

Université de Montréal

Les stratégies de coping utilisées par les athlètes en situation de compétition sportive :
Développement d'un modèle multidimensionnel du coping,
de ses antécédents et de ses conséquences

par

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Université de Montréal
Faculté des études supérieures

Cette thèse intitulée

Les stratégies de coping utilisées par les athlètes en situation de compétition sportive :
Développement d'un modèle multidimensionnel du coping,
de ses antécédents et de ses conséquences

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SOMMAIRE

Cette thèse doctorale présente quatre articles visant à étudier les conduites de coping utilisées par les athlètes durant les compétitions sportives. Le premier article avait pour objectif de poursuivre la validation de l'*Inventaire des Stratégies de Coping en Compétition Sportive* (ISCCS, Gaudreau et Blondin, 2002a). Les résultats de la première étude ont corroboré la structure factorielle de premier-ordre et la structure hiérarchique de l'ISCCS, tout en montrant que les super-facteurs de coping corrélaient significativement avec divers indices auto-rapportés d'atteinte d'objectifs personnels. Les résultats de la deuxième étude ont montré que la majorité des paramètres de l'ISCCS étaient invariants à travers les phases d'une compétition sportive. De plus, l'utilisation moyenne des stratégies de coping variait à travers les phases de la compétition (i.e. constance absolue) alors que les différences individuelles dans le changement intra-individuel étaient modérément stables (i.e., constance relative). Ces résultats témoignent de l'importance de considérer les influences situationnelles et dispositionnelles dans l'étude du coping. Le deuxième article visait à étudier l'effet médiateur du coping dans la relation entre l'optimisme dispositionnel et les états affectifs ressentis après une compétition sportive. Les résultats d'analyses structurales avec variables manifestes ont montré que (1) le coping centré sur la tâche médiatisait partiellement la relation entre l'optimisme et les affects positifs, (2) le coping centré sur le désengagement médiatisait complètement la relation entre le pessimisme et la colère, (3) les indices objectifs et subjectifs d'atteinte de buts médiatisaient partiellement la relation entre le coping et les affects post-compétition. Ces résultats corroborent l'hypothèse voulant que différents super-facteurs de coping médiatisent différemment la relation entre l'optimisme et l'expérience émotionnelle des athlètes. Le troisième article visait à étudier l'ajustement d'un modèle postulant le rôle médiateur de l'autodétermination dans les relations entre différents styles de perfectionnisme et les super-facteurs de coping de l'ISCCS. Les résultats d'analyses structurales avec variables latentes ont montré que (1) la motivation

autodéterminée médiatisait partiellement la relation entre le perfectionnisme de standard personnel (PSP) et le coping centré sur la tâche, (2) la motivation non-autodéterminée médiatisait partiellement la relation entre le perfectionnisme auto-critique (PAC) et le coping centré sur la distraction et sur le désengagement, (3) le coping centré sur le désengagement médiatisait partiellement la relation entre le PAC et le changement du bien-être subjectif, (4) l'atteinte d'objectifs médiatisait la relation entre les super-facteurs de coping et le changement du bien-être subjectif. Ces résultats ont démontré qu'un modèle intégrateur, regroupant des variables dispositionnelles, motivationnelles et situationnelles, s'ajustait raisonnablement bien aux données de l'échantillon. Le quatrième article visait à étudier la possibilité que différents athlètes puissent utiliser différentes combinaisons de stratégies de coping pour faire face aux exigences de la compétition sportive. Des analyses de classification hiérarchique ont permis de catégoriser les athlètes en quatre profils de coping : (I) centré sur l'absence de coping, (II) centré sur le tâche, (III) centré sur le désengagement, (IV) centré sur la tâche et sur le désengagement. Tel qu'attendu, le profil II était généralement associé à des conséquences positives alors que le profil III était généralement associé à des conséquences négatives. De plus, le profil IV était associé à des conséquences plus négatives que le profil II. Ce résultat suggère que l'utilisation du coping centré sur le désengagement puisse annuler ou à tout le moins diminuer substantiellement les effets bénéfiques associés à l'utilisation du coping centré sur la tâche. Ces résultats suggèrent qu'il est possible et pertinent d'étudier différents profils multidimensionnels afin de mieux comprendre les effets additifs et multiplicatifs des stratégies de coping sur le rendement et l'ajustement émotionnel des athlètes.

Mots-clés : coping, optimisme, pessimisme, perfectionnisme, émotion, bien-être psychologique, rendement, analyse factorielle confirmative, validité, sport

ABSTRACT

This thesis presents four papers on athletes' utilization of sport-related coping strategies during competitive sport encounters. The first article aimed at expanding the validation of the *Coping Inventory for Competitive Sports* (CICS, Gaudreau & Blondin, 2002a). Results of the first study have corroborated the first-order and hierarchical factorial structure of the CICS, and they showed that each superfactor correlated meaningfully with self-reported goal attainment indices. Results of the second study have provided evidence for the longitudinal factorial invariance of the CICS across the stages of a sport competition. Moreover, mean-level of coping utilization had changed across the stages of the competition whereas the inter-individual differences in intra-individual changes were moderately stable (i.e., rank-order consistency). These results demonstrate the importance of considering both situational and dispositional influences in coping research. The second article aimed at examining the mediating effect of coping in the relationship between dispositional optimism and post-competition affective states. Results of structural equation modeling with manifest variables have shown that (1) task-oriented coping mediated partially the relationship between optimism and positive affect, (2) disengagement-oriented coping mediated partially the relationship between pessimism and anger, (3) goal attainment indices mediated partially the relationships between superfactors of coping and post-competition affective states. These results indicate that each superfactor of coping has a differential role in mediating the effects of optimism and pessimism on emotional adjustment. The third article tested the goodness-of-fit of a model in which self-determination mediated the relationships between different styles of perfectionism and superfactors of coping measured in the CICS. Results of structural equation modeling with latent variables have shown that (1) self-determined motivation mediated partially the relationship between personal standard perfectionism (PSP) and task-oriented coping, (2) nonself-determined motivation mediated partially the relationship between evaluative

concern perfectionism (ECP) and both disengagement- and distraction-oriented coping, (3) disengagement-oriented coping mediated partially the relationship between ECP and changes in subjective well-being, (4) goal attainment mediated the relationship between superfactors of coping and changes in well-being. These results provide support for an integrative model in which dispositional, motivational, and situational variables were conceived at different levels of analysis. The fourth article tested whether different individuals could use different multivariate profiles of coping strategies. Based on hierarchical cluster analysis, athletes were classified in four different groups : (I) low copers, (II) task-oriented copers, (III) disengagement-oriented copers, (IV) high copers. As expected, profile II was associated with positive consequences whereas profile III was associated with negative consequences. Moreover, profile IV was associated with greater negative consequences than profile II. This result suggests that utilization of disengagement-oriented coping may cancel the benefits of using task-oriented coping. For the most part, this study indicated that research should complement coping strategies with coping profiles to assess the additive and multiplicative effects of coping on athletes' goal attainment and emotional adjustment.

Key words coping, optimism, pessimism, perfectionism, emotion, subjective well-being, goal attainment, structural equation modeling, validity, sport

TABLE DES MATIÈRES

IDENTIFICATION DU JURY.....	i
SOMMAIRE.....	ii
ABSTRACT.....	iv
TABLE DES MATIÈRES.....	vi
LISTE DES TABLEAUX.....	xiii
LISTE DES FIGURES.....	xv
REMERCIEMENTS.....	xvi
CHAPITRE 1 : INTRODUCTION.....	1
CHAPITRE 2 : RECENSION DE LA DOCUMENTATION.....	5
Introduction.....	6
Population cible.....	6
Frontières conceptuelles du coping.....	8
Définition et postulats implicites du coping.....	11
Postulat 1 : Opérationnalisation du coping.....	13
Vers une conception hiérarchique du coping.....	13
Modèles hiérarchiques du coping.....	15
Le COPE-Inventory en tant que modèle hiérarchique.....	15
Le modèle hiérarchique de Ayers et al. (1996).....	17
Le modèle hiérarchique de Walker et al. (1997).....	19
Le modèle hiérarchique de Connor-Smith et al. (2000).....	21
Synthèse et résumé des modèles hiérarchiques du coping.....	23
Postulat 2 : Le coping en tant que processus.....	24
Approche transactionnelle et dispositionnelle du coping.....	24
Stabilité et constance du coping : Une recension de la documentation.....	26
Définition de la stabilité absolue et de la stabilité relative.....	27
Stabilité générale ou stabilité des dispositions de coping à travers le temps.....	28
Stabilité relative.....	28
Stabilité absolue.....	29
Conclusion.....	29
Stabilité situationnelle.....	30
Stabilité relative.....	30
Stabilité absolue.....	31
Conclusion.....	32
Constance intra-situationnelle.....	33

Constance relative.....	33
Constance absolue.....	34
Conclusion.....	36
Critiques et pistes d'avenir.....	37
Opérationnalisation de la stabilité factorielle.....	38
Postulat 3 : Fonctions médiatrices du coping.....	43
Le modèle et Lazarus et Folkman (1987).....	43
La documentation empirique en contexte sportif.....	45
Objectifs de la thèse.....	49
Modèle hiérarchique du coping en compétition sportive.....	49
Objectifs spécifiques de la thèse.....	52
 CHAPITRE 3 : ARTICLE 1.....	 79
Liste des auteurs.....	80
Page titre.....	81
Abstract.....	82
Conceptual foundation of the coping construct.....	83
Toward a hierarchical framework of sport-related coping.....	87
Coping across the stages of a stressful encounter.....	89
Mean-level consistency of coping.....	90
Differential consistency of coping.....	92
Individual-level consistency of coping.....	94
Structural consistency of coping strategies.....	95
Study 1.....	97
Method.....	99
Participants.....	99
Sample 1 : Individual sports.....	99
Sample 2 : Team sports.....	99
Measures.....	99
Coping.....	99
Goal attainment.....	100
Procedure.....	100
Analytical strategy.....	101
Results and discussion.....	103
Data screening.....	103
Distribution of the CICS items.....	104
First-order CFAs.....	104
Hypothesized first-order model.....	104

Model respecification.....	105
Measurement invariance of the revised 10-factor first-order model.....	106
Hierarchical confirmatory factor analyses.....	107
Specification and identification of the hierarchical model.....	107
Hypothesized model with three second-order factors.....	108
Model respecification.....	108
Ancillary HCFAs of competing models.....	110
Alternative model with two second-order factors.....	110
Alternative model with four second-order factors.....	111
Measurement invariance of the revised second-order model.....	111
Concurrent validity : Associations with goal attainment indices.....	112
First-order model : Coping strategies and goal attainment indices.....	112
Hypothesized 13-factor model.....	112
Respecification.....	112
Invariance of the revised 13-factor model.....	113
Hierarchical model : Coping dimensions and goal attainment indices.....	114
Invariance of the 6-factor model.....	114
Study 2.....	114
Method.....	115
Participants.....	115
Measures.....	116
Procedure.....	116
Analytical strategy for the longitudinal confirmatory factor analysis.....	117
Results and discussions.....	119
Data screening.....	119
Structural consistency of each coping strategy.....	119
Mental imagery.....	119
Venting of unpleasant emotions.....	120
Distancing.....	121
Effort expenditure.....	121
Mental distraction.....	122
Thought control.....	122
Seeking support.....	122
Relaxation.....	123
Logical analysis.....	123
Disengagement/resignation.....	124
Mean-level consistency.....	124
Differential consistency.....	125

Individual-level consistency.....	125
General discussion.....	126
Hierarchical structure of sport-related coping.....	127
Coping and goal attainment in the sport domain.....	130
Trait-like versus state-like nature of coping across the stages of a competition...	131
Longitudinal factorial invariance.....	131
Mean-level consistency.....	132
Differential consistency.....	133
Individual-level consistency.....	134
Limitations, future directions, and conclusions.....	135
Notes.....	138
References.....	140
Appendix.....	166
CHAPITRE 4 : ARTICLE 2.....	168
Liste des auteurs.....	169
Page titre.....	170
Abstract.....	171
Introduction.....	172
Coping, goal attainment, and emotional adjustment.....	172
Dispositional optimism, coping, and adjustment.....	175
Optimism and task performance.....	176
Differential influence of optimism and pessimism.....	177
Purposes of this study.....	178
Method.....	179
Participants.....	179
Instruments.....	179
Optimism and pessimism.....	179
Coping.....	180
Affective states.....	180
Perceived goal attainment.....	181
Performance-goal discrepancy.....	181
Performance-norm discrepancy.....	182
Procedure.....	182
Overview of main analyses.....	183
Results.....	185
Data screening.....	185

Preliminary analyses.....	186
Structural equation modeling.....	187
Hierarchical regression with coping interactions.....	188
Polynomial regressions of optimism and pessimism.....	189
Discussion.....	190
Coping, goal attainment, and adjustment.....	190
Differential effect of optimism and pessimism.....	192
Interaction of coping dimensions.....	193
Linear versus quadratic effects of optimism and pessimism.....	194
Limitations, future directions, and conclusions.....	196
Notes.....	198
References.....	199
CHAPITRE 5 : ARTICLE 3.....	213
Liste des auteurs.....	214
Page titre.....	215
Abstract.....	216
Introduction.....	217
Personal standard and evaluative concern perfectionism.....	217
Motivational components of perfectionism.....	221
The direct and moderating role of goal attainment in well-being.....	223
The present study.....	225
Method.....	227
Participants.....	227
Procedure.....	228
Measures.....	229
Perfectionism.....	229
Sport-related motivation.....	231
Coping during the competition.....	231
Perceived goal attainment.....	233
General subjective well-being.....	233
Statistical analyses.....	234
Results.....	235
Measurement model.....	235
Structural model.....	236
Model specification.....	236
Fully mediated model.....	237
Partial mediation of motivation.....	237

Partial mediation of goal attainment.....	238
Partial mediation of motivation and coping through goal attainment.....	239
Goal attainment as moderator of perfectionism and motivation.....	239
Overview of analyses.....	239
Changes in well-being.....	240
Post-competition well-being.....	241
Ancillary analyses.....	241
Discussion.....	242
Pathways to coping, goal attainment, and well-being.....	242
The payoffs of goal attainment.....	246
Limitations, future directions, and conclusions.....	249
Notes.....	252
References.....	253
CHAPITRE 6 : ARTICLE 4.....	269
Liste des auteurs.....	270
Page titre.....	271
Abstract.....	272
Introduction.....	273
A conceptual model of coping in sport.....	273
Correlates of coping in sport.....	274
Subjective control.....	274
Goal attainment.....	275
Affective states.....	276
Multivariate profiles of coping.....	277
Goals and hypotheses.....	278
Method.....	278
Participants.....	278
Measures.....	278
Coping.....	278
Affective states.....	279
Goal attainment.....	279
Experience of control.....	279
Procedure.....	280
Results.....	280
Cluster analysis.....	280
Coping profiles and external variables.....	282
Controlling for the effect of goal attainment.....	282

Testing for potential confounds.....	283
Discussion.....	283
Conclusion.....	287
References.....	288
CHAPITRE 7 : CONCLUSION.....	294
Vers un modèle hiérarchique du coping.....	295
Le coping à travers les phases d'une situation stressante.....	298
Les antécédents et les conséquences du coping : Vers une approche intégratrice....	302
Le rôle du coping dans l'atteinte d'objectifs et le bien-être psychologique.....	302
Optimisme, pessimisme et utilisation du coping en compétition sportive.....	306
Perfectionnisme, motivation et utilisation du coping en compétition sportive....	309
Profils multidimensionnels de coping.....	313
Conclusion.....	314
Notes.....	316
RÉFÉRENCES GÉNÉRALES.....	318

LISTE DES TABLEAUX

CHAPITRE 2 : RECENSION DE LA DOCUMENTATION

Tableau 1 Définition et analyse conceptuelle du coping, des défenses, de la régulation des affects et des habiletés psychologiques fondamentales (HPF).....	59
Tableau 2 Structure factorielle hiérarchique du COPE-Inventory à travers différentes études de validation.....	60
Tableau 3 Recension des recherches sur la stabilité et de la constance du coping.....	64
Tableau 4 Recension des corrélats du coping dans le domaine des sports.....	71

CHAPITRE 3 : ARTICLE 1

Table 1 Hypothesized hierarchical model of the CICS.....	149
Table 2 Study 1 : Descriptive statistics and reliability of coping and goal attainment factors.....	150
Table 3 Study 1 : Fit indices of confirmatory factor analyses for samples of athletes from individual and team sports.....	151
Table 4 Study 1 : Standardized covariances between the coping strategies of the CICS.....	152
Table 5 Study 1 : Tests of invariance across individual and team sports samples for the respecified first-order model.....	153
Table 6 Study 1 : Tests of invariance across individual and team sports samples for the respecified hierarchical model with three superfactors.....	154
Table 7 Study 1 : Standardized second-factor loadings from the respecified hierarchical model.....	155
Table 8 Study 1 : Fit indices for the models assessing the concurrent associations between coping and goal attainment indices.....	156
Table 9 Study 1 : Standardized covariances of coping strategies and superfactors of coping with goal attainment indices.....	157
Table 10 Study 2 : Descriptive statistics and reliability of the coping strategies.....	158
Table 11 Study 2 : Tests of longitudinal invariance for each of the 10 coping strategies.....	159
Table 12 Study 2 : Differential and mean-level consistency of coping strategies for the full and partial invariance of intercepts models.....	162
Table 13 Study 2 : Individual-level changes in coping strategies based on RCI and full-point changes in absolute score on a five-point Likert-type scale.....	163

CHAPITRE 4 : ARTICLE 2

Table 1 Zero-order and partial correlations controlling for level of ability.....	205
Table 2 Total, direct, and indirect effects of hypothesized mediated relationships.....	206

Table 3 Unstandardized estimates of the hierarchical regressions of coping and coping interactions on goal attainment indices and post-competition affect..... 207

Table 4 Polynomial regressions of optimism and pessimism on goal attainment indices..... 208

CHAPITRE 5 : ARTICLE 3

Table 1 Descriptive statistics and reliability estimates..... 260

Table 2 Fit indices of the measurement and structural models..... 261

Table 3 Standardized factor loadings, uniquenesses, and construct validity of the latent variables..... 262

Table 4 Standardized covariances between the latent variables in the measurement model..... 264

Table 5 Significance tests of the unstandardized direct and indirect effects included in partially mediated models..... 265

Table 6 Hierarchical regressions of the moderating role of goal attainment in the relationship of perfectionism and motivation with changes and post-competition well-being..... 266

CHAPITRE 6 : ARTICLE 4

Table 1 Comparison of external variables across the four profiles of coping..... 291

Table 2 Comparison of external variables across the four profiles of coping after controlling for self-referenced goal attainment..... 292

LISTE DES FIGURES

CHAPITRE 2 : RECENSION DE LA DOCUMENTATION

Figure 1 Définition de la population cible.....	74
Figure 2 Frontières conceptuelles du coping.....	75
Figure 3 Évolution historique de la recherche sur le coping (1984-2003).....	76
Figure 4 Modèle des antécédents et des conséquences du coping de Lazarus et Folkman (1987).....	77
Figure 5 Modèle conceptuel hiérarchique de l'ISCCS de Gaudreau et Blondin (2002).....	78

CHAPITRE 3 : ARTICLE 1

Figure 1 Differential consistency and standardized parameter estimates from the LCFAs.....	164
--	-----

CHAPITRE 4 : ARTICLE 2

Figure 1 Hypothesized models assuming either complete or partial mediating effects....	209
Figure 2 Standardized path coefficients for the final partially mediated model.....	210
Figure 3 Interaction of the coping dimensions in predicting performance-goal discrepancy (panel A); performance-norm discrepancy (panel B); post-competition positive affect (panel C); subjective goal attainment (panel D).....	211
Figure 4 Quadratic relationship of subjective goal attainment with dispositional pessimism (panel A) and dispositional optimism (panel B).....	212

CHAPITRE 5 : ARTICLE 3

Figure 1 Partially mediated model of the associations between perfectionism, motivation, coping, goal attainment, and life-satisfaction.....	267
Figure 2 Moderating role of goal attainment in the relationships of personal standards and evaluative concerns perfectionism with change in life-satisfaction and post-competition life-satisfaction.....	268

CHAPITRE 6 : ARTICLE 4

Figure 1 Standardized score of coping strategies across the four profiles of coping.....	293
--	-----

CHAPITRE 7 : CONCLUSION

Figure 1 Modèle intégrateur de la personnalité, de la motivation, du coping et de l'adaptation.....	317
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CHAPITRE 1
INTRODUCTION

Le sport, et plus particulièrement les performances réalisées par ses acteurs, fascine l'imaginaire et la passion des foules qui assistent à leurs exploits afin de soutenir leurs efforts et parfois même pour vilipender leurs erreurs. Il suffit de penser à la popularité d'activités sportives telles les Jeux Olympiques, le Super Bowl (football), la Série Mondiale (base-ball), la Coupe Stanley (hockey) et la Coupe du Monde (soccer) pour réaliser la place prépondérante occupée par le sport dans nos sociétés contemporaines. Pour la plupart des athlètes et des équipes sportives, la frontière entre le succès et l'échec est si mince qu'elle échappe même au regard aguerris des experts. Considérant ses enjeux individuels, sociaux et économiques, la compétition sportive est susceptible d'être perçue comme stressante par les athlètes et par les entraîneurs. À cet effet, Pélé, le célèbre joueur de soccer Brésilien, expliquait les enjeux de la compétition sportive et son expérience subjective en ces mots :

« J'ai toujours eu peur de tirer les tirs de pénalité. Ça paraît facile, mais quand il y a égalité au score, la pression est terrible. Parfois un tir de pénalité est si important, qu'on devrait le faire tirer par le président du club »

(Pélé, dans Thill et Fleurance, 1998, p. 75)

Les athlètes accomplis et les athlètes en devenir doivent composer avec de multiples sources de stress qui peuvent freiner la réalisation de leurs objectifs de performance (v.g., Dugdale, Eklund et Gordon, 2002; Holt et Hogg, 2002; James et Collins, 1997; Noblet et Gifford, 2002). À cause de la pression imposée par les parents, les entraîneurs et les coéquipiers ou tout simplement à cause du climat de compétition et de la lourdeur des charges d'entraînement, plusieurs athlètes obtiennent un rendement inférieur à leur niveau

réel d'habileté. En ce sens, la plupart des intervenants qui travaillent actuellement auprès des athlètes reconnaissent que les aptitudes physiques, motrices, stratégiques et techniques sont insuffisantes pour prédire leur niveau de réussite sportive (Starkes et Ericsson, 2003). La célèbre citation du joueur de base-ball Yogi Bera résume la perception d'un nombre important d'athlètes et d'entraîneurs :

« Eighty percent of this game is mental and the other twenty percent is in the head ! ».

De telles croyances, jumelées aux nombreuses sources de stress associées au sport de compétition, présupposent que les athlètes doivent développer et utiliser diverses stratégies pour faire face aux multiples exigences rencontrées avant, pendant et après les compétitions sportives. Malgré l'importance d'inventorier ces stratégies pour mieux comprendre l'ajustement émotionnel, le rendement et la longévité professionnelle des athlètes dans le domaine des sports, un nombre relativement restreint de recherches empiriques ont étudié le concept de coping. Qui plus est, très peu d'attention empirique a été accordée à la construction et à la validation d'instruments de mesure ainsi qu'à l'étude des facteurs situationnels, dispositionnels, cognitifs et motivationnels pouvant influencer l'utilisation du coping en situation de compétition sportive.

Cette thèse de doctorat s'inscrit dans la lignée d'un programme de recherche (voir Amiot, Gaudreau et Blanchard, sous-presse; Gaudreau et Blondin, 2002; Gaudreau, Blondin et Lapierre, 2002; Gaudreau, Lapierre et Blondin, 2001) visant à étudier les stratégies de coping utilisées par les athlètes en situation de compétition sportive ainsi que les antécédents et les conséquences de ces stratégies. D'une part, elle vise à poursuivre la validation de l'Inventaire des Stratégies de Coping en Compétition Sportive (Gaudreau et

Blondin, 2002), un instrument construit pour mesurer les stratégies de coping des athlètes. D'autre part, elle a pour objectif d'étudier des corrélats dispositionnels (optimisme, pessimisme, perfectionnisme), motivationnels (motivation autodéterminée), cognitifs (expérience de contrôle), émotionnels (affect positif, affect négatif, bien-être subjectif) et fonctionnels (atteinte d'objectifs) du coping utilisé par les athlètes en situation de compétition sportive. Le développement de ce programme de recherche revêt une double importance. Au niveau théorique, il permettra d'approfondir les connaissances concernant les mécanismes psychologiques impliqués dans la gestion du stress des athlètes. De plus, il permettra d'évaluer le rôle de différentes stratégies de coping dans le rendement et le bien-être émotionnel des athlètes en situation de compétition. À un niveau appliqué, il permettra d'identifier un certain nombre de paramètres psychologiques et comportementaux pouvant aider les athlètes à gérer efficacement les exigences associées à la compétition sportive. À long terme, les connaissances acquises grâce à ces recherches devraient faciliter l'élaboration de programmes d'intervention basés sur une documentation empirique probante.

CHAPITRE 2

RECENSION DE LA DOCUMENTATION

INTRODUCTION

La psychologie du sport est une discipline scientifique qui étudie des facteurs susceptibles d'influencer le rendement, l'expérience émotionnelle et la santé des individus qui participent à un sport de compétition, directement (v.g., athlètes, entraîneurs, directeurs, soigneurs) ou indirectement (v.g., parents, amis, agents, supporteurs). La plupart des chercheurs et des intervenants en psychologie du sport considèrent le stress, et plus particulièrement les stratégies de gestion du stress (c-à-d., coping), comme des facteurs déterminants de la performance et de l'adaptation psychologique des athlètes (v.g., Anshel, Kim, Kim, Chang et Eom, 2001; Hanin, 2000; Hardy, Jones et Gould, 1996; Janelle et Hillman, 2003; Murphy et Tammen, 1998). Toutefois, seulement un nombre restreint de chercheurs ont étudié les stratégies de coping utilisées par les athlètes en contexte de compétition sportive. Cette thèse de doctorat vise à combler cette lacune en étudiant les conduites cognitives et comportementales utilisées par les athlètes afin de gérer le stress de la compétition sportive.

POPULATION CIBLE

Avant de définir les concepts et les visées spécifiques de cette thèse, il importe de délimiter la population ciblée dans les recherches empiriques qui seront présentées. La population générale inclut des individus inactifs ainsi que des individus actifs qui pratiquent régulièrement des activités physiques et sportives. En ce sens, l'étude scientifique des athlètes présuppose l'existence d'une sous-population pouvant être distinguée des individus qui pratiquent régulièrement des activités physiques. Bien que tous les athlètes font partie des membres physiquement actifs de la population générale, ces derniers ne sont pas tous des athlètes pour autant (voir la Figure 1). En conséquence, il

importe d'identifier certaines caractéristiques permettant de différencier les athlètes et les membres physiquement actifs de la population.

Insérez la Figure 1

D'une part, pour appartenir à la sous-population « athlète », une personne doit s'entraîner délibérément pour acquérir, améliorer et automatiser des habiletés physiques, techniques, tactiques et psychologiques dans le but d'atteindre des objectifs de performance individuelle et/ou collective en situation de compétition sportive (Bompa, 1994; Starkes et Ericsson, 2003). Être un athlète équivaut également à participer régulièrement à des activités sportives sanctionnées par des organismes régionaux, provinciaux, nationaux ou internationaux. Ces affrontements permettent aux individus et aux équipes d'évaluer leurs habiletés à l'intérieur d'un cadre assurant le respect des règles et des protocoles d'une discipline sportive.

D'autre part, être un membre physiquement actif de la population générale implique que l'on pratique, plus ou moins régulièrement, des activités physiques et sportives pour des fins de tout acabit. Tel que présenté dans la Figure 1, il est possible d'affirmer que tous les athlètes font partie des membres physiquement actifs de la population, alors que seulement quelques membres physiquement actifs de la population sont des athlètes. La plupart des membres physiquement actifs de la population effectuent des activités physiques et sportives pour atteindre des objectifs de loisir, de détente ou de santé physique. Seule une minorité d'individus physiquement actifs s'entraînent en prévision de la démonstration de leurs habiletés en situation de compétition sportive. Ces individus, qui

répondent aux critères avancés pour définir un athlète, forment la population cible des recherches qui seront effectuées dans cette thèse de doctorat.

FRONTIÈRES CONCEPTUELLES DU COPING

Au début du siècle dernier, les travaux de Sigmund Freud ont tracé la voie à l'exploration des mécanismes impliqués dans l'auto-régulation des émotions et des comportements humains. Bien que reposant sur des assises épidémiologiques qui diffèrent substantiellement des principes psycho-dynamiques, l'étude scientifique du coping s'inscrit dans une longue tradition de recherche visant à étudier l'adaptation émotionnelle et l'auto-régulation comportementale (pour une recension, voir Boekaerts, Pintrich et Zeidner, 2000; Cramer, 2000; Lazarus et Folkman, 1984). Au cours des vingt dernières années, plusieurs tenants d'une approche socio-cognitive et interactionniste, ont proposé une explication des processus par lesquels les individus gèrent et régularisent leurs émotions et leurs comportements (v.g., Carver et Scheier, 1998; Compas, Connor-Smith, Saltzman, Thomsen et Wadsworth, 2001; Elliot et McGregor, 2001; Freund et Baltes, 2002; Lazarus et Folkman, 1984; Locke et Latham, 2002; Murphy et Tammen, 1998). Bien que cette prolifération de cadres conceptuels reflète la complexité et la nature multidimensionnelle de l'adaptation humaine, elle complexifie significativement l'opérationnalisation du concept d'auto-régulation comportementale. Néanmoins, des travaux récents (v.g., Cramer, 1998; Matthews, Schwan, Campbell, Saklofske et Mohamed, 2000) conceptualisent *l'auto-régulation* comme un construit de second-ordre, pouvant se subdiviser en mécanismes d'adaptation mutuellement exclusifs (v.g., coping, défenses, régulation des affects, habiletés psychologiques fondamentales). Bien qu'une recension exhaustive de la documentation portant sur chacun de ces mécanismes d'adaptation dépasse largement le

cadre de cette thèse, il importe de les comparer afin de définir les frontières conceptuelles du coping et de la présente thèse doctorale.

De prime abord, il faut souligner que le *coping*, les *défenses*, la *régulation des affects* et les *habiletés psychologiques fondamentales* (HPF) représentent des mécanismes pouvant jouer un rôle complémentaire dans l'adaptation psychologique (Cramer, 1998; Hardy et al., 1996). D'ailleurs, les psychologues sportifs ont étudié chacun de ces concepts pour comprendre la performance et l'expérience émotionnelle des athlètes (v.g., Crocker, Kowalski et Graham, 1998; Hardy et al., 1996; Murphy et Tammen, 1998; Seheult, 1997). Toutefois, une analyse plus approfondie de ces concepts révèle plusieurs différences fonctionnelles et conceptuelles (v.g., Cramer, 1998; Cramer, 2000; Gaudreau et Blondin, 2002; Murphy et Tammen, 1998; Parkinson et Totterdell, 1999; Thomas, Murphy et Hardy, 1999) qui méritent d'être soulignées pour mieux saisir les portées du coping. Le tableau 1 présente une définition de ces concepts ainsi qu'une grille permettant d'analyser leurs principales différences et similitudes.

 Insérez le Tableau 1

Au niveau fonctionnel, le coping est le seul mécanisme d'adaptation (parmi ceux présentés dans le Tableau 1) jouant un rôle dans la gestion de la situation, dans la gestion des émotions et dans l'évitement des situations. D'une part, l'utilisation inconsciente des défenses vise à protéger la personne contre des émotions déplaisantes, tout en lui permettant d'éviter l'exposition à des situations menaçantes pour l'intégrité du soi. En ce sens, ce mécanisme d'adaptation ne permet pas de modifier les exigences objectives d'une situation. D'autre part, l'utilisation des HPF est orientée vers la maximisation de la

performance humaine. Donc, ce mécanisme d'adaptation ne permet pas d'éviter les contraintes objectives d'une situation et les émotions qui l'accompagnent. Finalement, la régulation des affects est orientée vers la gestion directe et indirecte (c-à-d., évitement) de l'état émotionnel et de l'humeur. En conséquence, les stratégies de régulation affective ne permettent pas d'agir directement sur les contraintes objectives d'une situation. En somme, l'étendue fonctionnelle des défenses, de la régulation des affects et des HPF est plus limitée que celle du coping.

D'un point de vue conceptuel, trois des quatre mécanismes d'adaptation recensés dans le Tableau 1 (c-à-d., coping, régulation des affects et HPF) accordent une importance égale aux efforts cognitifs et aux efforts comportementaux dans l'auto-régulation des comportements et des émotions. Ces efforts volontaires illustrent adéquatement les aspects conscients et délibérés du processus d'adaptation psychologique, tout en témoignant de sa complexité et de son caractère multidimensionnel. D'un point de vue épistémologique, l'étude de ces mécanismes découle d'une approche socio-cognitive qui reconnaît le rôle actif de la personne dans la régulation de ses propres comportements. Ces volitions diffèrent des défenses, qui reflètent une activité intrapsychique involontaire, rigide et parfois immature. Les mécanismes de défense, qui sont utilisés de façon inconsciente, reflètent la « face cachée » de la régulation comportementale et émotionnelle (Cramer, 1998, 2000; Lazarus, 2000b). Toutefois, leur étendue conceptuelle est plus limitée que les autres mécanismes d'adaptation qui intègrent simultanément des conduites cognitives et comportementales à l'intérieur de leur schème opérationnel.

Cette brève incursion dans l'univers conceptuel et fonctionnel des mécanismes d'adaptation étudiés par les psychologues sportifs permet de définir la frontière conceptuelle du coping. Premièrement, l'étendue fonctionnelle du coping est plus vaste

que celle des autres mécanismes d'adaptation recensés dans le Tableau 1. Rappelons que le coping inclut des conduites servant à agir sur les exigences objectives d'une situation stressante et des conduites servant à gérer les émotions qui les accompagnent. En conséquence, une part substantielle des habiletés psychologiques fondamentales et des stratégies de régulation affective est respectivement couverte par les stratégies de coping centrées sur la tâche et par les stratégies de coping centrées sur les émotions (viz., coping centré sur l'accommodation). Inversement, les conduites de coping orientées vers la tâche ne sont pas incluses dans les modèles s'intéressant à la régulation des émotions (v.g., Parkinson et Totterdell, 1999; Stevens et Lane, 2001) alors que les conduites de coping orientées vers le désengagement et vers les émotions ne sont pas représentées dans les modèles étudiant les habiletés psychologiques fondamentales (v.g., Durand-Bush, Salmela et Green-Demers, 2001; Thomas et al., 1999). Ces relations convergentes et divergentes entre les différents mécanismes d'adaptation sont illustrées dans la Figure 2¹.

Insérez la Figure 2

DÉFINITION ET POSTULATS IMPLICITES DU COPING

Au cours des vingt dernières années, les recherches empiriques sur le stress et le coping ont proliféré bien au-delà des sphères de la psychologie fondamentale. Plusieurs chercheurs en psychologie de la santé, du travail, des loisirs, de l'éducation, des sports et des relations interpersonnelles ont étudié les conduites de coping utilisées spécifiquement dans chacun de ces domaines de la vie. Une recherche de la banque de données PsychInfo, pour les années 1984 à 2003, a révélé l'existence de 10 723 articles scientifiques répondant au mot-clé « *coping behavior* ». Cette recherche, qui excluait les thèses doctorales et les

chapitres de livre, illustre la prépondérance du coping dans la psychologie contemporaine. Qui plus est, une recherche par intervalle de deux ans, a démontré une augmentation quasi continue du nombre de recherches scientifiques sur le coping. Ces résultats, illustrés dans la Figure 3, ne sont pas surprenants si l'on considère l'étendue conceptuelle du coping ainsi que son rôle dans la régulation des situations stressantes et des états émotionnels (voir le Tableau 1).

Insérez la Figure 3

La recherche contemporaine sur le coping a été guidée par les conceptions théoriques influentes de Richard Lazarus et de Susan Folkman (1984). Selon ces auteurs, le coping représente « l'ensemble des conduites comportementales et cognitives, constamment changeantes, utilisées par une personne afin de gérer les demandes internes et externes d'une situation spécifique (Lazarus et Folkman, 1984, p. 141) ». Bien qu'étant acceptée par la majorité des chercheurs (pour une recension, voir Zeidner et Endler, 1996), cette définition renferme trois postulats qui ne font pas l'unanimité dans la communauté scientifique. En conséquence, il est primordial d'expliquer ces postulats afin de mettre en lumière les orientations théoriques, conceptuelles et méthodologiques qui seront suivies dans le cadre de cette thèse. Les sections ci-contre recenseront la documentation empirique se rattachant à chacun de ces trois postulats et mèneront progressivement à présenter les visées de la présente thèse doctorale.

Postulat 1 : Opérationnalisation du coping

Vers une conception hiérarchique du coping

Lazarus et Folkman (1984) ont défini le coping comme *l'ensemble* des conduites cognitives et comportementales utilisées dans le but de gérer les exigences d'une situation. De façon explicite, cette définition postule que les individus peuvent utiliser une panoplie de conduites de coping pour tenter de gérer les exigences d'une situation stressante. D'une part, le caractère multidimensionnel du coping a contraint les chercheurs à regrouper les conduites de coping en un nombre limité d'entités porteuses de sens. D'autre part, il a favorisé l'émergence de cadres conceptuels visant à opérationnaliser le coping et à l'étudier par l'intermédiaire d'instruments de mesure validés. De toute évidence, une recension exhaustive des particularités conceptuelles et des propriétés psychométriques de ces instruments dépasserait largement les objectifs de cette présentation. À ce sujet, les lecteurs sont invités à consulter l'article de Skinner, Edge, Altman et Sherwood (2003) dans lequel sont recensés 89 instruments de mesure. De même, les lecteurs sont invités à consulter le chapitre de Crocker et al. (1998) dans lequel sont recensés les mesures de coping qui sont couramment utilisées dans le domaine du sport. Ceci dit, il importe tout de même de résumer les différentes approches qui ont servi à opérationnaliser le coping et à construire des instruments visant à le mesurer.

Trois grandes approches ont été utilisées pour opérationnaliser le concept de coping (Krohne, 1996; Schwarzer et Schwarzer, 1996). Chacune de ces approches repose sur un postulat différent à propos de l'organisation conceptuelle du coping. La première approche repose sur une conception micro-analytique, qui consiste à regrouper les conduites de coping en un certain nombre de stratégies de coping. En examinant les mesures recensées par Skinner et al. (2003), il est possible d'en identifier 38 qui ont recouru à cette approche.

Parmi les plus fréquemment utilisées, nous retrouvons le *COPE-Inventory* (Carver, Scheier et Weintraub, 1989), le *Ways of Coping Questionnaire* (Folkman et Lazarus, 1985), le *A-COPE* (Phelps et Jarvis, 1994). Ces instruments, qui mesurent généralement des stratégies mutuellement exclusives, permettent de dresser un portrait suffisamment détaillé des conduites de coping utilisés par les individus. Néanmoins, ils négligent d'importantes relations convergentes et divergentes qui pourraient permettre de regrouper les stratégies de coping en un nombre restreint de dimensions porteuses de sens.

La deuxième approche repose sur une conception macro-analytique, qui consiste à regrouper les conduites de coping en un nombre limité de super-facteurs de coping. Parmi les mesures recensées par Skinner et al. (2003), 34 ont recouru à cette approche. Les plus connues sont le *Coping Strategy Indicator* (Amirkhan, 1990), le *Coping Inventory for Stressful Situations* (Endler et Parker, 1994) et le *Coping with Health, Injuries and Problems* (Endler, Courbasson et Fillion, 1998). Certes, ces instruments possèdent l'avantage de la parcimonie. Toutefois, leur parcimonie néglige la possibilité que chacun des super-facteurs puisse se subdiviser en un certain nombre de stratégies de coping homogènes et mutuellement exclusives.

En dépit de leurs forces et faiblesses respectives, les approches micro- et macro-analytique sont limitées parce qu'elles couvrent un secteur relativement limité de l'univers conceptuel du coping. La troisième approche, qui repose sur une conception hiérarchique du coping, intègre les approches micro- et macro-analytique. Dans cette approche, les conduites de coping sont regroupées en stratégies de coping, qui elles, sont à leur tour regroupées en super-facteurs de second-ordre. Parmi les mesures recensées par Skinner et al. (2003), 17 ont proposé une conception hiérarchique du coping. Malgré le nombre relativement important de modèles hiérarchiques, seulement trois d'entre eux ont été

validés empiriquement (Ayers, Sandler, West et Roosa, 1996; Connor-Smith, Compas, Wadsworth, Thomsen et Saltzman, 2000; Walker, Smith, Garber et Van Slyke, 1997). De plus, bien que le COPE-Inventory (Carver et al., 1989) ait été construit selon une approche micro-analytique, plusieurs chercheurs ont tenté de regrouper ses stratégies de coping en super-facteurs de coping. Donc, les particularités conceptuelles et les propriétés psychométriques du COPE-Inventory ainsi que celles des trois instruments construits selon une approche hiérarchique sont présentées dans la section ci-contre.

Modèles hiérarchiques du coping

Le COPE-Inventory en tant que modèle hiérarchique

A priori, le COPE-Inventory de Carver et al. (1989) contenait 15 stratégies de coping. Plusieurs études de validation ont appuyé, du moins en partie, cette structure factorielle de premier-ordre. Les résultats d'analyses factorielles exploratoires ont démontré que la recherche de soutien instrumental et la recherche de soutien émotionnel d'une part, et que le coping actif et la planification d'autre part, n'étaient pas séparables empiriquement (Carver et al., 1989; Ntoumanis, Biddle et Haddock, 1999; Sica, Novara, Dorz et Sanavio, 1997)¹. De même, les résultats d'analyses factorielles confirmatives ont montré que des modèles alternatifs en 13 et en 14 facteurs (c-à-d., planification et coping actif sur le même facteur) s'ajustaient raisonnablement bien aux données d'étudiants universitaires (Clark, Bormann, Cropanzano et James, 1995; Cook et Heppner, 1997) et d'athlètes (Eklund, Grove et Heard, 1998). Qui plus est, le modèle proposé a priori (c-à-d., 15 facteurs) n'apportait aucune amélioration significative en comparaison à ces modèles alternatifs. En somme, les résultats de ces études ont permis d'identifier 13 ou 14 stratégies de coping mutuellement exclusives à l'intérieur du COPE-Inventory.

Plusieurs chercheurs ont tenté de regrouper les stratégies de coping du COPE-Inventory en dimensions de second-ordre. De façon générale, les chercheurs ont identifié deux (Zeidner, 1993; Zeidner et Ben-Zur, 1994; Zeidner et Hammer, 1992)², trois (Ben-Zur, 1999; Cook et Heppner, 1997; Hasking et Oei, 2002; Hudek-Knezevic, Kardum et Vukmirovic, 1999; Kallasmaa et Pulver, 2000; Segerstrom, Taylor, Kemeny et Fahey, 1998; Stewart et Schwarzer, 1996; Zautra, Sheets et Sandler, 1996; Zeidner, 1995, 1996) ou quatre (Carver et al., 1989; O'Connor et O'Connor, 2003; Phelps et Jarvis, 1994; Zautra et al., 1996)³ super-facteurs de coping⁴. Le tableau 2 résume les résultats de chacune de ces études. Bien qu'étant quelque peu divergents, ces résultats doivent être interprétés prudemment parce que ces recherches ont inclut un nombre différent de stratégies de coping, tout en utilisant divers types d'analyses statistiques (c-à-d., analyse en composantes principales, analyse factorielle exploratoire, analyse factorielle confirmative). Les trois grands super-facteurs qui ont été identifiés dans cette documentation représentent un 1) coping centré sur la tâche ou sur le problème, 2) un coping centré sur les émotions ou sur l'accommodation et 3) un coping centré sur l'évitement ou sur le désengagement. Dans le modèle en quatre facteurs, le coping centré sur la tâche se subdivise en engagement primaire (c-à-d., maîtriser directement la situation) et en engagement secondaire (c-à-d., maîtriser activement ses réactions émotionnelles face à la situation). Les résultats d'analyse factorielle confirmative ont démontré l'acceptabilité des modèles contenant trois (Hasking et Oei, 2002; Segerstrom et al., 1998; Zautra et al., 1996) et quatre super-facteurs (Zautra et al., 1996). Dans le modèle quatre facteurs, la corrélation entre l'engagement primaire et l'engagement secondaire était si élevée qu'il était difficile de distinguer empiriquement ces deux super-facteurs. De plus, les résultats de Hasking et Oei (2002) ont démontré que le modèle en trois facteurs s'ajustait mieux aux données que le modèle en

quatre facteurs. Bien que Zautra et al. (1996) aient préféré le modèle en quatre facteurs, il semble que trois super-facteurs soient suffisants pour catégoriser adéquatement et parcimonieusement les stratégies de coping incluses dans le COPE-Inventory. Par ailleurs, une lecture attentive du tableau 2 révèle que certaines stratégies de coping ont saturé systématiquement le même super-facteur à travers la majorité des recherches. Donc, il est possible de conclure que ces stratégies de coping forment le noyau central de chacun des super-facteurs du COPE-Inventory :

- 1) Centré sur la tâche (planification, coping actif, réévaluation positive, suppression des autres activités, restriction, acceptation).
- 2) Centré sur les émotions (recherche de soutien instrumental, recherche de soutien émotionnel, centration et ventilation des émotions).
- 3) Centré sur le désengagement (désengagement comportemental, désengagement mental, déni et alcool/drogue).

Insérez le Tableau 2

Le modèle hiérarchique de Ayers, Sandler, West et Roosa (1996)

Ayers et al. (1996) ont construit le *Children's Coping Strategies Checklist* (CCSC), une mesure dispositionnelle de coping pour les enfants du primaire. A priori, le CCSC proposait un regroupement de 11 stratégies de coping (trois à cinq conduites de coping par stratégie) en cinq super-facteurs de coping :

- 1) Centré sur le problème (prise de décision cognitive, résolution de problème).
- 2) Centré sur les émotions (analyse logique, restructuration cognitive, expression des émotions).
- 3) Centré sur la distraction (distraction comportementale et distraction mentale).
- 4) Centré sur l'évitement (évitement comportemental et évitement cognitif).
- 5) Centré sur le soutien social (recherche de soutien instrumental et émotionnel).

Dans le cadre d'une première étude, les analyses de fidélité ont révélé la faible cohérence interne de l'échelle mesurant l'expression des émotions. Cette échelle fut retirée des analyses subséquentes. Puis, les résultats d'une analyse factorielle confirmative ont rejeté le modèle hiérarchique proposé a priori. Spécifiquement, la corrélation entre le coping centré sur le problème et le coping centré sur les émotions était si élevée qu'il était impossible de séparer adéquatement ces deux super-facteurs de coping. Par contre, les résultats d'une analyse complémentaire ont démontré l'acceptabilité d'un modèle en quatre super-facteurs, dans lequel la prise de décision cognitive, la résolution de problème, l'analyse logique et la restructuration cognitive étaient regroupés en un super-facteur représentant du coping actif. Fait intéressant à noter, ce modèle en quatre facteurs était significativement supérieur à des modèles alternatifs dans lesquels les stratégies de coping étaient regroupées en deux dimensions de coping (i.e., centré sur le problème et centré sur les émotions; coping actif et coping passif). De plus, les paramètres de ce modèle (saturations, covariances et erreurs) étaient invariants à travers deux groupes d'âge (10 ans et moins et 11 ans et plus) et à travers les sexes. Une deuxième analyse factorielle

confirmative, réalisée sur un échantillon indépendant, a confirmé de nouveau l'acceptabilité du modèle en quatre facteurs.

Dans le cadre d'une deuxième étude, Ayers et al. (1996) ont testé le *How I Cope Under Pressure Scale* (HICUPS), une adaptation situationnelle du CCSC. Tel qu'attendu, les résultats d'une analyse factorielle confirmative ont démontré l'acceptabilité d'un modèle en quatre super-facteurs. Comme pour le CCSC, tous les paramètres du modèle étaient invariants à travers deux groupes d'âge et les sexes. De plus, ce modèle était significativement supérieur à des modèles alternatifs proposant deux facteurs.

En résumé, ces résultats ont apporté un appui certain au modèle hiérarchique proposé par le CCSC et l'HICUPS. Néanmoins, il aurait été pertinent d'effectuer une analyse complémentaire afin de tester un modèle alternatif en trois facteurs, dans lequel les stratégies de soutien social (instrumental et émotionnel) satureraient le coping actif.

Le modèle hiérarchique de Walker, Smith, Garber et Van Slyke (1997)

Walker et al. (1997) ont construit le *Pain Response Inventory* (PRI), une mesure de coping spécifique à la douleur abdominale pour les enfants du primaire. A priori, le PRI regroupait 14 stratégies de coping (5 conduites de coping par stratégie) en trois super-facteurs de coping. Une quinzième stratégie, le stoïcisme, était reliée à aucun des super-facteurs proposés dans ce modèle.

- 1) Coping actif (résolution de problème, recherche de soutien instrumental, recherche de soutien émotionnel, distraction, repos, massage et actions spécifiques à la condition)
- 2) Coping passif (désengagement comportemental, isolement social, pensée catastrophique)

3) Coping centré sur l'accommodation (acceptation, auto-encouragement, minimiser la douleur, évitement actif la douleur).

Les résultats d'une analyse factorielle confirmative, réalisée auprès d'enfants du primaire, ont rejeté le modèle hiérarchique proposé a priori. Premièrement, les corrélations entre deux paires de stratégies de coping (c-à-d., soutien social émotionnel et instrumental; distraction et l'évitement actif de la douleur) étaient si élevées qu'il était impossible de les séparer empiriquement. En conséquence, des facteurs de premier-ordre, représentant la distraction et la recherche de soutien social, ont été créés. Deuxièmement, le stoïcisme et l'acceptation semblaient mesurer à la fois du coping passif et du coping centré sur l'accommodation. De même, la pensée catastrophique et l'isolement social semblaient mesurer à la fois du coping passif et du coping actif. En conséquence, ces quatre stratégies de coping saturaient simultanément deux super-facteurs de coping. Les résultats d'une analyse complémentaire ont démontré que ce modèle alternatif s'ajustait marginalement aux données d'écoliers du primaire, d'enfants ayant obtenu leur congé de l'hôpital et d'enfants hospitalisés.

Bien que les auteurs aient conclu en l'acceptabilité de ce modèle, la présence de nombreuses saturations doubles suggèrent la grande difficulté à regrouper les stratégies de coping du PRI en trois super-facteurs de coping. En conséquence, il serait pertinent d'évaluer des modèles alternatifs (deux ou quatre dimensions) afin de déterminer s'il est possible de regrouper les stratégies de coping du PRI en super-facteurs homogènes et mutuellement exclusifs.

Le modèle hiérarchique de Connor-Smith, Compas, Wadsworth, Harding et Saltzman (2000)

Connor-Smith et al. (2000) ont construit le *Responses to Stress Questionnaire* (RSQ), une mesure situationnelle de stress et de coping pour les adolescents. Ce modèle distingue les réponses involontaires qui se manifestent en situation de stress (v.g., rumination, pensées intrusives, activation physiologique) et les conduites utilisées volontairement pour gérer les exigences d'une situation stressante (c-à-d., coping). A priori, le « volet » coping du RSQ proposait un regroupement de 10 stratégies de coping (trois conduites de coping par stratégie) en quatre super-facteurs, qui eux se regroupaient ensuite en deux dimensions de troisième-ordre (engagement et désengagement).

I. Centré sur l'engagement

- 1) Centré sur le contrôle primaire (résolution de problème, régulation des émotions et expression des émotions)
- 2) Centré sur le contrôle secondaire (pensée positive, restructuration cognitive et acceptation)

II. Centré sur le désengagement

- 1) Centré sur le contrôle primaire (éviter et déni)
- 2) Centré sur le contrôle secondaire (pensée magique et distraction)

Dans le cadre d'une première étude, les résultats d'une analyse factorielle confirmative ont rejeté le modèle hiérarchique proposé a priori. Premièrement, la distraction semblait représenter le coping centré sur l'engagement secondaire plutôt que le coping centré sur le désengagement secondaire. Deuxièmement, la pensée magique semblait mesurer du désengagement primaire plutôt que du désengagement secondaire. En

conséquence, le modèle a été modifié en éliminant la distinction entre désengagement primaire et désengagement secondaire (c-à-d., pensée magique, déni et évitement saturaient un même facteur) et en faisant saturer la distraction sur l'engagement secondaire plutôt que sur le désengagement. Les résultats d'une analyse complémentaire ont démontré l'acceptabilité de ce modèle alternatif. Fait important à noter, ce modèle était significativement supérieur à des modèles alternatifs dans lesquels les stratégies de coping étaient regroupées en deux super-facteurs (i.e., centré sur le problème et centré sur les émotions; engagement et désengagement). Une deuxième analyse factorielle confirmative, réalisée sur un échantillon indépendant, a reconfirmé l'acceptabilité de ce modèle alternatif, tant chez les garçons que chez les filles.

En plus de soutenir le modèle alternatif du RSQ, les études de Connor-Smith et al. (2000) ont démontré sa validité convergente et concurrente. Premièrement, les parents des adolescents ont répondu au RSQ en référence aux conduites de coping de leur enfant. Les coefficients de convergence (c-à-d., corrélation de Pearson) entre les réponses fournies par les parents et celles données par leur enfant étaient acceptables (autour de 0.30). Deuxièmement, les parents et les adolescents ont répondu à une mesure des troubles internalisés (dépression, anxiété, isolement social et symptômes physiques) et externalisés de la conduite (agression et délinquance). Les résultats ont montré que la fréquence des troubles internalisés et externalisés rapportés au cours des six derniers mois corrélait négativement avec le coping centré sur l'engagement (primaire et secondaire) et positivement avec le coping centré sur le désengagement. Finalement, les résultats d'une expérimentation psychophysiological en laboratoire ont démontré que la réactivité cardiaque des adolescents était reliée positivement à l'utilisation du coping centré sur le désengagement et non significativement à l'utilisation du coping centré sur l'engagement

primaire et secondaire. En somme, ces résultats ont apporté un appui préliminaire à la validité convergente et concurrente des super-facteurs de coping identifiés dans le RSQ.

Synthèse et résumé des modèles hiérarchiques du coping

Malgré leurs particularités conceptuelles et leurs forces et faiblesses respectives, les modèles hiérarchiques recensés ont montré qu'il était possible de regrouper les stratégies de coping en un certain nombre de super-facteurs de coping. Bien que la plupart des recherches aient appuyé la présence de trois super-facteurs de coping (v.g., Connor-Smith et al., 2000; Cook & Heppner, 1997; Hudek-Knezevic et al., 1999; Kallasmaa & Pulver, 2000; Segerstrom et al., 1998; Walker et al., 1997; Zautra et al., 1996), d'autres études ont proposé la présence de quatre super-facteurs (v.g., Ayers et al., 1996; Carver et al., 1989; Phelps & Jarvis, 1994; Zautra et al., 1996). Néanmoins, il est possible d'invoquer quatre arguments démontrant la supériorité d'un modèle contenant trois super-facteurs de coping. Premièrement, les résultats d'analyse factorielle confirmative de second-ordre sur le COPE-Inventory ont démontré l'acceptabilité d'un modèle contenant trois super-facteurs (Segerstrom et al., 1998; Zautra et al., 1996) ainsi que sa supériorité en comparaison à un modèle en quatre super-facteurs (Hasking & Oei, 2002). Malgré l'acceptabilité du modèle en quatre super-facteurs, la corrélation entre l'engagement primaire et l'engagement secondaire était si élevée qu'il était difficile de distinguer empiriquement ces deux super-facteurs. Deuxièmement, les recherches portant sur le RSQ (Connor-Smith et al., 2000) ont été incapables de séparer empiriquement le désengagement primaire et le désengagement secondaire. Qui plus est, Connor-Smith et al. (2000) ont démontré l'acceptabilité d'un modèle alternatif en trois super-facteurs de coping auprès de deux échantillons indépendants. Troisièmement, bien que le CCSC et l'HICUPS (Ayers et

al., 1996) aient proposé quatre super-facteurs de coping, le dernier super-facteur représente des stratégies liées à la recherche de soutien social. D'autres modèles hiérarchiques ont démontré empiriquement que les stratégies de soutien social (instrumental et émotionnel) pouvaient saturer soit les super-facteurs de coping actif (Walker et al., 1997) ou de coping centré sur les émotions (v.g., Cook et Heppner, 1997; Hudek-Knezevic et al., 1999; Kallasmaa et Pulver, 2000; Zautra et al., 1996). Ne serait-ce que pour le réfuter, les recherches futures sur le CCSC et l'HICUPS devraient tester l'ajustement d'un modèle en trois super-facteurs de coping. Finalement, les résultats d'une analyse factorielle exploratoire ont démontré qu'il était possible de regrouper les 26 stratégies de coping du COPE-Inventory (Carver et al., 1989), du *Coping Strategy Inventory* (CSI, Tobin, Holroyd, Reynolds et Wigal, 1989) et du *Coping Inventory for Stressful Situation* (CISS, Endler et Parker, 1994) en trois super-facteurs de coping mutuellement exclusifs. En somme, ces arguments conceptuels et empiriques appuient l'organisation hiérarchique du construit de coping, tout en démontrant la possibilité de regrouper les différentes stratégies de coping en trois super-facteurs conceptuellement distincts et porteurs de sens :

- 1) Coping centré sur la tâche ou sur le problème
- 2) Coping centré sur les émotions ou sur l'accommodation
- 3) Coping centré sur l'évitement ou le désengagement

Postulat 2 : Le coping en tant que processus

Approche transactionnelle et dispositionnelle du coping

Lazarus et Folkman (1984) ont défini le coping comme l'ensemble des conduites cognitives et comportementales, constamment changeantes, utilisées dans le but de gérer les exigences d'une situation spécifique. De façon explicite, cette définition postule la

nature momentanée et fluctuante des conduites de coping et présuppose que leur utilisation est susceptible de changer selon le passage du temps (variabilité longitudinale) ainsi qu'à travers différents contextes de la vie d'un individu (variabilité inter-contextuelle), différentes situations à l'intérieur d'un même contexte de vie (variabilité inter-situationnelle) et différentes phases d'une même situation stressante (variabilité intra-situationnelle). Qui plus est, la nature dynamique du coping implique que les individus peuvent modifier leurs conduites en fonction des exigences changeantes de leur environnement physique et social. Cette approche, qui conçoit l'individu comme un agent actif qui interagit constamment avec son environnement, suggère que les conduites de coping seraient des processus situationnels et momentanés plutôt que des tendances stables et dispositionnelles de la personne.

Une approche interactionniste ou transactionnelle recèle trois conditions méthodologiques qui doivent guider l'étude du coping (Lazarus et Folkman, 1987). Premièrement, les chercheurs doivent mesurer les conduites de coping spécifiques à une situation plutôt que les tendances personnelles à les utiliser à travers tous les contextes de la vie. Deuxièmement, le coping doit être étudié dans un contexte de vie particulier afin de pouvoir comparer son utilisation à travers différents domaines de vie et différentes situations à l'intérieur d'un même domaine. Finalement, le coping doit être mesuré à plusieurs points dans le temps ou à travers différentes situations afin d'évaluer respectivement sa stabilité et sa constance de façon empirique.

Bien que la plupart des chercheurs adhèrent à la définition de Lazarus et Folkman (1984), plusieurs d'entre eux ont étudié le coping en utilisant une approche dispositionnelle (v.g., Amirkhan, 1990; Carver et al., 1989; Endler et Parker, 1994; Suls et David, 1996). Cette approche, qui est encore très répandue, étudie le coping comme étant stable et

déterminé par les dimensions de la personnalité d'un individu. D'un point de vue méthodologique, les tenants de cette approche demandent généralement aux individus de décrire les conduites de coping qu'ils utilisent habituellement pour faire face à des situations stressantes. Bien qu'étant relativement facile à implanter, cette méthodologie néglige les particularités situationnelles du coping en présumant son invariance contextuelle, situationnelle et intra-situationnelle.

Certes, la démonstration empirique de la stabilité d'un construit hypothétique est un préalable à sa conceptualisation en tant que disposition stable de la personne. Malgré l'utilisation répandue de l'approche dispositionnelle, un nombre relativement limité de recherches longitudinales ont tenté de déterminer si le coping changeait à travers le temps, les contextes et les situations (voir le Tableau 3). Afin de comparer le bien fondé des approches interactionnistes et dispositionnelles, il importe de recenser la documentation portant sur la stabilité du coping à travers le temps ainsi que sur sa consistance à travers différents contextes de vie et différentes situations à l'intérieur d'un même contexte.

Insérez le Tableau 3

Stabilité et consistance du coping : Une recension de la documentation⁶

Certes, conclure que les conduites de coping sont stables à travers le temps et constantes à travers les situations est aussi périlleux que d'assumer la stabilité des traits de personnalité à travers les phases du développement d'un individu (Roberts et DelVecchio, 2000). D'un point de vue strictement méthodologique, la stabilité et la constance peuvent être examinées sous différents angles susceptibles d'entraîner des conclusions divergentes (v.g., Roberts, Caspi et Moffitt, 2001; Schutz, 1998; Vaidya, Gray, Haig et Watson, 2002).

Par exemple, il est possible que le coping, mesuré selon une approche dispositionnelle, puisse demeurer stable à travers le temps alors que les mêmes conduites de coping, mesurées selon une approche situationnelle, puissent varier à travers différentes situations. En ce sens, il importe de différencier les études selon qu'elles s'intéressent à la stabilité temporelle du coping ou à sa constance à travers différents domaines de vie, différentes situations et différentes phases d'une même situation. Le tableau 3 présente et définit six catégories de recherches longitudinales sur le coping. Seules les mieux représentées, en terme de nombre d'études (c-à-d., stabilité générale, stabilité situationnelle et constance intra-situationnelle), sont recensées dans le cadre de ce texte.

Il importe également de différencier les études selon leur orientation méthodologique. À cet effet, les chercheurs dans le domaine de la personnalité (v.g., Roberts et al., 2001; Schutz, 1998; Vaidya et al., 2002) considèrent qu'il est préférable d'évaluer la stabilité d'un construit hypothétique en utilisant simultanément trois axes d'investigation : 1) stabilité factorielle, 2) stabilité absolue et 3) stabilité relative. La documentation est ici recensée en différenciant la stabilité absolue et la stabilité relative du coping. Les aspects de la stabilité factorielle, rarement évalués dans les recherches empiriques sur le coping, seront présentés subséquemment pour orienter la présente thèse doctorale.

Définition de la stabilité absolue et de la stabilité relative

La *stabilité absolue* d'un construit hypothétique repose sur la comparaison des moyennes obtenues par un groupe d'individus à travers le temps ou différentes situations (Schutz, 1998). Ce type de stabilité, aussi nommé stabilité des moyennes et stabilité normative, est évalué en utilisant des analyses statistiques qui permettent de comparer les moyennes à travers le temps (v.g., tests *t* non indépendants, ANOVAs, MANOVAs, SEM

avec moyennes latentes). La stabilité absolue d'un construit est inférée lorsque les moyennes d'un groupe d'individus ne changent pas significativement à travers différents points de mesure ou lorsque la taille de l'effet (c-à-d., d de Cohen) du facteur intra-sujet est inférieur à 0.20. Quant à elle, la stabilité relative réfère à la stabilité des différences individuelles ou à l'absence de différence individuelle dans le changement intra-individuel (Schutz, 1998). Ce type de stabilité, aussi nommé stabilité des différences individuelles, est évalué en utilisant un coefficient de corrélation test-retest (v.g., corrélation de Pearson, corrélation intra-classe, régression, SEM). En conséquence, la stabilité relative d'un construit est généralement inférée lorsque que son coefficient de corrélation test-retest est supérieur ou égal à 0.70 (Nunnally et Bernstein, 1994).

Stabilité générale ou la stabilité des dispositions de coping à travers le temps

Stabilité relative. Plusieurs tenants de l'approche dispositionnelle ont testé la stabilité relative des dispositions de coping à travers le temps (voir stabilité générale dans le Tableau 3). Bien que Long et Schutz (1995) aient démontré la stabilité relative du coping centré sur l'engagement ($r = 0.92$) et sur le désengagement ($r = 0.96$) sur une période de 10 mois, la majorité des études ont obtenu des coefficients test-retest inférieurs à 0.70. Sur les 83 autres coefficients test-retest recensés (c-à-d., 7 recherches), 22% ($n = 18$) étaient supérieurs à 0.69 et 23% ($n = 19$) variaient entre 0.60 et 0.69. Au total, ces coefficients test-retest variaient entre 0.20 et 0.92, avec une moyenne de 0.58 ($ET = 0.14$). Fait intéressant à noter, le passage du temps semblait moduler la stabilité relative des dispositions de coping. Pour illustrer cette tendance, nous pouvons calculer la moyenne des coefficients test-retest obtenus dans chacune des études et observer que la stabilité relative du coping diminue avec le passage du temps : $r = -0.78$, $N = 9$, $p < .05$, en faisant le calcul à partir des données rapportées par les auteurs.

Stabilité absolue. Seulement deux recherches ont testé la stabilité absolue des dispositions de coping. Les résultats d'une première recherche longitudinale sur 24 mois, effectuée auprès de femmes cadres (Long et Schutz, 1995), ont montré une diminution significative du score moyen de l'utilisation du coping centré sur l'engagement ($d = -0.19$) et sur le désengagement ($d = -0.22$) entre le deuxième et le troisième mois, ainsi qu'une augmentation significative entre le sixième et le douzième mois (engagement $d = 0.27$; désengagement $d = 0.17$). Dans une seconde étude, Frydenberg et Lewis (2000) ont suivi une cohorte d'adolescents sur une période allant de l'âge de 12 à 16 ans. Les résultats ont démontré que l'utilisation moyenne de 11 des 17 dispositions de coping variait significativement entre l'âge de 12 à 16 ans. Alors que l'utilisation moyenne de cinq stratégies a augmenté avec le passage du temps (c-à-d., résolution de problème, blâme personnel, inquiétudes, réduction des tensions, rétention), d'autres dispositions ont significativement diminué (c-à-d., effort, actions sociales, recherche de soutien spirituel, activités physiques). La taille de l'effet de ces différences significatives, estimée avec le coefficient d de Cohen, variait entre -0.34 et 0.72 , avec une moyenne absolue de $|0.24|^7$. En somme, ces résultats démontrent que l'utilisation moyenne de certaines dispositions de coping fluctue substantiellement à travers le temps.

Conclusion. Comparées aux dimensions de la personnalité, qui demeurent relativement stables sur des périodes allant de quelques mois à plusieurs années (Roberts et DelVecchio, 2000), plusieurs dimensions du coping fluctuent sur une période allant de quelques semaines à quelques années. De façon générale, ces résultats infirment l'approche dispositionnelle. De plus, ils soutiennent le postulat de Lazarus et Folkman (1984) en montrant le changement normatif et la présence de différences individuelles non-négligeables dans le changement intra-individuel du coping à travers le temps.

Stabilité situationnelle

Tel que démontré dans le Tableau 3 (voir stabilité situationnelle), plusieurs recherches ont évalué la stabilité relative du coping à travers le temps dans une situation spécifique. Certains chercheurs ont utilisé une situation stressante normative vécue simultanément par tous les membres de l'échantillon. D'autres chercheurs ont demandé aux individus de rapporter les conduites de coping utilisées dans une quelconque situation vécue dans leur vie. Dans certaines de ces recherches, aucune précaution particulière n'a été prise pour garantir que chacun des participants se référerait à la même situation stressante à travers les différentes prises de données. En conséquence, la première approche assure une meilleure validité interne des résultats parce que tous les membres d'un échantillon réfèrent à une même situation. Qui plus est, elle permet un meilleur contrôle en s'assurant que chacun des participants réfère à la même situation à travers les différentes phases de la collecte de données.

Stabilité relative. En se basant sur 12 recherches publiées, qui fournissent 81 coefficients test-retest provenant de 16 sources de données différentes (c-à-d., certaines recherches avaient plus de deux temps de mesure), nous observons que 28% de ces coefficients ($n = 23$) sont supérieurs à 0.69 alors que 23% ($n = 19$) varient entre 0.60 et 0.69. Les coefficients test-retest varient entre 0.21 et 0.90, avec une moyenne de 0.56 ($ET = 0.19$). Qui plus est, deux facteurs semblent moduler la stabilité relative des dispositions de coping. Premièrement, le passage du temps entre les deux prises de données semble contribuer à diminuer la taille des coefficients test-retest. Pour illustrer cette tendance, nous pouvons calculer la moyenne des coefficients test-retest rapportés dans chacune des études et découvrir ainsi que la stabilité relative du coping diminue avec le passage du temps ($r = -0.63, N = 12, p < .05$). Deuxièmement, l'approche utilisée pour mesurer le

coping semble également influencer la stabilité test-retest. De façon générale, les recherches dans lesquelles aucune précaution particulière n'a été prise pour garantir que chacun des participants se référerait à la même situation stressante à travers les différentes prises de données procurent des coefficients test-retest inférieurs aux autres recherches. Ces résultats ne sont guère étonnants parce que ces études ont mesuré la constance inter-situationnelle du coping plutôt que sa stabilité à travers le temps dans une situation particulière. En conséquence, les conclusions de ces recherches devraient être interprétées avec une extrême prudence. Suite au retrait de ces trois recherches (c-à-d., 5 sources de données), les 54 coefficients test-retest restants varient entre 0.34 et 0.90, avec une moyenne de 0.65 ($ET = 0.15$). Au total, 43% des coefficients test-retest ($n = 23$) demeurent supérieurs à 0.69 et 35% des coefficients ($n = 19$) varient entre 0.60 et 0.69.

Stabilité absolue. Neuf recherches ont testé la stabilité absolue du coping à travers une situation stressante. Sur les 46 effets que fournissent les huit recherches disponibles, la taille absolue de l'effet s'avère supérieure à $|0.29|$ dans 23% des cas ($n = 11$) et elle varie entre $|0.20|$ et $|0.29|$ dans 22% des cas ($n = 10$). La taille absolue des effets varie entre $|0.00|$ et $|1.33|$, avec une moyenne de $|0.23|$ ($ET = 0.23$). Fait intéressant à noter, deux recherches ont été effectuées auprès d'échantillons d'athlètes. Premièrement, Bouffard et Crocker (1992) ont testé la stabilité du coping sans vérifier que chacun des participants se référerait à la même situation à travers trois prises de données sur une période de six mois. La taille absolue de l'effet variait ici entre $|0.12|$ et $|0.39|$, avec une moyenne de $|0.22|$ ($ET = 0.11$). Seulement, deux effets sur six (33%) étaient supérieurs à $|0.25|$. Deuxièmement, Crocker et Isaak (1997) ont testé la stabilité situationnelle du coping en suivant une cohorte de nageurs à travers trois compétitions sportives. La taille absolue de l'effet variait entre $|0.09|$ et $|0.69|$, avec une moyenne de $|0.37|$ ($ET = 0.22$). Six effets sur huit (75%) étaient

supérieurs à $|0.25|$. Les résultats de cette recherche suggèrent que l'utilisation moyenne de plusieurs stratégies de coping change significativement à travers les différentes compétitions sportives vécues par des athlètes durant un cycle de compétition.

Conclusion. Contrairement aux recherches portant sur les dispositions de coping, les résultats présentés ci-dessus suggèrent que plusieurs stratégies de coping demeurent relativement stables dans une même situation stressante à travers le temps. Qui plus est, les études ayant instauré un plus grand contrôle au niveau de la méthodologie ont obtenu des coefficients test-retest permettant d'inférer une certaine stabilité dans l'utilisation du coping. Bien que supportant une approche dispositionnelle, ces résultats peuvent néanmoins être interprétés à la lumière d'une approche situationnelle. Puisque les exigences d'une situation demeurent relativement stables à travers le temps, il n'est pas surprenant de constater que l'utilisation du coping puisse également demeurer stable à travers une même situation à deux occasions différentes. Néanmoins, les recherches effectuées en contexte sportif ont démontré que l'utilisation moyenne de plusieurs stratégies de coping changeait substantiellement à travers différentes compétitions sportives. En ce sens, il est possible que certains paramètres de la situation (v.g., importance de la compétition, qualité des adversaires, qualité de préparation) puissent fluctuer à travers le temps, entraînant ainsi des changements significatifs dans l'utilisation moyenne du coping dans une même situation à travers le temps. En somme, la documentation sur la stabilité situationnelle du coping a procuré des résultats équivoques qui mériteraient d'être investigués plus en profondeur dans le cadre de nouvelles études empiriques.

Constance intra-situationnelle

Selon Lazarus et Folkman (1984), les situations stressantes se divisent en phases mutuellement exclusives comportant des exigences et défis qualitativement distincts qui sont susceptibles d'engendrer d'importantes variations dans l'utilisation des stratégies de coping. Tel que rapporté dans le Tableau 3, plusieurs chercheurs ont examiné la constance du coping à travers les différentes phases d'une grossesse (v.g., avant, immédiatement après et plusieurs mois après), d'une intervention médicale (v.g., chirurgie, diagnostic d'un cancer, transplantation d'un organe, infarctus, fertilisation in vitro), d'une restructuration organisationnelle (v.g., fusion, perte d'emploi), d'une année scolaire, d'un examen académique et d'une compétition sportive.

Constance relative. Seulement huit recherches ont testé la constance relative du coping à travers les phases d'une situation. Qui plus est, trois de ces recherches n'ont rapporté qu'un estimé moyen des coefficients test-retest du coping à travers plusieurs phases de la situation. Carver et ses collègues (1993) ont rapporté des coefficients test-retest supérieurs à 0.70 pour l'humour et la religion, tout en mentionnant que le trois quart des autres coefficients test-retest variait entre 0.50 et 0.70 à travers cinq phases d'une ablation mammaire. Sorlie et Sexton (2001) ont montré que la constance relative du coping était inférieure dans les phases aiguës d'une chirurgie (c-à-d., avant et immédiatement après, test-retest entre 0.36 et 0.52) que durant les phases liées à la récupération post-chirurgicale (c-à-d., deux et quatre mois post-opération, test-retest entre 0.54 et 0.74). De même, Carver et Scheier (1994) ont montré que la constance du coping était inférieure dans les phases proximales d'un examen académique (c-à-d., pré-examen et avant la divulgation de la note, test-retest moyen de 0.50) que durant les phases subséquentes (c-à-d., avant divulgation de la note et sept jours plus tard, test-retest moyen de 0.64). En excluant ces

trois recherches, les 39 coefficients test-retest restants (c-à-d., 5 recherches recensées et 7 sources de données car certaines études ont plus de deux temps de mesure) varie entre 0.15 et 0.83, avec une moyenne de 0.52 ($ET = 0.18$). Spécifiquement, 21% ($n = 8$) sont supérieurs à 0.69 et 18% ($n = 7$) varient entre 0.60 et 0.69. La seule recherche effectuée en contexte sportif a démontré que la constance du coping était inférieure dans les phases proximales d'une compétition (c-à-d., jours avant et durant la compétition, test-retest entre 0.15 et 0.56, $M = 0.42$, $ET = 0.13$) que dans les phases subséquentes (c-à-d., durant compétition et journée après la compétition, test-retest entre 0.54 et 0.83, $M = 0.64$, $ET = 0.09$). Ces résultats, similaires à ceux obtenus en contexte académique (Carver et Scheier, 1994) et médical (Sorlie et Sexton, 2001), suggèrent que l'utilisation du coping varierait davantage alors que le stress lié à la situation est encore très élevé. De plus, ces résultats soulignent la possibilité que les individus utilisent différemment les stratégies de coping pour se préparer (v.g., pré-situation) et pour s'adapter (v.g., intra- et post-situation) à des exigences différentes qui sont rencontrées avant, pendant et après une même situation stressante.

Constance absolue. Vingt-deux recherches ont testé la constance de l'utilisation moyenne du coping à travers les phases d'une situation stressante. Toutefois, cinq de ces études n'ont pas rapporté suffisamment d'informations pour que la taille des effets (c-à-d., d de Cohen) puisse être calculée convenablement. Sur les 191 effets disponibles, la taille absolue de l'effet est supérieure à $|0.29|$ dans 37% des cas ($n = 70$) et elle varie entre $|0.20|$ et $|0.29|$ dans 15% des cas ($n = 29$). La taille absolue des effets varie entre $|0.00|$ et $|2.12|$, avec une moyenne de $|0.35|$ ($ET = 0.33$). L'utilisation moyenne du coping semblait changer davantage dans les études réalisées en situation d'accomplissement (c-à-d., compétition sportive et examen académique) que dans le domaine de la santé (c-à-d., interventions

médicales diverses). La taille absolue des effets en contexte d'accomplissement (80 effets disponibles, 6 recherches; $M = 0.51$, $ET = 0.55$) est substantiellement supérieure à celle des effets obtenus dans le domaine de la santé (94 effets disponibles, 8 recherches, $M = 0.18$, $ET = 0.15$). À première vue, ce résultat suggère que les conduites de coping demeurent stables à travers les phases de situation impliquant des interventions médicales. Par contre, un examen plus minutieux révèle d'importantes différences de moyennes à certaines phases d'une intervention médicale. Toutefois, il est difficile de dresser un portrait quantitatif de ces variations parce que les recherches ont mesuré le coping en utilisant un nombre différents de phases ainsi que des intervalles de temps différents entre chacune de ces phases. Néanmoins, il semble que les moyennes d'utilisation du coping diminuent significativement à partir du moment où l'incertitude à propos de la réussite de l'intervention (c-à-d., avant et immédiatement après l'intervention) fait place aux exigences des phases de réadaptation post-chirurgicale. De façon générale, l'utilisation moyenne du coping se stabilise à travers les différentes phases subséquentes du processus de réadaptation.

Pour ce qui est des recherches en contexte d'accomplissement, deux tendances méritent d'être soulignées. Dans les recherches réalisées en situation d'examen académique (Carver et Scheier, 1994; Folkman et Lazarus, 1985; Raffety, Smith et Ptacek, 1997), la taille absolue de l'effet des 25 comparaisons pré-examen versus pré-résultat est substantiellement supérieure (d de Cohen variant entre $|0.00|$ et $|2.10|$, $M = |0.65|$, $ET = 0.62$) à celle des 25 comparaisons pré-résultat versus post-résultat (d de Cohen variant entre $|0.00|$ et $|1.68|$, $M = |0.32|$, $ET = 0.38$). Dans la seule étude réalisée dans les sports, la taille absolue de l'effet des huit comparaisons pré- versus intra-compétition est substantiellement supérieure (d de Cohen variant entre $|0.08|$ et $|0.87|$, $M = |0.50|$, $ET = 0.27$) à celle des huit

comparaisons intra- versus post-compétition (d de Cohen variant entre $|0.05|$ et $|0.46|$, $M = |0.20|$, $ET = 0.15$). En ce sens, il semble que les individus utilisent davantage de coping pour faire face aux exigences pré-événement que pour gérer les exigences intra- ou post-événement. Ensuite, l'utilisation moyenne du coping aurait tendance à se stabiliser ou à varier d'une façon moins marquée à travers les phases subséquentes d'une situation. Fait également intéressant à rapporter, il semble que l'utilisation de différentes stratégies de coping évolue différemment à travers les phases d'une situation d'accomplissement. D'une part, il semble que les individus utilisent davantage de coping centré sur la tâche (c-à-d., coping actif, augmentation des efforts, planification, suppression des autres activités, recherche de soutien instrumental, réévaluation positive) pour faire face aux exigences pré-événement que pour gérer les exigences intra- ou post-événement. D'autre part, les individus semblent utiliser davantage de coping centré sur la désengagement (c-à-d., désengagement comportemental, déni et ventilation des émotions) pour faire aux exigences intra ou post-événement que pour gérer les exigences pré-événement.

Conclusion. De façon générale, les résultats des études empiriques ont démontré que l'utilisation de plusieurs stratégies de coping changeait significativement à travers les phases d'une même situation. D'une part, il semble que la constance relative du coping soit inférieure dans les phases aiguës d'une situation (c-à-d., avant et pendant) alors que le niveau de stress est encore très élevé et que la résolution de la situation est encore incertaine. D'autre part, il appert que l'utilisation moyenne des stratégies centrées sur la tâche diminue significativement alors que celle des stratégies centrées sur le désengagement augmente significativement à travers les phases d'une situation d'accomplissement. En résumé, ces résultats corroborent le postulat de Lazarus et Folkman (1984), voulant que les situations stressantes se divisent en phases mutuellement

exclusives, comportant des exigences et défis qualitativement distincts, susceptibles d'engendrer d'importantes variations dans l'utilisation des stratégies de coping.

Critiques et pistes d'avenir

La stabilité absolue et la stabilité relative réfèrent à des niveaux d'analyse complémentaires mais conceptuellement différents. Pris isolément, comme dans la plupart des recherches recensées ci-dessus, ces deux types de stabilité peuvent mener à des conclusions erronées ou à tout le moins incomplètes. D'une part, la *stabilité absolue* procure des informations à propos de la stabilité au niveau groupal. Toutefois, l'absence de variation significative des moyennes à travers le temps ne permet pas d'assumer l'absence de différences inter-individuelles dans le changement intra-individuel (Schutz, 1998). Il se peut, par exemple, que le score brut d'un nombre égal d'individus ait respectivement diminué et augmenté avec la même intensité, entraînant simultanément une différence non-significative du score moyen à travers le temps et un faible coefficient de corrélation test-retest. Dans cette condition, il serait possible de conclure qu'une stratégie de coping est stable en comparant sa moyenne à travers le temps, tout en démontrant son instabilité relative par le biais d'analyses corrélationnelles. D'autre part, *la stabilité relative* procure des informations concernant la stabilité des différences individuelles à l'intérieur d'un groupe. Toutefois, le fait d'obtenir une corrélation test-retest très élevée n'exclut pas la présence d'un changement normatif à travers les points de mesure. Il se peut, par exemple, que le score de tous les individus d'un échantillon ait augmenté ou diminué avec une intensité comparable, entraînant simultanément une corrélation test-retest élevée et un changement significatif du score moyen du groupe à travers les points de mesure. Dans cette condition, il serait possible de conclure qu'une stratégie de coping est stable au niveau corrélationnel, tout en démontrant son instabilité en comparant les moyennes. Considérant

que bien peu d'études sur le coping ont testé simultanément ces types de stabilité, il est difficile d'évaluer adéquatement les données disponibles concernant la stabilité et la constance du coping. Certes, les recherches futures devront évaluer simultanément la stabilité relative et absolue afin d'offrir un portrait complet de l'évolution du coping à travers le temps, les situations et les contextes de la vie. Une telle approche sera adoptée dans le cadre de cette thèse doctorale.

Opérationnalisation de la stabilité factorielle

« *If it changes, it might be unstable* ». Cette citation, tirée des travaux de James Parker (Parker, Endler et Bagby, 1993, p. 361), illustre une limite importante des recherches ayant évalué la stabilité et la constance du coping. Bien que les recherches suggèrent que le coping change à travers le temps et les situations, il demeure incertain que ce changement soit attribuable à un changement réel plutôt qu'à de l'erreur de mesure. Pour les tenants des théories classiques de la mesure et de l'évaluation psychométrique (v.g., Byrne, Shavelson et Muthén, 1989; Meredith, 1993; Schutz, 1998; Steenkamp et Baumgartner, 1998; Vandenberg et Lance, 2000), toute comparaison d'un construit à travers des groupes ou à travers le temps requiert la démonstration empirique de certains postulats concernant son invariance factorielle. Considérant la possibilité, aussi infime soit-elle, que le coping puisse se découper différemment à travers le temps ou à travers différentes situations, il est possible que les variations observées reflètent des changements qualitatifs ou structuraux plutôt que des changements réels de ses taux d'utilisation. Puisque la quasi-totalité des chercheurs a omis d'évaluer la stabilité factorielle (voir le Tableau 3) et parce que celle-ci est considérée comme un préalable méthodologique à l'évaluation des autres formes de stabilité (c-à-d., stabilité absolue et relative), conclure que

le coping change à travers le temps et les situations serait prématuré. Certes, « *if it changes, it might be unstable* ».

En utilisant des analyses factorielles confirmatives longitudinales, il est possible d'évaluer les différents postulats inhérents à la démonstration empirique de l'invariance factorielle (Conroy, Metzler et Hofer, 2003; Meredith, 1993; Schutz, 1998; Vandenberg et Lance, 2000). En premier lieu, *l'invariance structurale* d'un construit est démontrée lorsqu'un instrument de mesure contient le même nombre de facteurs et que chacun des indicateurs sature le même facteur à travers les points de mesure. L'invariance structurale est une condition nécessaire mais insuffisante, qui assure néanmoins que le construit se découpe de façon identique à travers différents points de mesure. En deuxième lieu, *l'invariance métrique* est démontrée lorsque les saturations des items qui mesurent un même construit sont quantitativement invariables à travers différents temps de mesure. Lorsque la majorité des saturations ne respectent pas ce postulat d'invariance, l'interprétation conceptuelle d'un construit hypothétique diffère substantiellement à travers les points de mesure. En ce sens, l'invariance métrique est une condition nécessaire et suffisante pour évaluer la stabilité relative d'un construit hypothétique. Elle assure que la corrélation test-retest reflète véritablement la relation longitudinale d'un construit plutôt que la relation longitudinale d'un construit perçu différemment par les répondants à travers différents points de mesure. Toutefois, l'invariance métrique est une condition nécessaire, mais insuffisante pour assurer une évaluation fidèle de la stabilité absolue. Pour ce faire, il importe de démontrer *l'invariance scalaire* de la majorité des indicateurs d'un construit. L'invariance scalaire est nécessaire pour assurer une comparaison fidèle des moyennes latentes d'un construit à travers le temps (c-à-d., stabilité absolue). À l'intérieur du paradigme d'équations structurales, la modélisation des moyennes latentes nécessite que

l'ordonnée à l'origine de chaque indicateur soit estimée (Byrne et al., 1989; Steenkamp et Baumgartner, 1998). Par définition, l'ordonnée à l'origine correspond à la valeur d'un indicateur lorsque son construit latent égale zéro (Vandenberg et Lance, 2000).

L'invariance scalaire est démontrée lorsque la valeur de la majorité des ordonnées à l'origine d'un construit est invariante à travers différents points de mesure. Lorsque la majorité des ordonnées à l'origine ne respectent pas ce postulat d'invariance, toute différence significative des moyennes demeure ambiguë car elle peut refléter un changement réel ou la présence d'un biais de réponse qui varie substantiellement à travers les points de mesure (Cheung et Rensvold, 2000). En ce sens, la vérification empirique de l'invariance scalaire est nécessaire pour conclure, hors de tout doute raisonnable, que les différences de moyennes d'un construit reflètent un changement véritable à travers différents points de mesure.

Tel que démontré dans le Tableau 3, seulement quatre recherches ont testé l'invariance factorielle du coping à travers différents points de mesure. Qui plus est, aucune de ces études n'a testé l'ensemble des conditions nécessaires à la démonstration de la stabilité factorielle d'un instrument.

Dans une première étude, Stewart et Schwarzer (1996) ont testé la structure factorielle de second-ordre du COPE-Inventory auprès de 121 étudiants de première année en médecine. Ces étudiants ont répondu au questionnaire au début de l'année universitaire et au début de la session du printemps, soit huit mois plus tard. Les résultats d'analyses en composantes principales avec rotation oblique ont permis d'extraire le même nombre de facteurs aux deux temps de mesure. Toutefois, plusieurs stratégies de coping ont saturé des facteurs différents à travers les points de mesure, infirmant ainsi le postulat d'invariance structurale nécessaire à la démonstration de l'invariance factorielle du coping.

Dans une deuxième étude, Terry et Hynes (1998) ont évalué la structure de premier ordre de leur instrument de coping auprès de 139 femmes participant à une tentative de fertilisation in vivo. Ces femmes ont répondu au questionnaire environ deux et huit semaines après l'échec de leur fertilisation in vivo. Les résultats d'analyses en composantes principales ont permis d'extraire le même nombre de facteurs aux deux phases de la situation. Parce que tous les items ont saturé le même facteur aux deux points de mesure, il était possible d'inférer l'invariance structurale de ce questionnaire. Néanmoins, cette étude n'a pas évalué si les saturations (invariance métrique) et les ordonnées à l'origine (invariance scalaire) étaient statistiquement similaires à travers les points de mesure. En conséquence, il demeure incertain que le changement normatif des stratégies de coping, démontré dans cette étude, représente un changement réel plutôt que de l'erreur de mesure.

Dans une troisième étude, Zautra et al. (1996) ont évalué la structure de second ordre du COPE-Inventory auprès de 108 mères récemment divorcées. Ces femmes ont répondu au questionnaire deux fois pendant une période de cinq mois. Les résultats d'analyses factorielles confirmatives longitudinales ont permis d'inférer l'invariance structurale et l'invariance métrique partielle d'un modèle contenant quatre super-facteurs de coping. Seules les saturations partant du coping centré sur le désengagement vers la drogue et l'alcool, le déni et le désengagement mental étaient significativement différents à travers les points de mesure. En somme, ces résultats ont permis d'inférer l'invariance métrique de trois des quatre super-facteurs de coping évalués dans cette recherche.

Finalement, Sorlie et Sexton (2001) ont évalué la structure de premier ordre de leur traduction Norvégienne du Ways of Coping Questionnaire auprès de 345 adultes ayant subi une intervention chirurgicale. Ces individus ont répondu au questionnaire deux semaines

avant leur admission, durant leur séjour ainsi qu'immédiatement, deux mois et quatre mois après leur sortie de l'hôpital. Les résultats d'analyses factorielles confirmatives ont permis d'inférer l'invariance structurale et métrique d'un modèle en cinq facteurs. Toutefois, cette étude n'a pas évalué si les ordonnées à l'origine (invariance scalaire) étaient statistiquement similaires à travers les points de mesure. En conséquence, il demeure incertain que le changement normatif des stratégies de coping, démontré dans cette étude, représente un changement réel plutôt que des biais de réponses spécifiques à certaines phases de la situation chirurgicale.

Telle que démontré dans le Tableau 3, la quasi-totalité des chercheurs n'ont pas évalué la stabilité factorielle du coping avant d'estimer sa stabilité absolue et sa stabilité relative. Bien que, de façon générale, ces études aient soutenu le postulat de l'approche transactionnelle du coping, il demeure incertain que ces changements dans l'utilisation du coping représentaient des variations réelles plutôt que de l'erreur de mesure. Qui plus est, comme Sorlie et Sexton (2001), la plupart des chercheurs ont estimé la stabilité absolue du coping en utilisant des tests *t* non-indépendants ou des ANOVAs. Ces analyses ne permettent pas d'évaluer systématiquement l'invariance scalaire du coping. Donc, il est possible que le changement dans l'utilisation du coping ait été causé par des biais de réponse non détectés plutôt que par des variations réelles (Cheung et Rensvold, 2000; Vandenberg et Lance, 2000). De même, la majorité des recherches ont estimé la stabilité relative du coping en effectuant des corrélations de Pearson. Puisque la taille de ces corrélations est influencée négativement par le manque de fidélité d'un construit (Cohen, Cohen, West et Aiken, 2003), il est possible que la stabilité relative du coping ait été sous-estimée dans les recherches précédentes. Certes, la modélisation par analyse factorielle confirmative longitudinale pourrait contrer ces lacunes en procurant une évaluation non-

biaisée de la corrélation test-retest (Schutz, 1998). D'ailleurs, Conroy, Metzler et Hoffer (2003) ont démontré que la stabilité relative était sous-estimée d'environ 10% lorsqu'elle était calculée en utilisant une méthode n'offrant aucun contrôle pour la présence d'erreur de mesure (i.e., corrélation de Pearson). En examinant les résultats de Yali et Lobel (2002) obtenus par corrélations test-retest et par analyses factorielles confirmatives longitudinales, il est possible de conclure que les corrélations de Pearson ont sous-estimé la stabilité relative du coping d'environ 13%. Cette thèse de doctorat présentera une analyse factorielle confirmative longitudinale pour offrir une évaluation plus rigoureuse des postulats de Lazarus et Folkman (1984).

Postulat 3 : Fonctions médiatrices du coping

Le modèle de Lazarus et Folkman (1987)

Rappelons que Lazarus et Folkman (1984) ont défini le coping comme l'ensemble des conduites cognitives et comportementales, constamment changeantes, utilisées *dans le but de gérer les exigences d'une situation spécifique*. De façon explicite, cette définition postule que les individus utilisent des conduites de coping pour tenter de s'adapter aux défis, aux menaces et aux exigences d'une situation stressante. En ce sens, l'utilisation de conduites de coping pourrait aider les individus à maîtriser les exigences d'une situation stressante. Toutefois, l'utilisation de conduites de coping ne garantit pas la réussite et l'adaptation psychologique des individus. Différents super-facteurs ou différentes stratégies de coping peuvent jouer un rôle différent et complémentaire dans la gestion des situations stressantes (Skinner et al., 2003). Différentes combinaisons de stratégies de coping peuvent également mener à des impacts différents sur l'expérience émotionnelle et l'ajustement psychologique des individus (Suls et David, 1996). De même, une stratégie particulière peut avoir des répercussions différentes selon la situation dans laquelle est elle

utilisée. En ce sens, il importe d'évaluer empiriquement les impacts fonctionnels, psychologiques et physiques des conduites de coping utilisées par les individus dans un contexte de vie relativement restreint afin de porter un jugement éclairé sur leur efficacité respective.

Au cours des vingt dernières années, plusieurs modèles ont été proposés afin d'orienter la recherche portant sur les multiples déterminants et conséquences du coping (Lazarus et Folkman, 1984; Matthews et al., 2000; Matthews, Zeidner et Roberts, 2002; Moos et Schaefer, 1993; Skinner et Edge, 2002). Malgré leurs particularités, chacun de ces modèles repose sur les postulats inhérents à la définition du coping proposée par Lazarus et Folkman (1984). Qui plus est, Lazarus et Folkman (1987) ont présenté un modèle intégrateur qui regroupe des déterminants et des conséquences du coping. Dans ce modèle, le coping est considéré comme un processus constamment changeant qui médiatise les relations entre des déterminants et des conséquences proximales (c-à-d., à court terme) et distales (c-à-d., à long terme). D'une part, ce modèle subdivise les déterminants du coping en deux grands systèmes représentant des *variables intra-individuelles* et des *variables extra-individuelles*. Le système des variables intra-individuelles se subdivise en facteurs motivationnels, cognitifs et dispositionnels. Quant au système extra-individuel, il représente les exigences et les aspects temporels de la situation ainsi que les ressources matérielles et sociales sur lesquelles une personne peut compter pour gérer la situation. Ce système inclut également les influences du contexte social dans lequel une personne évolue. D'autre part, ce modèle subdivise les impacts du coping en conséquences *émotionnelles*, *psychosomatiques* et *fonctionnelles*. En retour, ces différentes conséquences pourraient influencer indirectement les stratégies de coping qui seront utilisées dans la futur, via leurs influences rétroactives sur les antécédents intra- et extra-individuels. En ce sens, le modèle

transactionnel de Lazarus et Folkman (1987) propose qu'une variable puisse être modélisée à la fois comme antécédent et conséquence du coping à l'intérieur d'un modèle longitudinal. La Figure 4 illustre le modèle intégrateur proposé par Lazarus et Folkman (1987).

Insérez la Figure 4

La documentation empirique en contexte sportif

Tels qu'illustré dans la Figure 3, des milliers de recherches ont étudié les déterminants et les conséquences des stratégies de coping. Certes, une recension exhaustive de ces travaux dépasse largement les visées de cette thèse. Qui plus est, les antécédents et les répercussions du coping pourraient différer selon le contexte de vie et la situation précise dans lesquels ils sont étudiés. Considérant la population ciblée par la présente thèse doctorale (voir Figure 1), le Tableau 4 présente une recension sommaire de la documentation quantitative portant sur les antécédents et les conséquences du coping en contexte sportif.

Insérez le Tableau 4

Malgré l'attention empirique accordée au coping en contexte sportif, seulement cinq recherches ont utilisé une approche intégrative en étudiant simultanément les antécédents et les conséquences du coping. Dans une première étude, Haney et Long (1995) ont étudié le

rôle médiateur de deux super-facteurs de coping (c-à-d., engagement et désengagement) dans les relations qu'entretiennent respectivement le sentiment d'efficacité personnelle et la perception de contrôle avec des indices objectifs de rendement en situation de compétition (c-à-d., nombre de points réussis à une tâche de tirs au but). Les corrélations de Pearson étaient toutes significatives. Toutefois, les résultats d'analyses par équations structurales avec variables manifestes ont démontré que la perception de contrôle prédisait positivement l'utilisation du coping centré sur l'engagement alors que le sentiment d'efficacité personnelle prédisait négativement l'utilisation du coping centré sur le désengagement. Fait intéressant à noter, la relation entre la perception de contrôle et le rendement était significativement médiatisée par le sentiment d'efficacité personnelle et par le coping centré sur l'engagement. De plus, la relation entre le sentiment d'efficacité personnelle et le rendement était significativement médiatisée par le coping centré sur le désengagement.

Dans une deuxième étude, Ntoumanis et ses collègues (1999) ont étudié le rôle médiateur des stratégies de coping dans les relations qu'entretiennent respectivement le climat motivationnel perçu (c-à-d., climat d'entraînement dans le sport) et les buts d'accomplissement avec l'expérience émotionnelle positive et négative des athlètes. Les résultats d'analyses par équations structurales avec variables manifestes ont soutenu les fonctions médiatrices du coping. D'une part, les buts centrés sur la tâche et un climat centré sur la maîtrise étaient reliés positivement à la suppression des autres activités et à l'augmentation des efforts. En plus de mener à davantage d'affects positifs, ces deux stratégies de coping centrées sur la tâche médiatisaient significativement la relation entre le climat centré sur la maîtrise et les affects positifs. Seule la suppression des autres activités médiatisait significativement la relation entre les buts centrés sur la tâche et les affects positifs. D'autre part, les buts centrés sur la performance et un climat centré sur la

performance étaient reliés positivement au désengagement comportemental et à la ventilation des émotions. En plus de mener à davantage d'affects négatifs, ces deux stratégies de coping centrées sur le désengagement médiatisaient significativement la relation qu'entretenaient respectivement les buts de performance et le climat de performance avec les affects négatifs.

Dans une troisième étude, Kim (1999, étude 2) a testé un modèle complexe proposant la séquence suivante : variables contextuelles (climat de performance et de maîtrise) → variables motivationnelles (buts centrés sur la tâche et buts centrés sur la performance) → conception du succès (centrée sur les efforts et centrée sur le talent) → évaluation cognitive (perception de stress et perception de contrôle) → super-facteurs de coping (engagement et désengagement). Au niveau corrélational, les résultats ont montré que le coping centré sur l'engagement corrélait positivement avec un climat de maîtrise, des buts centrés sur la tâche, une conception du succès centrée sur les efforts et la perception de contrôle. Quant au coping centré sur le désengagement, il corrélait positivement avec un climat de performance et la perception de stress. De façon générale, les résultats d'analyses par équations structurales à groupes multiples (garçons et filles) avec variables manifestes ont soutenu la séquence du modèle proposé. Ces résultats suggèrent que les relations qu'entretenaient des variables cognitivo-motivationnelles (i.e., climat motivationnel, buts d'accomplissement et conception du succès) avec le coping centré sur l'engagement et le coping centré sur le désengagement étaient partiellement médiatisées par la perception de contrôle et la perception de stress, respectivement. Malgré ces résultats intéressants, plusieurs relations proposées étaient non-significatives et les relations entre le climat motivationnel et les super-facteurs de coping sont demeurées significatives au-delà de l'effet des processus médiateurs inclus dans le modèle. En ce sens, il semble que certaines

variables extra-individuelles liées au contexte motivationnel puissent influencer directement les conduites de coping utilisées par les athlètes en situation de compétition sportive.

Dans une quatrième étude, Kim (1999, étude 3) a évalué le rôle médiateur des super-facteurs de coping dans les relations qu'entretiennent respectivement la perception de contrôle et la perception de stress avec des conséquences affectives (c-à-d., plaisir dans le sport, satisfaction dans le sport) et fonctionnelles (c-à-d., intention de poursuivre son sport). Au niveau corrélational, chacune des conséquences était reliée positivement à la perception de contrôle et négativement à la perception de stress. De façon générale, les résultats d'analyses par équations structurales à groupes multiples (Coréens et Américains) avec variables manifestes ont soutenu les relations incluses dans le modèle proposé. D'une part, la perception de contrôle était reliée positivement au coping centré sur l'engagement qui, en retour, menait à davantage de satisfaction et de plaisir ainsi qu'à une plus forte intention de poursuivre son sport. D'autre part, la perception de stress était reliée positivement au coping centré sur le désengagement qui, en retour, menait à une plus faible intention de poursuivre son sport. En somme, les résultats de cette recherche ont appuyé la fonction médiatrice de chacun des super-facteurs de coping dans la relation entre des variables cognitives et des conséquences émotionnelles et fonctionnelles.

Finalement, dans une cinquième étude, Amiot, Gaudreau et Blanchard (sous-*presse*) ont testé le rôle médiateur des super-facteurs de coping dans les relations qu'entretiennent respectivement la motivation autodéterminée et la motivation non-autodéterminée avec l'atteinte d'objectifs de performance et la variation de l'état émotionnel positif et négatif des athlètes (i.e., score de changement post- versus pré-compétition). Au niveau corrélational, la motivation autodéterminée corrélait

positivement avec le coping centré sur la tâche, l'atteinte d'objectifs de performance et le changement dans le score d'affect positif. Quant à la motivation non-autodéterminée, elle corrélait négativement avec l'atteinte d'objectifs de performance et positivement avec le coping centré sur le désengagement et le changement dans le score d'affect négatif. Les résultats d'une analyse par équations structurales avec variables manifestes ont soutenu le rôle médiateur des super-facteurs de coping. D'une part, le coping centré sur la tâche médiatisait significativement la relation qu'entretenait la motivation autodéterminée avec l'atteinte d'objectifs et le changement des affects positifs. D'autre part, le coping centré sur le désengagement médiatisait significativement la relation qu'entretenait la motivation non-autodéterminée avec l'atteinte des objectifs et le changement des affects négatifs.

Tel que démontré dans le Tableau 4, les conduites de coping utilisées par les athlètes sont reliées à divers antécédents et conséquences proposés dans le modèle de Lazarus et Folkman (1987). Qui plus est, les recherches intégratives ont démontré qu'il était possible d'étudier simultanément des antécédents et des conséquences afin de comprendre le rôle médiateur des différents super-facteurs de coping. Deux nouvelles recherches intégratives seront effectuées dans le cadre de cette thèse doctorale; elles sont décrites avec les objectifs spécifiques de la thèse ainsi que dans les articles 2 et 3.

OBJECTIFS DE LA THÈSE

Modèle hiérarchique du coping en compétition sportive

Au cours de la dernière décennie, plusieurs psychologues sportifs ont construit et validé des instruments pour mesurer le coping des athlètes (pour une recension, voir Crocker et al., 1998). Dans un premier temps, des chercheurs ont construit et validé des adaptations sportives du WOCQ (Crocker, 1992; Madden et Kirkby, 1989) de Folkman et

Lazarus (1985) et du COPE-Inventory (Crocker et Graham, 1995b; Eklund et al., 1998) de Carver et al. (1989). Dans un deuxième temps, des instruments ont été construits spécifiquement pour l'évaluation du coping dans le domaine des sports. D'une part, le *Coping Function Questionnaire* (Kowalski et Crocker, 2001) et le *Coping Scale for Korean Athletes* (Yoo, 2000) reposent sur une approche macro-analytique dans laquelle les conduites de coping sont regroupées en super-facteurs de coping. D'autre part, le *Athletic Coping Skills Inventory-28* (R. E. Smith, Schutz, Smoll et Ptacek, 1995) et le *Approach to Coping in Sport Questionnaire* (Kim, Duda et Ntoumanis, sous-pressé) utilisent une approche micro-analytique dans laquelle les conduites de coping sont regroupées en stratégies de coping.

Récemment, Gaudreau et Blondin (2002) ont construit et commencé la validation de *l'Inventaire des Stratégies de Coping en Compétition Sportive* (ISCCS). Le modèle conceptuel de l'ISCCS s'inspire de l'organisation hiérarchique proposée par Skinner et al. (2003). De plus, il repose sur une recension de la documentation qualitative et quantitative du coping dans le domaine des sports (voir Gaudreau et Blondin, 2002). L'ISCCS mesure 10 stratégies de coping fréquemment utilisées par les athlètes en situation de compétition sportive. Chacun de ses indicateurs...

- (1) représente une conduite de coping appartenant clairement à une seule stratégie de coping,
- (2) peut être utilisé dans des sports individuels et collectifs,
- (3) peut être utilisé pour mesurer le coping pré- et intra-compétition,
- (4) est conceptuellement distinct des corrélats dispositionnels, émotionnels, cognitifs, motivationnels, contextuels et fonctionnels du coping.

Les résultats d'une première recherche de validation ont appuyé la validité de construit et la fidélité de l'ISCCS (Gaudreau et Blondin, 2002). En utilisant une version préliminaire de 90 items, une analyse factorielle confirmative itérative a permis de conserver les quatre meilleurs indicateurs de chacune des 10 stratégies de coping. La dernière étape de l'analyse, effectuée sur 39 items, a démontré l'acceptabilité du modèle factoriel de premier-ordre de l'ISCCS (CFI = 0.93, NNFI = 0.92, RMSEA = 0.04). La fidélité de chacune des échelles était acceptable, avec des coefficients de cohérence interne (alpha de Cronbach) variant de 0.67 à 0.87 ($M = 0.74$, $ET = 0.06$). De plus, les stratégies de coping de l'ISCCS corrélaient significativement avec des variables affectives, cognitives et fonctionnelles. D'une part, les stratégies de coping centrées sur la tâche corrélaient positivement avec les affects positifs, la perception de contrôle et des indices auto-révélés d'atteinte d'objectifs. D'autre part, les stratégies de coping centrées sur le désengagement corrélaient négativement avec des indices auto-révélés d'atteinte d'objectifs et positivement avec les affects négatifs et l'anxiété cognitive. En somme, les résultats de cette recherche ont apporté un appui préliminaire à la validité factorielle et concurrente de l'ISCCS.

Parce qu'aucune étude empirique n'a encore testé la structure hiérarchique de l'ISCCS, la présente thèse doctorale vise à poursuivre la validation de cet instrument. L'ISCCS mesure 10 stratégies de coping pouvant se regrouper en trois super-facteurs représentant le coping centré sur la tâche, le coping centré sur la distraction et le coping centré sur le désengagement. Le *coping centré sur la tâche* représente des stratégies de coping utilisées pour gérer les exigences internes et externes de la compétition sportive. Il inclut des stratégies telles que l'imagerie mentale, le contrôle des pensées, l'analyse logique, la relaxation, le déploiement d'effort et la recherche de soutien. Le *coping centré sur la distraction* représente des stratégies de coping utilisées momentanément pour

orienter l'attention vers des stimuli et des activités cognitives qui ne sont pas associés directement à la compétition sportive. Il est formé de stratégies telles que la distraction mentale et la distanciation. Le *coping centré sur le désengagement* représente des stratégies de coping utilisées pour se désengager du processus pouvant mener à l'atteinte de ses objectifs personnels. Il est constitué de stratégies telles que le désengagement/résignation et la ventilation des émotions déplaisantes. Le modèle conceptuel de l'ISCCS est illustré dans la Figure 5.

Insérez la Figure 5

Objectifs spécifiques de la thèse

Un premier objectif de cette thèse consiste à poursuivre la validation de l'ISCCS. Tel que mentionné précédemment, cet instrument a été construit pour mesurer le coping des athlètes qui participent à des compétitions de sports individuels et collectifs. La première recherche (voir étude 1 de l'article 1) vise à réévaluer la structure factorielle de premier ordre de l'ISCCS et à tester son invariance à travers deux échantillons distincts d'athlètes de sports individuels et de sports collectifs. Il est attendu que le modèle hypothétique de l'ISCCS (c-à-d., 10 facteurs de premier ordre) devrait s'ajuster aux données aussi bien dans l'échantillon de sports individuels que dans celui de sports collectifs. De plus, cette recherche testera la structure hiérarchique du coping par le biais d'analyses factorielles confirmatives hiérarchiques. Spécifiquement, le modèle hypothétique contenant trois dimensions de second ordre (voir la Figure 5) devrait s'ajuster aux données de façon satisfaisante, tout en étant substantiellement supérieur à un modèle alternatif comportant

deux dimensions de second-ordre (c-à-d., engagement versus désengagement). Qui plus est, les paramètres du modèle de premier-ordre (saturations, variances des facteurs et covariances entre les facteurs) ainsi que ceux du modèle hiérarchique (saturations de premier-ordre, saturations de second-ordre et covariances entre les facteurs de second-ordre) devraient être invariants à travers les échantillons de sports individuels et de sports collectifs. Finalement, cette recherche évaluera la validité concurrente de l'ISCCS en examinant les relations des stratégies et des super-facteurs de coping avec des indices auto-rapportés d'atteinte d'objectifs de performance. En accord avec la documentation existante (Amiot et al., sous-presse; Gaudreau et Blondin, 2002; Gaudreau et al., 2002), les indices d'atteinte d'objectifs devraient corrélérer positivement avec le coping centré sur la tâche et négativement avec le coping centré sur le désengagement. Le coping centré sur la distraction ne devrait pas corrélérer significativement avec les indices d'atteinte d'objectifs. Il est également attendu que chacune de ces relations devrait être invariante à travers les échantillons de sports individuels et de sports collectifs.

Un deuxième objectif de cette thèse consiste à mesurer le coping utilisé par les athlètes durant les jours qui précèdent une compétition (pré-compétition) et durant la compétition elle-même (intra-compétition) afin d'évaluer leur constance intra-situationnelle. La deuxième recherche (voir étude 2 de l'article 1) propose d'évaluer la constance factorielle, relative et absolue de chacune des stratégies de coping de l'ISCCS par le biais d'une série d'analyses factorielles confirmatives longitudinales. Considérant que l'ISCCS a été construit pour mesurer le coping pré- et intra-compétition, les paramètres de chacune des 10 stratégies de coping (c-à-d., saturations et ordonnées à l'origine) devraient être invariants à travers les deux phases d'une compétition sportive. En termes opérationnels, l'ISCCS devrait manifester une invariance structurale, métrique et scalaire à

travers les deux phases de la compétition sportive. De plus, cette recherche testera la constance absolue et relative du coping par le biais d'analyses factorielles confirmatives longitudinales. En se basant sur la documentation portant sur la constance intra-situationnelle du coping (voir Tableau 3) et, plus particulièrement sur les résultats de l'étude de Gaudreau et al. (2001), l'utilisation moyenne des stratégies de coping centrées sur la tâche devrait diminuer à travers les phases de la compétition alors que l'utilisation moyenne des stratégies centrées sur le désengagement devrait augmenter. Aucune hypothèse a priori n'est formulée concernant les stratégies de coping centrées sur la distraction.

Un troisième objectif de cette thèse consiste à évaluer les fonctions médiatrices de chacun des super-facteurs de coping dans la relation entre des antécédents intra-individuels (facteurs dispositionnels et motivationnels) et des conséquences fonctionnelles (indices objectifs et subjectifs d'atteinte des buts) et émotionnelles (affect positif, affect négatif et bien-être subjectif). L'article 2 présente une recherche prospective dans laquelle les super-facteurs de coping seront mis en relation avec les variables suivantes : optimisme, pessimisme, indices subjectifs et objectifs d'atteinte des buts, affect positif et négatif post-compétition. En se basant sur le modèle d'auto-régulation comportementale de Carver et Scheier (1981; 1998) et sur la documentation empirique sur l'optimisme (pour une recension, voir Chang, 2001), il est attendu que l'optimisme et le pessimisme devrait corrélérer différemment avec les super-facteurs de coping. D'une part, l'optimisme devrait corrélérer positivement avec le coping centré sur la tâche qui, en retour, devrait faciliter l'atteinte d'objectifs de performance et mener à un état affectif positif après la compétition. D'autre part, le pessimisme devrait corrélérer positivement avec le coping centré sur la distraction et sur le désengagement. En retour, cette dernière forme de coping devrait

corréler négativement avec l'atteinte d'objectifs de performance et entraîner davantage d'émotions négatives après la compétition. La documentation empirique, les fondements théoriques et les hypothèses spécifiques portant sur chacune de ces relations seront présentés de façon détaillée dans le deuxième article de cette thèse. L'article 3 présente une recherche qui examinera les relations entre les super-facteurs de coping et les variables suivantes : perfectionnisme de standard personnel, perfectionnisme auto-critique, motivation autodéterminée, motivation non-autodéterminée, indices subjectifs d'atteinte de buts et bien-être subjectif. En se basant sur la documentation empirique (pour une recension, voir Flett et Hewitt, 2002) et sur les différentes conceptions théoriques du perfectionnisme (Frost, Marten, Lahart et Rosenblate, 1990; Hewitt et Flett, 1991; Slade et Owens, 1998), ainsi que sur la théorie de l'autodétermination (Deci et Ryan, 2002; Skinner et Edge, 2002; Vallerand, 1997), il est attendu que différents types de perfectionnisme et d'orientations motivationnelles devraient corréler différemment avec les super-facteurs de coping. D'une part, le perfectionnisme de standard personnel et la motivation autodéterminée devraient corréler positivement avec le coping centré sur la tâche qui, en retour, devrait faciliter l'atteinte d'objectifs de performance et le bien-être subjectif des athlètes. D'autre part, le perfectionnisme auto-critique et la motivation non-autodéterminée devraient corréler positivement avec le coping centré sur la distraction et sur le désengagement. En retour, cette dernière forme de coping devrait corréler négativement avec l'atteinte d'objectifs de performance et entraîner une baisse du bien-être subjectif des athlètes. La documentation empirique, les fondements théoriques et les hypothèses spécifiques portant sur chacune de ces relations seront présentés de façon détaillée dans le troisième article de cette thèse.

Le coping est un construit multidimensionnel (Lazarus et Folkman, 1984). En ce sens, un même individu pourrait utiliser diverses stratégies ou super-facteurs de coping pour tenter de gérer les exigences d'une situation stressante. D'ailleurs, les recherches qualitatives effectuées en contexte sportif (v.g., Cresswell et Hodge, 2001; Dale, 2000; Gould et Diefenbach, 2002; Gould, Eklund et Jackson, 1993; Gould, Finch et Jackson, 1993; Holt et Dunn, sous-presse; Holt et Hogg, 2002; Park, 2000; Pensgaard, Roberts et Ursin, 1999; Poczwadowski et Conroy, 2002; Prapavessis et Grove, 1995) ont démontré que la majorité des athlètes utilisent plusieurs stratégies de coping dans le cadre d'une même situation stressante. Malgré ces résultats intéressants, très peu de chercheurs ont considéré la possibilité que différents individus puissent utiliser différentes combinaisons de stratégies de coping pour faire face aux exigences d'une même situation. Récemment, Suls et David (1996) ont souligné la possibilité que différentes combinaisons de coping puissent mener à des conséquences différentes. A ma connaissance, seulement trois recherches ont testé cette proposition en catégorisant des patients souffrant d'arthrite (C. A. Smith et Wallston, 1996), des patients subissant une intervention chirurgicale (Losiak, 2001) et des étudiants du secondaire (Rijavec et Brdar, 2002) en groupes homogènes en fonction de leur profil multidimensionnel de coping. En utilisant des analyses de classification hiérarchique (c-à-d., *analyse de clusters*), ces recherches ont démontré que les individus pouvaient être catégorisés en quatre profils multidimensionnels de coping : (1) centré sur la tâche, (2) centré sur le désengagement, (3) centré sur la tâche et sur le désengagement, (4) centré sur l'absence de coping. Fait intéressant à noter, les différents profils de coping étaient associés différemment à des variables telles que le bien-être subjectif, les symptômes dépressifs et anxieux, les buts d'accomplissement (c-à-d., centrés sur la tâche et centrés sur la performance), la perception de contrôle, les conceptions du

succès (c-à-d., effort versus talent), les stratégies d'apprentissage (c-à-d., surface versus profondeur), la tendance auto-handicapante, l'estime de soi et le rendement scolaire. Un quatrième objectif de cette thèse consiste à explorer la possibilité de regrouper les athlètes selon leur profil multidimensionnel de coping. Spécifiquement, le quatrième article de cette thèse vise à évaluer si différents profils d'utilisation du coping sont associés différemment à des variables fonctionnelles (indices subjectifs d'atteinte des buts), cognitives (expérience subjective de contrôle) et émotionnelles (affect positif et affect négatif) dans le cadre d'une compétition sportive. La documentation empirique, les fondements théoriques et les hypothèses spécifiques portant sur chacune de ces variables seront présentés de façon détaillée dans le quatrième article de cette thèse.

Notes

- 1 Les défenses et le coping, étant respectivement formés de mécanismes inconscients et de processus conscients, devraient théoriquement se diviser en deux entités mutuellement exclusives. Toutefois, certains mécanismes de défense ont été inclus dans des instruments servant à mesurer le coping (v.g., déni, suppression, répression, voir Cramer, 1998).
- 2 Les résultats de l'analyse factorielle exploratoire de Lyne et Roger (2000) ont permis d'identifier 12 facteurs. La planification, le coping actif et la réévaluation positive formaient un seul facteur. Toutefois, plusieurs items saturaient simultanément plusieurs facteurs. En conséquence, cette structure factorielle était difficile à interpréter.
- 3 Les études de Zeidner et ses collègues (Zeidner, 1993; Zeidner et Ben-Zur, 1994; Zeidner et Hammer, 1992) ont utilisé une version abrégée du COPE-Inventory (deux items par échelle). Seules les études réalisées en situation de guerre ont obtenu une structure factorielle en deux super-facteurs.
- 4 Suite à une analyse en composantes principales de second-ordre, Lyne et Roger (2000) ont retenu quatre super-facteurs de coping. Toutefois, le dernier facteur contenait seulement une stratégie de coping et les autres facteurs étaient difficilement interprétables. Ces résultats suggèrent qu'il aurait été préférable de rejeter ce modèle afin de tester un modèle contenant trois super-facteurs de coping.

- 5 Suite à une analyse en composantes principales de second-ordre, Sica et al. (1997) ont retenu cinq super-facteurs de coping. Bien que quatre facteurs étaient facilement interprétables (engagement primaire, engagement secondaire, accommodation et désengagement), le dernier facteur contenait seulement une stratégie de coping. Ces résultats suggèrent qu'il aurait été préférable de rejeter ce modèle afin de tester un modèle contenant quatre super-facteurs de coping.
- 6 Cette recension tente de faire ressortir les grandes lignes de la documentation portant sur la stabilité et la constance du coping. Elle n'est pas totalement exhaustive et ne vise pas à dériver une évaluation non-biaisé de la stabilité et de la constance du coping. En ce sens, les conclusions présentées reposent sur les étapes préliminaires d'une recension méta-analytique en devenir. Compte tenu de l'étendue de la documentation empirique, une véritable méta-analyse dépasse largement les visées de cette thèse.
- 7 Un d de Cohen négatif et positif suggère respectivement une diminution et une augmentation du score moyen à travers le temps. La moyenne absolue de la taille des effets a été calculée sans tenir compte de la direction du changement.

Tableau 1 Définition et analyse conceptuelle du coping, des défenses, de la régulation des affects et des habiletés psychologiques fondamentales (HPF)

Concept	Définition	Processus adaptatif			Type de conduites			Fonctions			Intentionnalité			Origine théorique		
		Comportements	Cognitions	Intra-psychiques	Gérer la situation	Gérer les émotions	Éviter la situation et les émotions	Délibérées et volontaires	Inconscientes et involontaire	Théories du stress	Modèle psychodynamique	Régulation des émotions	Théories de la performance sportive			
Coping	Ensemble des efforts cognitifs et comportementaux, constamment changeants, destinés à gérer les exigences externes et internes spécifiques qui sont perçues comme menaçant ou débordant les ressources de la personne (Lazarus et Folkman, 1984).	X	X	X	X	X	X	X	X	X	X	X	X			
Défenses	Ensemble des mécanismes inconscients utilisés dans le but de protéger la personne des conséquences émotionnelles négatives d'un événement perturbateur (Cramer, 1998).	X		X		X		X								
Régulation des affects	Processus délibéré et intentionnel par lequel une personne modifie ou maintient son humeur et ses émotions. (Parkinson et Totterdell, 1999).	X	X			X		X		X	X					
HPF	Ensemble des actions comportementales et cognitives orientées vers la régulation de l'action dans le but de faciliter la performance humaine (Murphy et Tammen, 1998).	X	X		X	X		X		X			X			

Note. HPF = Habiletés psychologiques fondamentales.

Tableau 2 Structure factorielle hiérarchique du COPE-Inventary à travers différentes études de validation

	Planification	Coping actif	Réévaluation positive	Suppression des autres activités	Humour	Désengagement comportemental	Déni	Désengagement mental	Restriction des actions	Acceptation	Recherche soutien instrumental	Recherche soutien émotionnel	Focaliser les ventiler les	Prise d'alcool et drogue	Religion
1. Kallasmaa et Pulver (2000) Forme dispositionnelle N = 515 étudiants de l'Estonie Trois facteurs (AFE)	T+	T+ (A-)	T+	T+	T+	A+	A+	A+	T+ (A+)	T+ (A+)	E+ (T+)	E+	E+	n.s.	---
Extraction : Composante principale Rotation : Varimax Critère : Valeurs propres > 1 48% de variance totale															
2. Hudek-Knezevic et al. (1999) Forme dispositionnelle N = 403 étudiants de Croatie Trois facteurs (AFE)	T+	T+	T+	T+	n.s.	A+	A+	A+	T+	T+	E+	E+	E+	A+	n.s.
Extraction : Axes principaux Rotation : Varimax Critère : Test des éboulis 44% de variance commune															
3. Zeidner (1995); Zeidner (1996) Forme situationnelle (examen) N = 241 étudiants d'Israël Trois facteurs (AFE)	T+	T+	E+	T+	E+	A+	A+	A+	E+	---	E+	E+	E+	n.s.	A+
Extraction : Axes principaux Rotation : Varimax Critère : Valeurs propres > 1 36% de variance commune															
4. Ben-Zur (1998, dans Ben-Zur, 1999) Forme dispositionnelle N = 251 étudiants d'Israël Trois facteurs (AFE)	T+	T+	T+	T+	n.s.	A+	A+	A+	T+	T+	E+	E+	E+	n.s.	n.s.
Extraction : PCA Rotation : Varimax Critère : Simplicité de la structure															

"Suite du tableau 2 à la page suivante"

Tableau 2 (Suite)

	Planification	Coping actif	Révaluation positive	Suppression des autres activités	Humour	Désengagement comportemental	Déni	Désengagement mental	Restriction des actions	Acceptation	Recherche soutien instrumental	Recherche soutien émotionnel	Focaliser les ventiliers	Prise d'alcool et drogue	Religion
5. Cook et Heppner (1997) Forme dispositionnelle N = 329 étudiants Américains Trois facteurs (AFE)	T+	T+	T+	T+	n.s.	A+	A+	A+	T+	T+	E+	E+	---	A+	n.s.
Estimation : Axes principaux Rotation = Varimax Critères = Valeurs propres > 1															
6. Stewart et Schwarzer (1996) Forme dispositionnelle (temps 1) N = 121 étudiants de Hong Kong Trois facteurs (AFE)	T+	T+ (A+)	E+	---	E+	T- (E+)	A+	E+ (A-)	---	T+	---	E+ (A-)	E+ (A-)	A+	T+
Extraction : Composante principale Rotation : Oblimin Critère : Valeur propres > 1 46% de variance totale															
7. Sergerstrom et al. (1998) Forme dispositionnelle N = 90 étudiants Américains Trois facteurs (AFC)	T+	T+	E+	T+	---	A+	A+	A+	---	E+	---	---	A+	---	---
Estimation : Max. de vraisemblance Rotation : Oblique Critère : χ^2 et NNFI NNFI = 1.00															
8. Zaura et al. (1996) Forme dispositionnelle N = 169 femmes divorcées Trois facteurs (AFC) Quatre facteurs (AFC)	T+ PE+	T+ PE+	T+ SE+	---	T+ SE+	---	A+ A+	A+ A+	T+ PE+	T+ SE+	E+ E+	E+ E+	---	A+ A+	---
Estimation : Max. de vraisemblance Rotation : Oblique Critère : χ^2 et CFI 3 facteurs : CFI = 0.93 4 facteurs : CFI = 0.95															

Tableau 2 (Suite)

	Planification	Coping actif	Réévaluation positive	Suppression des autres activités	Humeur	Désengagement comportemental	Déni	Désengagement mental	Restriction des actions	Acceptation	Recherche soutien instrumental	Recherche soutien émotionnel	Focaliser et ventiler les	Prise d'alcool et drogue	Religion
9. Phelps et Jarvis (1994) Forme situationnelle N = 484 adolescents Américains Quatre facteurs (AFE)	PE+	PE+	SE+	PE+	n.s.	A+	A+	SE+	SE+	SE+	PE+	E+	E+	A+	n.s.
Extraction : Composante principale Rotation : Varimax Critère : Valeurs propres > 1															
10. Carver et al. (1989, study 1) Forme dispositionnelle N = 978 étudiants Américains Quatre facteurs (AFE)	PE+	PE+	SE+	PE+	---	A+	A+	A+	SE+	SE+	E+	E+	E+	---	n.s.
Extraction : ND Rotation : ND Critère : ND															
11. Carver et al. (1989, étude 2) Forme situationnelle N = 156 étudiants Américains Quatre facteurs (AFE)	PE+	PE+	SE+	PE+	---	A+	A+	A+	SE+	SE+	E+	E+	E+	---	A+
Extraction : ND Rotation : ND Critère : ND															
12. O'Connor et O'Connor (2003) Forme dispositionnelle N = 175 étudiants Américains Quatre facteurs (AFE)	PE+	PE+	SE+	PE+	---	A+	A+	A+	PE+	SE+	E+	E+	E+	A+	n.s.
Extraction : Composante principale Rotation : Oblique Critère : Valeurs propres > 1 60% de variance totale															

"Suite du Tableau 2 à la page suivante"

Table 2 (Suite)

	Planification	Coping actif	Réévaluation positive	Suppression des autres activités	Humour	Désengagement comportemental	Déni	Désengagement mental	Restriction des actions	Acceptation	Recherche soutien instrumental	Recherche soutien émotionnel	Focaliser les ventiler les	Prise d'alcool et drogue	Religion
13. Fortune et al. (2002) Forme situationnelle (psoriasis) N = 225 patients Quatre facteurs (AFE)	PE+	PE+	PE+	PE+	4-	A+	A+	---	PE+	PE+	E+	E+	E+	---	4+
Extraction : Composante principale Rotation : Varimax Critère : Valeurs propres > 1 63% de variance totale															
14. Zeidner & Ben-Zur (1994) Forme dispositionnelle (guerre) N = 822 adultes d'Israël Deux facteurs	T+	T+	T+	T+	--	E+	E+	E+	T+	T+	T+	T+	E+	E+	E+
Extraction : Axes principaux Rotation : Varimax Critère : ND 24% de variance commune															
15. Zeidner (1993) Forme situationnelle (guerre) N = 109 adolescents d'Israël Deux facteurs	T+	T+	T+	T+	n.s.	n.s.	n.s.	n.s.	T+	n.s.	E+	E+	E+	E+	T+
Extraction : Axes principaux Rotation : Varimax Critère : ND 29% de variance commune															
16. Zeidner & Hammer (1992) Forme situationnelle (guerre) N = 261 adultes d'Israël Deux facteurs	T+	T+	T+	E+	T+	E+	n.s.	E+	E+	T+	E+	E+	E+	E+	n.s.
Extraction : PAF Rotation : Varimax Critère : ND 25% de variance commune															

Note. + Saturations positives. - Saturations négatives. n.s. Saturations non-significatives. --- Stratégies non-incluses dans les analyses. () Saturations secondaires.
T = Centré sur la tâche. E = Centré sur les émotions ou sur l'accommodation. A = Centré sur l'évitement. PE = Centré sur l'engagement primaire. SE = Centré sur l'engagement secondaire. 4 = Facteur athéorique. ND = informations non-disponibles.

Tableau 3 Recension des recherches sur la stabilité et de la constance du coping

But de l'étude	Auteurs	Description	Type de stabilité			Corrélation latente (SEM)
			Structurale	Absolute	Relative	
Stabilité générale : Évolution de l'utilisation du coping à travers le temps, nonobstant le contexte de vie ou les situations particulières dans lesquels il est utilisé.	Carver et al. (1989), étudiants	-----				X
	Bramsen et al. (1995), étudiants	-----				X
	Zautra et al. (1996), mères divorcées	-----	X			X
	Hudek-Knezevic et al. (1999), étudiants	-----				X
	Kallasmaa et Pulver (2000), étudiants	-----				X
	Zuckerman et Gagné (2003), étudiants	-----				X
	Sica et al. (1997), étudiants	-----				X
	Long et Schutz (1995), femmes cadres	-----			X	X
	Frydenberg et Lewis (2000), adolescents	-----			X	X

« Suite du tableau 3 à la page suivante »

Tableau 3 (Suite)

But de l'étude	Auteurs	Agent stressant		Description	Type de stabilité								
		Disposition	Sélectionné par le chercheur		Sélectionné par les participants	Invariance structurale	Invariance métrique	Invariance scalaire	Moyenne observées	Moyennes latentes (SEM)	Corrélation test-retest	Relative	
Stabilité contextuelle : Évolution de l'utilisation du coping à travers le temps dans un contexte de vie précis, nonobstant les situations particulières dans lesquelles il est utilisé.	Connor-Smith et al. (2000), adolescents	X		Interpersonnel								X	
	Fournier et al. (2002), adultes	X		Condition de santé				X					X
	Causey et Dubow (1992), enfants	X		Académique, interpersonnel									X
Stabilité situationnelle : Évolution de l'utilisation du coping à travers le temps dans une situation spécifique	Endler et al. (sous-pressée), patients	X		Douleur chronique				X					
	Endler et al. (1998), patients atteints d'un cancer	X		Radiothérapie									X
	Jensen et Linton (1993), patients	X		Douleur chronique									X
	Gil et al. (1997), enfants, adolescents et adultes	X		Douleur									X
	Grey et al. (1997), enfants diabétiques	X		Diabète									X
Walker et al. (1997), enfants et patients	X		Douleur abdominale										X

« Suite du tableau 3 à la page suivante »

l' tableau 3 (Suite)

But de l'étude	Auteurs	Agent stressant		Description	Type de stabilité					Corrélation retest	Corrélation latente (SEM)	
		Disposition	Selectionné par le chercheur		Selectionné par les participants	Invariance structurale	Invariance métrique	Invariance scalaire	Moyenne observées			Moyennes latentes (SEM)
« Suite » Stabilité situationnelle : Évolution de l'utilisation du coping à travers le temps dans une situation spécifique	Crocker et Isaak (1997), athlètes	X	X	Compétition				X				
	Vedhara et al. (2001), aidants naturels	X	X	Aidant naturel				X				X
	Frazier (2002), patients Parkinson	X	X	Symptômes				X				X
	Amirkhan (1990), étudiants et adultes			Divers ¹	X							X
	Cousson et al. (1996), étudiants		X	Divers ¹	X							X
	Bramsen et al. (1995), étudiants		X	Divers ¹	X							X
	Compas et al. (1988), étudiants		X	École et interpersonnel ¹	X					X		X
	Bouffard et Crocker (1992), athlètes		X	Divers ²	X					X		X
	Steele et al. (1999), enfants		X	Divers ²	X					X		X
	Swindle Jr et al. (1989), patients dépressifs		X	Divers ²	X					X		X
	Holahan et Moos (1987), adultes		X	Divers ²	X					X		X

« Suite du tableau 3 à la page suivante »

Tableau 3 (Suite)

But de l'étude	Auteurs	Agent stressant		Description	Type de stabilité									
		Disposition	Selectionné par le chercheur		Selectionné par les participants	Invariance structurale	Invariance métrique	Invariance scalaire	Moyenne observées	Moyennes latentes (SEM)	Corrélation test-retest	Relative		
Constance contextuelle : Différence dans l'utilisation du coping à travers des situations précises vécues dans des contextes de vie différents.	Peacock et Wong (1996), étudiants	X			Travail, école, sécurité				X					
	Causey et Dubow (1992), enfants	X			École et interpersonnel				X				X	
	Sellers (1995), athlètes	X			École et sport				X				X	
	Compas et al. (1988), étudiants			X	École et interpersonnel Accomplissement, social, interpersonnel				X				X	
	Frydenberg et Lewis (1994), adolescents			X	Divers ¹				X				X	
Constance situationnelle : Différence dans l'utilisation du coping à travers des situations vécues dans un même contexte de vie, nonobstant les phases spécifiques dans lesquels il est utilisé.	Lu (1996), étudiants			X	Divers ¹				X					
	Giacobbi Jr et Weinberg (2000), athlètes			X	Divers ¹				X					

Tableau 3 (Suite)

But de l'étude	Auteurs	Agent stressant		Description	Structurale					Type de stabilité		
		Disposition	Sélectionné par le chercheur		Sélectionné par les participants	Invariance structurale	Invariance métrique	Invariance scalare	Moyenne observées	Moyennes latentes (SEM)	Corrélation test-retest	Relative
Constance intra-situationnelle : Différence dans l'utilisation du coping à travers les phases d'une situation spécifique.	Folkman et Lazarus (1985), étudiants	X		Examen					X			
	Lay et al., (1989), étudiants du secondaire	X		Examen					X			
	Love et al., (2000), patients hospitalisés	X		Infarctus du myocarde					X			
	Bolger (1990), étudiants	X		Examen					X			
	Carver et al. (1993), femmes avec un cancer du sein	X		Chirurgie					X		X	
	Fugate et al. (2002), employés	X		Fusion d'entreprise					X			
	Kinicki et al. (2000), employés	X		Perte d'emploi					X			
	Begley (1998), employés	X		Remaniement organisationnel							X	
	Mikulincer et Florian (1999), femmes enceintes	X		Grossesse					X			
	Levy-Shiff et al. (1998), mères	X		Naissance d'un enfant					X			X
Arthur (1998), étudiants	X		Année académique					X				

l' tableau 3 (Suite)

But de l'étude	Auteurs	Agent stressant		Description	Type de stabilité									
		Disposition	Selectionné par le chercheur		Selectionné par les participants	Invariance structurale	Invariance métrique	Invariance scalaire	Moyenne observées	Moyennes latentes (SEM)	Corrélation test-retest	Relative		
« Suite » Constance intra-situationnelle :	Isakson et Jarvis (1999), étudiants au secondaire	X		Transition au secondaire						X				
	Rodrigue et al. (1997), mères d'un enfant transplanté	X		Transplantation d'organes						X				
	Sorlie et Sexton (2001), patients	X		Chirurgie				X						
	Stanton et Snider (1993), patients atteints d'un cancer	X		Chirurgie						X				
	van Elderen (1999), patients cardiaques	X		Accident cardiaque						X				X
	King et al. (1998), patients cardiaques	X		Chirurgie										
	Yali et Lobel (2002), femmes enceintes	X		Grossesse				X						X
	Terry et Hynes (1998), femmes	X		Fertilisation in vivo				X						
	Berghuis et Stanton (2002), couples	X		Fertilisation in vivo										
	Carver et Scheier (1994), étudiants	X		Examen										X

Tableau 3 (Suite)

But de l'étude	Auteurs	Agent stressant		Description	Type de stabilité							
		Disposition	Sélectionné par le chercheur		Sélectionné par les participants	Invariance structurale	Invariance métrique	Invariance scalaire	Moyenne observées	Moyennes latentes (SEM)	Corrélation test-retest	Relative
« Suite » Constance intra-situationnelle :	Huizink et al. (2002), femmes enceintes	X	X	Grossesse	X	X	X	X	X	X	X	X
	Raffety et al. (1997), étudiants	X	X	Examen				X				
	Gaudreau et al., (2001), athlètes	X	X	Compétition				X				X

Note. ¹ = Les répondants n'ont pas tous répondu au questionnaire en référence à la même situation. ² = Aucun contrôle méthodologique pour vérifier que chacun des répondants se réfère à la même situation stressante à travers les deux points de mesure.

Tableau 4 Recension des corrélats du coping dans le domaine des sports

Corrélat	Auteurs
ANTÉCÉDENTS	
Variables intra-individuelles	
Caractéristiques de la personne	
- Age	Madden et Kirkby (1989)
- Genre	Crocker et Graham (1995a) Gaudreau et Blondin (2002a) Kolt, Kirkby et Lindner (1995) Kowalski et Crocker (2001) Madden et Kirkby (1989) Yoo (2001)
- Niveau d'expertise	Gaudreau et Blondin (2002a) Madden et Kirkby (1989) Yoo (2001)
Facteurs cognitifs	
- Perception de contrôle	Anshel et Kaissidis (1997) Gaudreau et Blondin (2002) Haney et Long (1995) Kaissidis-Rodafinos, Anshel et Porter (1997) Kim (1999)
- Sentiment d'efficacité personnelle	Haney et Long (1995)
- Importance perçue	Gaudreau et Blondin (2002)
- Perception de stress	Anshel et Kaissidis (1997) Kaissidis-Rodafinos et al. (1997) Kim (1999)
- Événements stressants (auto-révéle)	Madden, Summers, et Brown (1990)
- Perception de compétence	Kim (1999)
- Conception du succès	Kim (1999)
Facteurs motivationnels	
- Motivation autodéterminée	Amiot, Gaudreau et Blanchard (sous-presse)
- Buts d'accomplissement	Kim (1999) Ntoumanis, Biddle et Haddock (1999) Pensgaard et Roberts (2003)
Facteurs dispositionnels	
- Optimisme	Baltzell (1999) Grove et Heard (1997)
- Trait de confiance	Grove et Heard (1997)
- Trait d'anxiété	Eubank et Collins (2000) Finch (1994) Giacobbi Jr et Weinberg (2000)

« Suite du Tableau 4 à la page suivante »

Tableau 4 (Suite)

Corrélat	Auteurs
Facteurs dispositionnels (Suite)	
- Trait de résilience	Baltzell (1999)
- Tendance auto-handicapante	Prapavessis, Maddison et Grove (2003)
- Identité athlétique	Grove, Lavalée et Gordon (1997)
- Style cognitif	Anshel et Kaissidis (1997)
	Kaissidis-Rodafinos et al. (1997)
- Style attributionnel	Sellers et Peterson (1993)
- Style dispositionnel de coping	Giacobbi Jr et Weinberg (2000)
Variables extra-individuelles	
Facteurs liés à la situation	
- Stabilité situationnelle	Crocker et Isaak (1997)
- Constance inter-situationnelle	Giacobbi Jr et Weinberg (2000)
	Kaissidis-Rodafinos et al. (1997)
- Constance inter-contextuelle	Sellers (1995)
- Constance intra-situationnelle	Gaudreau, Lapierre et Blondin (2001)
Facteurs contextuels	
- Perception du climat motivationnel	Kim (1999)
	Ntoumanis et al. (1999)
- Perception du soutien social	Baltzell (1999)
CONSÉQUENCES	
Conséquences émotionnelles	
- État d'anxiété cognitive et somatique	Gaudreau et Blondin (2002)
	Hammermeister et Burton (2001)
	Ntoumanis et Biddle (2000)
- Affect positif et affect négatif	Amiot et al. (sous-presse)
	Crocker et Graham (1995a)
	Gaudreau, Blondin et Lapierre (2002)
	Gaudreau et Blondin (2002)
	Ntoumanis et Biddle (1998)
	Ntoumanis et al. (1999)
- Bien-être subjectif	Baltzell (1999)
- État de flow	Jackson, Thomas, Marsh et Smethurst (2001)
Conséquences fonctionnelles	
- Indices objectifs de rendement	Finch (1994)
	Haney et Long (1995)
	R.E. Smith et Christensen (1995)
- Indices subjectifs d'atteinte d'objectifs	Amiot et al., (sous-presse)
	Gaudreau et Blondin (2002)
- Indices objectifs d'atteinte d'objectifs	Gaudreau et al. (2002)

« Suite du Tableau 4 à la page suivante »

Tableau 4 (Suite)

Corrélat	Auteurs
Conséquences fonctionnelles (Suite)	
- Efficacité perçue du coping	Kim (1999) Ntoumanis et Biddle (1998)
- Survie (persévérance dans le sport)	R.E. Smith et Christensen (1995)
Conséquences psychosomatiques	
- Blessures sportives	Madden et Kirkby (1989)
- Burnout	Gould, Udry, Tuffey et Loehr (1996)

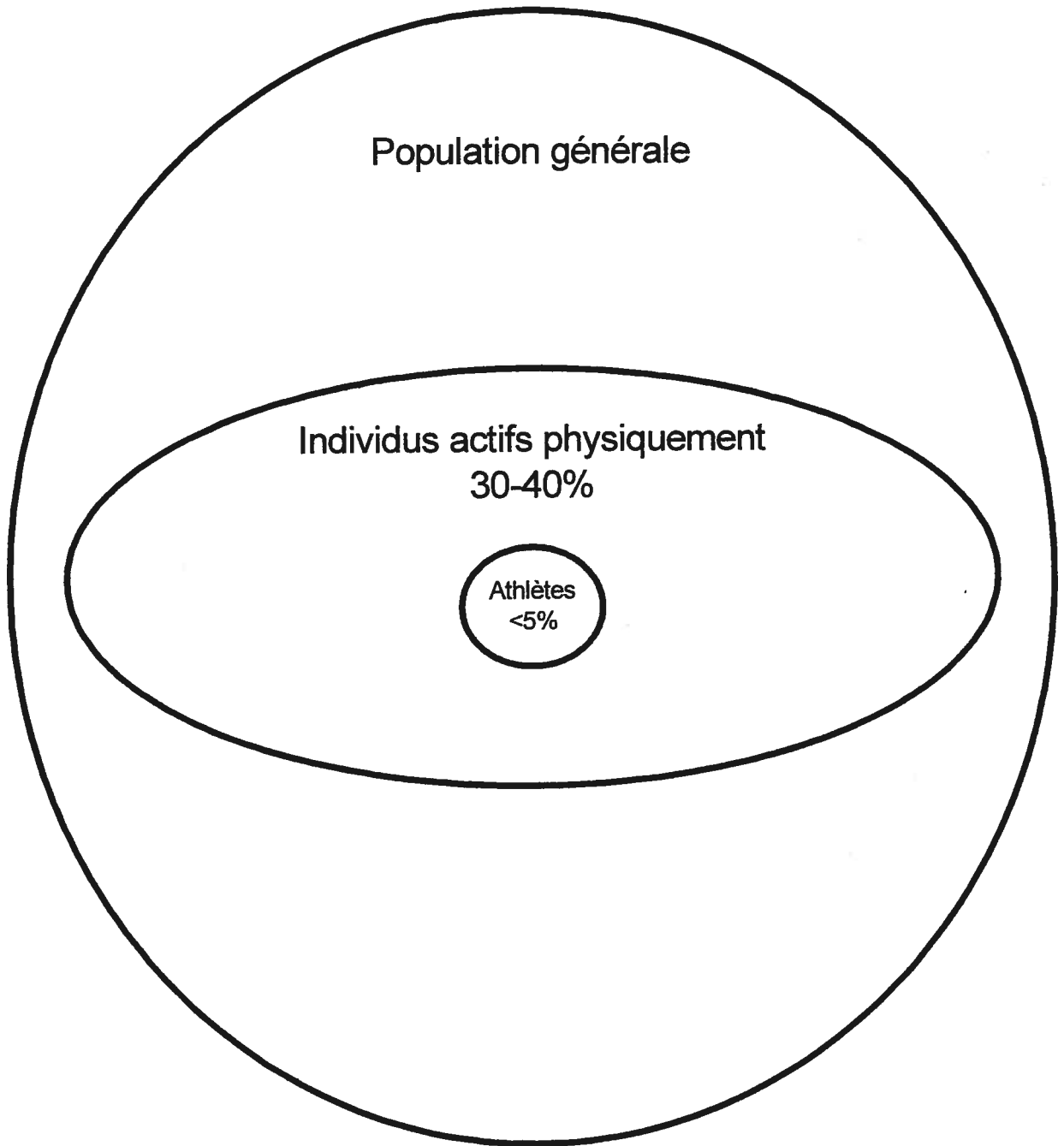


Figure 1 Définition de la population cible

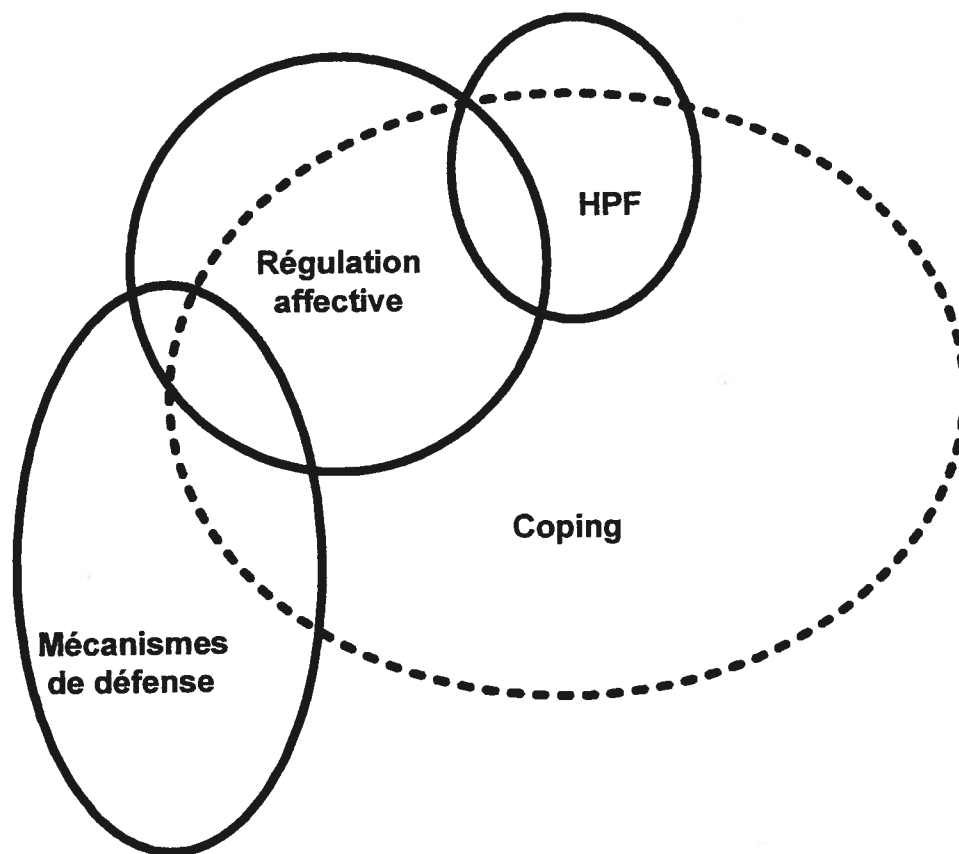


Figure 2 Frontières conceptuelles du coping

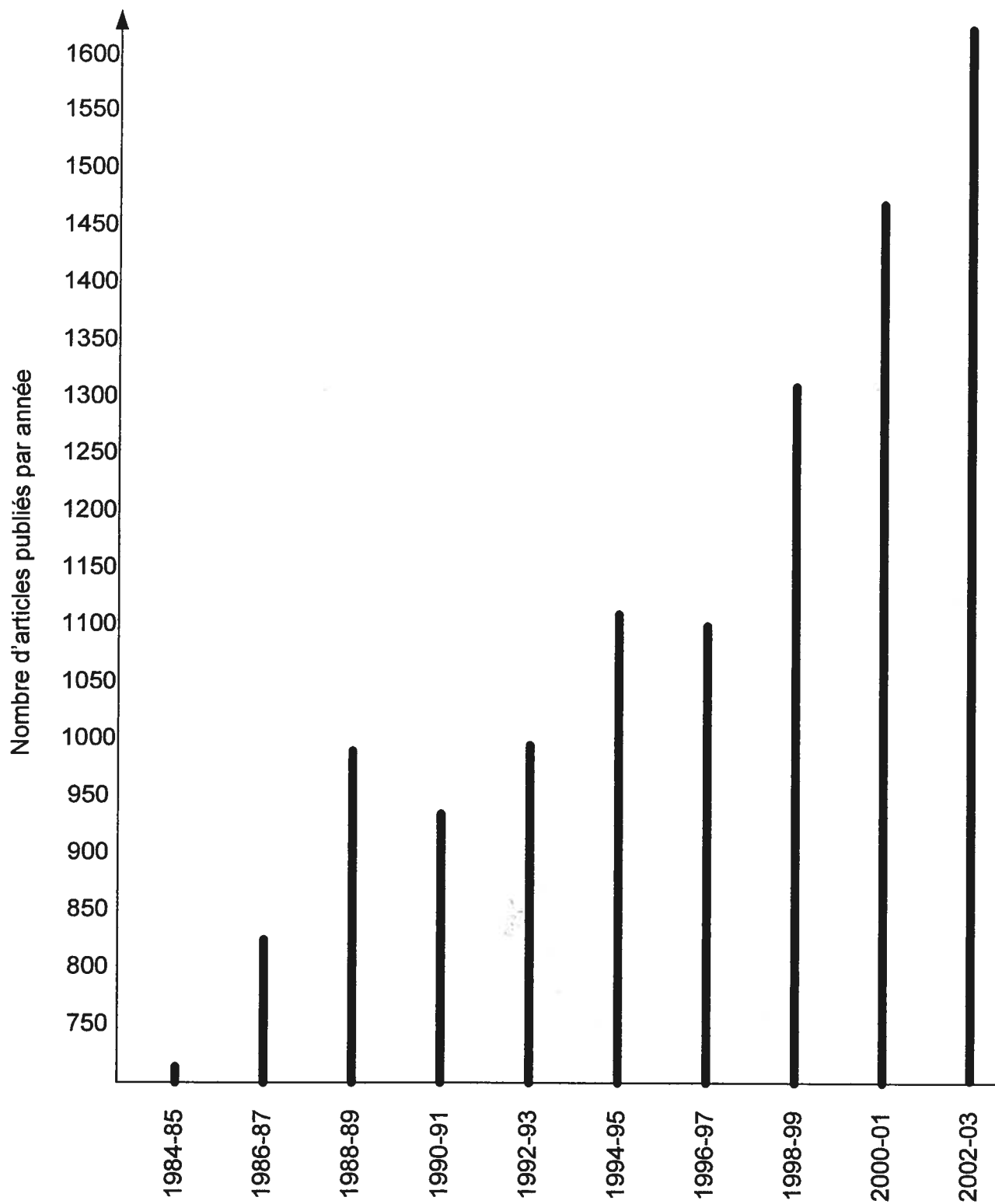


Figure 3 Évolution historique de la recherche sur le coping (1984-2003)

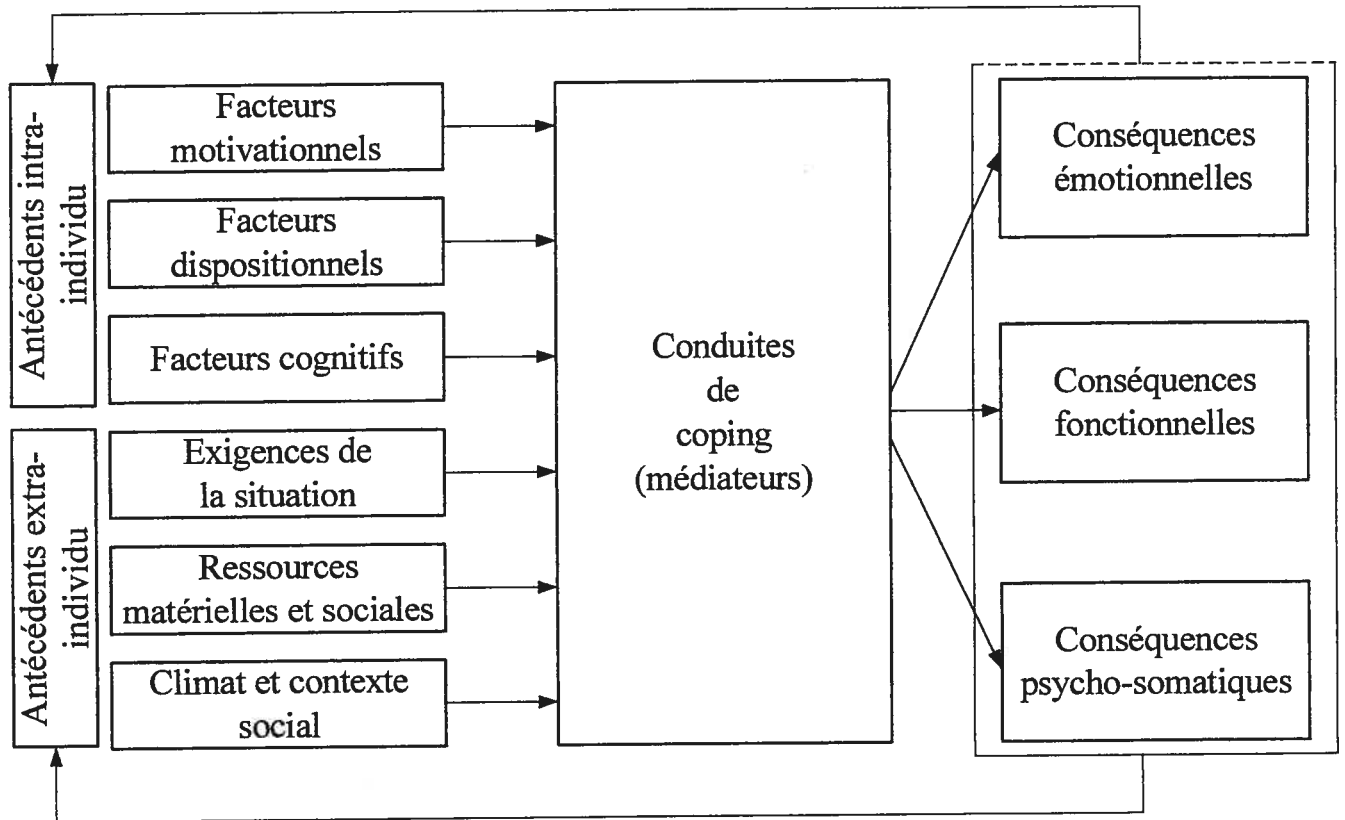


Figure 4. Modèle des antécédents et des conséquences du coping de Lazarus et Folkman (1987)

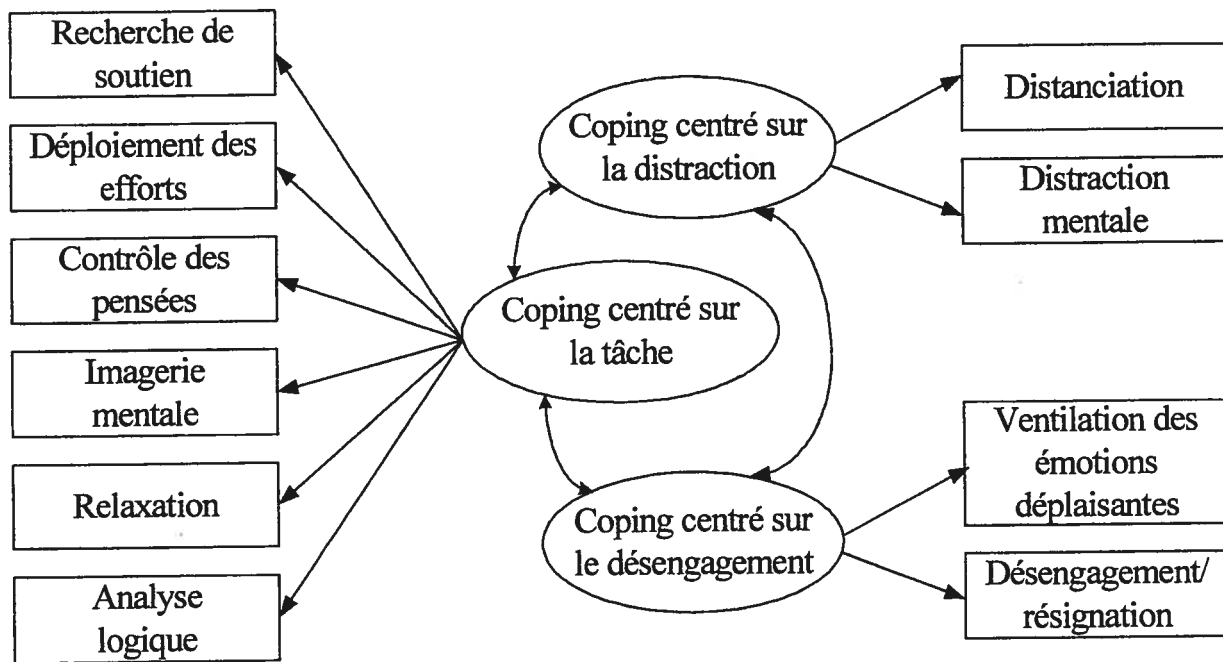


Figure 5. Modèle conceptuel hiérarchique de l'ISCCS (Gaudreau et Blondin (2002))

CHAPITRE 3

ARTICLE 1

Testing the between-group and longitudinal invariance of sport-related coping strategies using structural equation modeling

ARTICLE 1

1. Identification de l'étudiant et du programme

Patrick Gaudreau
Ph.D. en psychologie, option recherche

2. Description de l'article

Titre : Testing the between-group and longitudinal invariance of sport-related coping strategies using structural equation modeling

Auteur : Patrick Gaudreau et Jean-Pierre Blondin

Revue : Cet article sera soumis à Journal of Personality and Social Psychology

3. Contribution des auteurs

- P. Gaudreau
- Élaboration de la mesure et du plan de recherche
 - Recherche documentaire
 - Cueillette des données et préparation de la base des données
 - Analyses des données
 - Rédaction et correction de l'article
- J.-P. Blondin
- Participation à l'élaboration de la mesure
 - Relecture et correction de l'article

4. Déclaration de tous les coauteurs autres que l'étudiant

À titre de coauteur de l'article identifié ci-dessus, je suis d'accord pour que Patrick Gaudreau inclut cet article dans sa thèse doctorale qui a pour titre « Les stratégies de coping utilisées par les athlètes en situation de compétition sportive : Développement d'un modèle multidimensionnel du coping, de ses antécédents et de ses conséquences ».

Jean-Pierre Blondin

Coauteur

Signature

12 Février 2004

Date

Running head : INVARIANCE OF SPORT-RELATED COPING

Testing the between-group and longitudinal invariance of sport-related coping strategies using structural equation modeling

Patrick Gaudreau

Jean-Pierre Blondin

Université de Montréal

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Abstract

This research investigated unresolved issues pertaining to the hierarchical organization of coping strategies and to their dispositional versus situational nature. Study 1 provided evidence for the factor structure of the *Coping Inventory for Competitive Sport*, a hierarchical measure of sport-related coping. The first-order and hierarchical structure were invariant across individual and team sport samples. Coping strategies and super-factors of coping correlated meaningfully with goal attainment indices and these relationships were mainly invariant across samples. In Study 2, athletes reported their pre- and intra-competition coping efforts. The structure of each coping strategy was consistent across waves. There was moderate mean-level changes, moderate rank-order consistency, and substantial individual-level changes in coping utilization across stages of the competition. This research provides a foundation for future study on coping in the sport domain.

Key words : coping behavior, sport, validity, stability, goal attainment

Researchers in the sport domain generally agree that the self-regulatory and coping skills of athletes are fundamental processes to an understanding of their psychological adjustment (e.g., Hardy, Jones, & Gould, 1996; Starkes & Ericsson, 2003). Albeit that sport-related coping had recently received a growing amount of theoretical and empirical attention, this stream of inquiry is still at a genesis stage. Up to now, many important questions have not been investigated systematically. Specifically, unresolved issues pertain to the hierarchical organization of coping, the dispositional vs. situational nature of coping efforts, and their effectiveness in bringing about desired outcomes. This paper presents two studies that examined these issues with samples of athletes participating in involving levels of sport competition.

CONCEPTUAL FOUNDATION OF THE COPING CONSTRUCT

Lazarus and Folkman (1984) have defined coping as the cognitive and behavioral actions used by individuals to manage the internal and external demands encountered during a specific stressful situation. Given the multidimensional nature of this widely accepted definition, coping has been conceptualized at varying levels of analysis. In general, two approaches have been used to operationalize the coping construct (e.g., Krohne, 1996). A micro-analytical approach focuses on organizing similar coping actions into a series of conceptually distinct and mutually exclusive coping strategies (e.g., Carver, Scheier, & Weintraub, 1989; Folkman & Lazarus, 1985). A macro-analytical approach operates at a higher level of analysis by aggregating coping actions into a few numbers of factors such as task-, emotion-, distraction-, and disengagement-oriented coping (e.g., Endler & Parker, 1994). In and of themselves, these approaches cover a limited area of the conceptual space of the coping construct. At first glance, the macro-analytical approach yields a parsimonious and theoretically-driven account of coping. Yet, it fails to consider

the presence of meaningful subordinates' constructs within each factor of coping.

Considering its larger scope, the micro-analytical approach renders a more exhaustive portrait of the ways through which a person tries to manage a situation. Nevertheless, it overlooks the interdependence among coping strategies, while neglecting the possibility that they can be nested within higher-order superfactors of coping.

Several conceptual models that combine micro- and macro-analytical approaches of coping have been proposed (e.g., Frydenberg & Lewis, 1996; Moos, 1993). In a thorough review of the literature, Skinner, Edge, Altman, and Sherwood (2003) presented the foundations of a hierarchical approach integrating three levels of analysis (i.e., instances, strategies, and families). The lower level of the hierarchy is represented by coping instances, which correspond to the myriad of behavioral and cognitive actions that individuals use to manage a stressful situation. At an intermediate level, coping instances are categorized into a variety of well-defined, homogeneous, and mutually exclusive coping strategies (i.e., ways of coping). Finally, at a higher level, families of coping are construed by organizing coping strategies into a few numbers of second-order dimensions of coping. Each second-order dimension can be viewed as a homogeneous superfactor providing a parsimonious and integrated account of related strategies that should generally lead to securing or incurring similar outcomes (i.e., functional homogeneity). Given their different functions in the adaptation process, each superfactor of coping should render a distinctive contribution to an understanding of how a person tries to adapt himself to a stressful situation (i.e., functional distinctiveness).

Two streams of research have supported a hierarchical conceptualization of coping. In a first stream of investigation, researchers have tried to uncover the hierarchical structure of the COPE Inventory (Carver et al., 1989). In a series of factor analytical studies (e.g.,

Cook & Heppner, 1997; Hudek-Knezevic, Kardum, & Vukmirovic, 1999; Kallasmaa & Pulver, 2000; Segerstrom, Taylor, Kemeny, & Fahey, 1998), coping strategies have been clustered in three superfactors, representing task- or problem-oriented coping (e.g., active coping, suppression of competing activities, positive reappraisal), accommodation or emotion-oriented coping (e.g., seeking support, focus on emotions), and disengagement- or avoidance-oriented coping (e.g., denial, behavioral disengagement). In other studies (Carver et al., 1989; O'Connor & O'Connor, 2003; Phelps & Jarvis, 1994), four superfactors were extracted and the task-oriented strategies loaded on separate factors representing primary-engagement (e.g., active coping, suppression of competing activities) and secondary-engagement (e.g., positive reappraisal, acceptance). Results of confirmatory factor analyses (CFA) have revealed the suitability of models encompassing three and four superfactors of coping (Hasking & Oei, 2002; Segerstrom et al., 1998; Zautra, Sheets, & Sandler, 1996). In the study of Zautra et al. (1996), the goodness-of-fit of the four-factor model was slightly superior. At the same time, however, the high correlation between the primary- and secondary-engagement factors provided evidence for the acceptability of a three-factor model. In the study of Hasking and Oei (2002), a four-factor model failed to fit the data adequately whereas a three-factor model provided a reasonable fit to the data. The COPE Inventory was not developed within the confines of a hierarchical approach. Hence, the lack of a priori hypotheses about the higher-order organization of its coping strategies could explain these somewhat inconsistent results. Despite their respective strengths and weaknesses, factor analytical studies have nonetheless lent some credence to a hierarchical conceptualization of coping.

A theoretically driven approach has been espoused by proponents of a second stream of research. Specifically, three research groups have developed measures with the

goal of aggregating a series of well-defined coping strategies into a few numbers of second-order dimensions (Ayers, Sandler, West, & Roosa, 1996; Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000; Walker, Smith, Garber, & Van Slyke, 1997). A detailed examination of the conceptual underpinnings and psychometric properties of these instruments goes beyond the scope of this presentation (for reviews see, Connor-Smith et al., 2000; Skinner et al., 2003). Albeit their idiosyncrasies, each research program provided some evidence for a hierarchical conceptualization of the coping construct. In accordance with literature on the COPE Inventory, results of CFAs have shown the acceptability of models encompassing three (Connor-Smith et al., 2000; Walker et al., 1997) or four superfactors of coping (Ayers et al., 1996). Furthermore, it has been shown that the proposed models were superior to a series of alternative two-factor models representing engagement- and disengagement-oriented coping (Ayers et al., 1996; Connor-Smith et al., 2000). Despite their promising features, the validation studies of these frameworks have modeled coping strategies as if they were manifest rather than first-order latent variables. In some situations, a supposedly reliable coping instance can be a poor indicator of its underlying coping strategy. Therefore, the loadings of coping instances on their first-order latent construct (i.e., coping strategies) as well as the loadings of coping strategies on their second-order latent construct (i.e., dimensions of coping) should be simultaneously assessed to provide a thorough evaluation of a hierarchical factor structure. Using this analytical approach, results of Walker et al. (1997) brought marginal support for their hierarchical model of coping. Therefore, hierarchical confirmatory factor analyses (HCFA) are warranted to minimize the likelihood of including unreliable coping instances and undistinguishable pairs of coping strategies into hierarchical frameworks.

TOWARD A HIERARCHICAL FRAMEWORK OF SPORT-RELATED COPING

Sport-related adaptation of instruments such as the COPE Inventory (Carver et al., 1989) and the Ways of Coping Questionnaire (Folkman & Lazarus, 1985) have been used extensively in the sport psychology literature (for a review, see Crocker, Kowalski, & Graham, 1998). To some extent, however, their content validity is questionable as they fail to measure sport-related strategies (e.g., mental imagery, relaxation, thought control, logical analysis, mental distraction) reported frequently in qualitative investigations (e.g., Eklund, 1996; Gould, Finch, & Jackson, 1993).

Based on these limitations, researchers have recently created and validated instruments designed specifically for use in the sport domain. Some instruments have relied on a micro-analytical approach (Kim, Duda, & Ntoumanis, in press; R. E. Smith, Schutz, Smoll, & Ptacek, 1995) whereas others have focused on higher-order dimensions of coping (i.e., macro-analytical approach, see Kowalski & Crocker, 2001; Yoo, 2000). Based on a hierarchical approach, the *Coping Inventory for Competitive Sport* (CICS, Gaudreau & Blondin, 2002) was developed for the assessment of athletes' coping before and during sport competition (see Appendix). Several lines of inquiry (i.e., stress management, psychological skills training, peak performance) and the sport-related qualitative literature of coping were reviewed to maximize its content broadness and situational relevance. Coping instances and strategies were included in the CICS only if they could (1) represent a clearly defined sport-relevant strategy and superfactor, respectively, (2) hold relevance across a wide variety of individual and team sports, (3) remain applicable at each stage of a sport competition, and (4) exhibit conceptual distinctiveness from dispositional, affective, cognitive, motivational, and contextual correlates of coping. Based on these criteria, a model was proposed in which 10 sport-related coping strategies were categorized in three

superfactors representing task-, distraction-, and disengagement-oriented coping (see Table 1).

Research has provided evidence for the suitability of the 10 first-order factor model of the CICS (Gaudreau & Blondin, 2002). Results of CFAs have shown that a 39-item 10-factor model fitted the data reasonably well ($\chi^2_{(652)} = 910.27, p < .001$; CFI = 0.93; NNFI = 0.92; RMSEA = 0.04). The reliability of each subscale was acceptable, with alpha coefficients ranging from 0.67 to 0.87. Moreover, the subscales of the CICS correlated meaningfully with similar constructs from the sport-related adapted COPE (Crocker & Graham, 1995), thus providing evidence of convergent validity. As expected, the subscales of the CICS correlated meaningfully with a series of cognitive, functional, and affective variables. The use of task-oriented strategies was associated positively with perceived relevance of the competition, perceived control, perceived goal attainment, and positive affective state. In contrast, disengagement-oriented strategies correlated positively with negative affective states and cognitive state anxiety, and negatively with perceived goal attainment. Distraction-oriented strategies did not correlate significantly with any of the affective and appraisal variables.

Despite its promising features, the factor structure of the hierarchical framework of the CICS has yet to be tested systematically. Inasmuch as the validation study was conducted with a single sample of athletes, the first-order structure should be cross-validated. Studies on coping have often failed to replicate factor structure across different samples (e.g., Edwards & O'Neill, 1998). The situational nature of coping, the inapplicability of items across domains, an inductive approach to measurement, and the use of exploratory factor analyses have been suggested to interpret these inconsistencies (for a review, see Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001; Skinner et

al., 2003). Another potential caveat is the reliance on heterogeneous samples for the development and validation of coping instruments. To some extent, athletes can be considered as a heterogeneous population varying on a variety of dimensions, one of which being the type of sport that they practice. Several taxonomies have been proposed to categorize sporting activities into meaningful clusters (Breivik, 2000). From psychosocial and methodological perspectives, the distinction between team and individual sports stems out as substantive. Of particular concerns, team sports include interpersonal (i.e., social cohesion) and interdependence dimensions (i.e., task cohesion) that could influence the coping process during competition. Given that team sport participants are nested within teams, this distinction might also produce difficulty in replicating factor structure of instruments designed to assess individual-level processes (Julian, 2001). Considering that the CICS assumes invariance of coping across individual and team sports, this study aimed at replicating and extending its validation by assessing the factorial invariance of the hierarchical framework across two samples of athletes.

COPING ACROSS THE STAGES OF A STRESSFUL ENCOUNTER

The trait- vs. state-like debate on the nature of coping is a crucial concern for its measurement (Schwartz, Neale, Marco, Shiffman, & Stone, 1999; Schwarzer & Schwarzer, 1996). A dispositional approach posits that individuals are using coping actions in a stable manner across time and that their coping responses remain consistent across situations. Hence, tenants of this position have developed generic instruments that are usable, at least hypothetically, across a wide variety of stressful encounters (e.g., Carver et al., 1989; Endler & Parker, 1994). Using these instruments, trait-oriented researchers investigated dispositional coping styles by asking individuals to approximate their general coping efforts. Such an approach contrasts with a situational paradigm in which coping is

conceived as state-like responses to a specific stressful encounter. Proponents of a situational approach have postulated that the use of coping actions should change across life domains as well as across different situations within a given life domain (e.g., Lazarus & Folkman, 1984; Somerfeld, 1997). Considering that stressful encounters can be subdivided in distinctive stages placing different demands on the individuals, it has been assumed that coping actions should change across the stages of an unfolding situation. Based on this latter postulate, this paper examined the consistency of coping strategies across the stages of a stressful situation.

From a methodological standpoint, the trait- and state-like postulates of the dispositional and situational models of coping are ambiguous as they can be operationalized and evaluated in several ways. Recent studies in the field of personality (e.g., Roberts, Caspi, & Moffitt, 2001) have shown that different categories of temporal score consistency (e.g., mean-level, rank-order, individual, and structural) can be used to provide more accurate estimation of consistency or changes in psychological constructs. Hereby, the existent coping literature is reviewed using these four definitions of temporal score consistency.

Mean-level consistency of coping

Researchers have relied mainly on mean-level analyses to assess whether coping changes or remains consistent across stages of stressful situations. Mean-level consistency addresses the normative consistency of coping by examining the extent to which a whole sample of individuals changes from one point to another (Schutz, 1998). For the most part, studies in the health domain (e.g., Carver, Pozo, Harris, Noriega, & et al., 1993; Lowe, Norman, & Bennett, 2000; Sorlie & Sexton, 2001; Stanton & Snider, 1993; Terry & Hynes, 1998) as well as with employees undergoing organizational stress (Fugate, Kinicki,

& Scheck, 2002; Kinicki, Prussia, & McKee-Ryan, 2000) have shown that coping strategies change as a situation unfolds. The magnitude of change varied somewhat across studies and from one coping strategy to another. Yet, results have shown consistently that coping utilization was more frequent in the acute stages surrounding a stressful situation (i.e., before and closely after) than during the follow-up stages in the weeks or months afterward. Of particular importance, these results suggest that coping efforts are more predominant in the preparation and confrontation stages than during stages involving physical recovery. Similarly, researches with samples of college students (e.g., Bolger, 1990; Carver & Scheier, 1994; Folkman & Lazarus, 1985; Raffety, Smith, & Ptacek, 1997) have revealed generally that coping utilization decreased from the preparation stage to the stages following the examination. In some studies, however, coping strategies such as distancing (Bolger, 1990; Folkman & Lazarus, 1985), denial, and behavioral disengagement (Carver & Scheier, 1994) increased substantially ($d > 0.20$) from pre- to post-examination.

Gaudreau and his colleagues (2001) have tested the mean-level consistency of athletes' coping strategies. Results were fairly consistent with studies in the academic domain. Specifically, strategies such as active coping ($d = 0.54$), increased effort ($d = 0.57$), suppression of competing activities ($d = 0.64$), seeking social support ($d = 0.87$), positive reappraisal ($d = 0.33$), and wishful thinking ($d = 0.58$) were used more frequently before a sport competition than during the competition per se. In contrast, behavioral disengagement ($d = 0.74$) was used more frequently during the competitive encounter than during the preparation stage. Overall, this study shed light on the normative changes of coping utilization across stages of a sport competition. Nonetheless, further studies are needed to assess the consistency of the sport-related coping strategies unmeasured in prior

research (i.e., logical analysis, thought control, relaxation, mental imagery, distancing, and mental distraction).

Differential consistency of coping

Estimated with test-retest correlations, differential or rank-order consistency refers to the consistency of individual differences in intra-individual changes (Schutz, 1998). By convention, an arbitrary minimal value of 0.70 (Nunnally & Bernstein, 1994) has been suggested for test-retest stability. A strong test-retest correlation would indicate that individuals tend to maintain the same relative position within a group across measurement points. Proponents of a dispositional approach would predict strong test-retest correlation of coping strategies ($r^2 > 0.50$) whereas weaker correlations would lend credence to the tenets of a situational approach ($r^2 < 0.10$, see Schwartz et al., 1999).

Differential stability has been rarely estimated in research measuring coping across the stages of a stressful situation. In the work domain, Begley (1998) reported six test-retest correlations ranging from 0.38 to 0.71 ($M = 0.40$, $SD = 0.18$) across two stages of an organizational consolidation. Studies investigating coping across stages of a cardiac accident (Van Elderen, Maes, & Dusseldorp, 1999) and terms of a pregnancy (Levy-Shiff, Dimitrovsky, Shulman, & Har-Even, 1998; Yali & Lobel, 2002), have reported 11 test-retest correlations ranging from 0.21 to 0.74 ($M = 0.55$, $SD = 0.18$). On average, Sorlie and Sexton (2001) have indicated that the rank-order consistency of coping was lower (test-retest ranged from 0.36 to 0.52) during the days surrounding a surgery (i.e., preparation and days after) than during the subsequent months following discharge from hospital (test-retest ranged from 0.54 to 0.74). Similar findings were reported in the academic domain (Carver & Scheier, 1994), with lower consistency of coping across the preparation and the post-examination stages than across the two post-examination stages (i.e., post-examination

versus post-grade posting). In the first set of associations, the test-retest correlations of social support, turning to religion, and use of alcohol/drug were moderately high (average $r = 0.70$) whereas those of the remaining coping strategies ranged from 0.29 to 0.57, with an average correlation of 0.47. In the second set of associations, all but one correlations exceeded 0.50 (i.e., behavioral disengagement, $r = 0.39$), with an average correlation of 0.66.

In the sport domain, a study by Gaudreau and his colleagues (2001) suggested that athletes did not maintain the same relative position in their group before and during sport competition. Specifically, the correlations of venting of emotions, humour, behavioral disengagement, and increased effort were smaller than 0.40 whereas those of the remaining coping strategies ranged from 0.44 to 0.56. Although providing some support for the changing properties of coping, these results should be interpreted cautiously. Test-retest correlations, as any other correlation coefficients, are attenuated by the reliability of the variables (Fan, 2003). Given that coping scores contained unaccounted measurement error, their differential consistency may have been substantially underestimated. Longitudinal confirmatory factor analyses (LCFA) can provide unbiased estimation of differential consistency by separating the variance of a latent construct into unique (i.e., error) and common (i.e. true score) components (Schutz, 1998). Of particular interest, Conroy and his colleagues (2003) reported that test-retest correlations underestimated the differential stability of latent constructs by approximately 10%. Similarly, Yali and Lobel (2002) tested the differential consistency of coping from early- to mid-pregnancy. Results of LCFAs provided evidence for the differential consistency of coping, while the test-retest correlations underestimated the differential consistency of latent constructs by an average

of 13%. Clearly, future research should use LCFAs to provide unbiased estimate of coping differential consistency across stages of a sport competition.

Individual-level consistency of coping

Albeit routinely reported in the coping literature, mean-level and differential indices of consistency provide little information on the direction and magnitude of change at an individual-level (Roberts et al., 2001; Vaidya, Gray, Haig, & Watson, 2002). In prior literature, statistically significant mean-level changes in coping utilization may have been caused by a minority of individuals whose magnitude of change was substantial. Likewise, the low to moderate levels of rank-order consistency of coping strategies provided little indication on how many individuals changed substantially across measurement points.

Change at an individual-level has not been investigated systematically in coping research. In recent years, longitudinal researches on personality have relied on the Reliable Change Index (RCI, Christensen & Mendoza, 1986), which estimates whether the change score of each individual on a particular variable exceeds what could be attributed to measurement error (e.g., Roberts et al., 2001; Vaidya et al., 2002). Using their RCI, participants can be classified as having increased, stayed the same, or decreased on a personality dimension across two measurement points. Results of a study (Vaidya et al., 2002), in which scores on negative affect displayed moderate rank-order stability and a substantial mean-level change, have nonetheless indicated that a majority of the young adults did not change reliably over a 2.5-year period. Despite moderate group-level changes in personality, results of the RCI analyses have shown that only a small percent of individuals changed reliably across waves. Whether the same conclusion would apply to the use of coping strategies across stages of a stressful encounter is an issue that deserves further exploration.

Structural consistency of coping strategies

The coping construct is operationalized with a series of latent variables measured with multiple indicators each representing a specific coping action. A serious threat to the validity of studies assessing differential and mean-level consistency stems from the possibility that a particular coping instance can be a reliable indicator of an underlying coping strategy at one point in time (or in a given situation), while being unrelated to that coping strategy at other ones. *Structural consistency*, also called longitudinal factorial invariance, includes a set of prerequisites ensuring the reliable comparison of individuals' score on a latent variable across measurement points. Hence, reliable estimation of mean-level, differential, and individual-level consistency of coping strategies depends on the capacity to demonstrate their *configural*, *metric*, and *scalar* invariance across the stages of a stressful encounter.

Limited empirical attention has been accorded to the consistency of coping structure across measurement points. Yet, the increasingly stringent prerequisites of *configural*, *metric*, and *scalar* invariance can be tested easily within the confines of hierarchically nested LCFAAs (Vandenberg & Lance, 2000). First, *configural invariance*, a prerequisite of metric and scalar invariance, requires that a coping strategy be measured by a consistent set of indicators across the stages of a stressful encounter. In other words, each indicator or coping instance should load significantly on its underlying coping strategy at each wave. In prior studies, it has been shown that a coping instance can be applicable at a given stage of a stressful encounter, while being inapplicable at others (Ben-Porath, Waller, & Butcher, 1991). Also, results of an exploratory factor analytical study indicated that some coping strategies can load on different superfactors of coping across waves (Stewart & Schwarzer, 1996). Hence, configural invariance should be tested beforehand as the organizational

structure of coping may change qualitatively across measurement points. Second, *metric or weak invariance* evaluates whether the strength of factor loadings can be assumed equivalent across waves. Establishing that a majority of factor loadings are longitudinally invariant ensures that a coping strategy holds equivalent psychological meaning across measurement points. In a study using LCFAs (Zautra et al., 1996), it has been shown that factor loadings of disengagement-oriented coping were non-invariant across a five-month interval. Based on these results, metric invariance of coping should not be taken for granted in longitudinal coping research. Finally, *scalar or strong invariance*, corresponds to the longitudinal equivalence in a manifest variable's score when its underlying latent construct is set to zero (i.e., intercept). Demonstrating that a majority of intercepts are invariant signifies that measurement biases are longitudinally consistent (Vandenberg & Lance, 2000). Specifically, scalar invariance overrules the possibility that changes in coping reflect measurement error and unsystematic biases rather than changes in true scores. Therefore, achievement of a strong factorial invariance is a minimal prerequisite for reliable estimation of mean-level and differential consistency.

In prior performance-related research on coping (e.g., Carver & Scheier, 1994; Gaudreau et al., 2001), no provision was made for the possibility that the basic structure (i.e., configural) or the parameter estimates (i.e., loadings and intercepts) of coping strategies could change across the stages of stressful situation. At best, these prior results remain ambiguous as they failed to demonstrate that the mean-level and differential inconsistency were due to true changes in coping scores rather than to non-invariance of measurement instruments. Insofar as test-retest correlations are attenuated by measurement error (Fan, 2003), prior research may have underestimated the true differential consistency of coping strategies. Along with expending the validation of the CICS, this paper may

contribute to the literature by examining the consistency of coping across two stages of a stressful competition within the confines of LCFAs. Given that the CICS was created specifically for the assessment of athletes' coping strategies before and during sport competition, it was expected that each coping strategy would display configural, metric, and scalar invariance across measurement points.

STUDY 1

This paper reports two studies designed to evaluate the construct validity of the CICS. Study 1 examined the construct validity of the instrument with data collected on samples of athletes from individual and team sports. A first goal was to reexamine the suitability of the hypothesized first-order factor structure of the CICS. Given that the CICS was developed for the study of athletes participating in team and individual sports, its first-order factor structure and parameter estimates were expected to be invariant across the samples. A second goal was to examine the suitability of the hierarchical model of the CICS. Based on empirical evidences (Compas et al., 2001; Hasking & Oei, 2002; Walker et al., 1997) and hypotheses underlying the development of the CICS, most particularly, it was hypothesized that a model with three superfactors would fit the data better than an alternative bidimensional model (e.g., engagement vs. disengagement). An additional goal involved the demonstration of measurement invariance across individual and team sports. Specifically, the hierarchical model was expected to provide reasonable fit in both samples (i.e., configural invariance) as well as evidences for the between-group equivalence of second-order factor loadings (i.e., metric invariance) and factors' covariance (i.e., structural invariance).

Prior studies in the sport domain have failed to find strong correlations between coping and absolute indices of sport performance (Finch, 1994; Haney & Long, 1995). A

major part of inter-individual differences in absolute sport performance is determined by physical, biomechanical, technical, and tactical factors (Starkes & Ericsson, 2003) that cannot be overcome by the utilization of effective coping strategies. Nevertheless, it has been suggested that coping may explain why some athletes attain their goals whereas others fail to perform to the best of their capacities (Cerin, Szabo, Hunt, & Williams, 2000; Gaudreau, Blondin, & Lapierre, 2002). Albeit sparse, empirical evidences have lent credence for this postulate by showing that coping strategies correlated with objective (Gaudreau et al., 2002) and subjective indices of goal attainment (Amiot, Gaudreau, & Blanchard, in press; Gaudreau & Blondin, 2002). A third goal of this study was to assess the concurrent associations of coping strategies and coping dimensions with self-reported goal attainment indices. Individuals in achievement-related domains can use distinctive, yet interrelated, criteria to evaluate the extent to which they are successful in a particular situation (Elliot & McGregor, 2001; Harwood, Hardy, & Swain, 2000). Specifically, they can evaluate whether their goal has been attained by comparing their performance with the requirements of the task itself (mastery-oriented), with their habitual level of achievement (self-referenced), and with the performance of others (normative-oriented). Previous literature on coping have overlooked these fundamental distinctions by relying on unidimensional indices of goal attainment. Using a newly developed instrument allowing the measurement of mastery, self-referenced, and normative goal attainment (Gaudreau, Amiot, & Blanchard, 2003), it was expected that each of the goal attainment factors would correlate positively with task-oriented coping, negatively with disengagement-oriented coping, and non-significantly with distraction-oriented coping. An additional goal was to examine the invariance of these relationships across samples of individual and team sports. Given their exploratory nature, no specific hypothesis was set concerning these analyses.

Method

Participants

Sample 1 : Individual sports

Three hundred and twenty-eight athletes (65% male) ranging from 14 to 68 years of age ($M = 22.06$, $SD = 10.16$) participated in this study. On average, they have been competing in their sport for 11 years ($SD = 9.06$) and were training 11.50 hours weekly ($SD = 7.27$). They were competing in swimming (7%), tennis (5%), badminton (12%), alpine skiing (20%), golf (27%), track and field (13%), freestyle skiing (5%), snowboard (4%), figure skating (4%), and other sports (3%; diving, judo, karate, equestrian sport). They were participating in regional (28%), provincial (52%), and national (20%) levels of competition.

Sample 2 : Team sports

Three-hundred and fifty-three athletes (57% male) ranging from 14 to 47 years of age ($M = 19.03$, $SD = 4.97$) participated in this study. On average, they have been competing in their sport for 8.30 years ($SD = 4.17$) and were training 7.70 hours weekly ($SD = 5.50$). They were competing in basketball (32%), hockey (19%), baseball (9%), soccer (24%), and volleyball (16%). They were participating in regional (46%), provincial (50%), and national (4%) levels of competition.

Measures

Coping

Coping was assessed using the French version of the CICS (Gaudreau & Blondin, 2002), which contains nine four-item and one three-item subscales. All items were rated on a five-point Likert-type scale from 1 (*does not correspond at all*) to 5 (*corresponds very strongly*). Descriptive statistics and reliability estimates are displayed in Table 2.

Goal attainment

The French version of the *Attainment of Sport Achievement Goals Scale* (A-SAGS, Gaudreau et al., 2003) was used to assess goal attainment. This questionnaire consists of three four-item subscales representing distinct, yet interrelated, criteria of goal attainment : mastery (“I mastered the difficulties of the situation”), self-referenced (“I did better than my usual performances”), and normative (“I outperformed other athletes”). Each item was rated on a 7-point Likert-type scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds completely*). Results of CFAs provided evidence for the validity of an oblique three-factor model as well as for its superiority over competing unidimensional and bidimensional models (Gaudreau et al., 2003). Cronbach’s alphas ranged between 0.86 and 0.91. Each goal attainment factor correlated meaningfully with objective indices of goal attainment (Gaudreau & Blondin, 2003). Overall, these results have provided evidence for the factorial and convergent validity of the A-SAGS. Descriptive statistics and reliability estimates are displayed in Table 2.

Procedure

Contacted through athletic directors and coaches, athletes were invited to participate in a study on emotional experience during sport competition. Athletes were informed that they were free to participate or not in the study. A strong emphasis was put on confidentiality and participants were asked not to write their names on the questionnaire. All participants signed an informed consent agreement. Questionnaires were completed retrospectively in small groups of five to fifteen athletes during the first practice session after an important competition under the supervision of a research assistant. The elapsed time between the end of the competition and the completion of the questionnaire ranged from 12 to 96 hours. When completing the CICS, participants indicated the extent to which

the items represented the things they had done or thought during the competition. For the A-SAGS, athletes indicated the extent to which the items represented how they performed during the competition.

Analytical strategy

The factorial and concurrent validity of the CICS was tested within the confines of structural equation modeling. Firstly, a series of CFAs was performed independently on the samples of athletes from individual and team sports to assess the suitability of a 10-factor first-order model. These analyses allowed the identification of misspecifications and the respecification of the models. To avoid capitalizing on chance, respecifications were allowed if their modification indices were highly significant ($LM\chi^2, p < .01$) in both samples and if a substantive theoretical/conceptual rationale could be given. These analyses were followed by multiple-sample CFAs in which the configural, metric (i.e., first-order loadings), and structural invariance (i.e., factors' variance and covariances) were tested progressively. Secondly, a series of HCFAs was performed to assess the suitability of the hypothesized hierarchical model of the CICS (see Table 1). Model respecifications were allowed as per the first-order CFAs. These analyses were followed by multiple-sample HCFAs in which the configural, the metric (i.e., first- and second-order loadings), and the structural invariance (i.e., second-order factors' covariances) were tested progressively. Finally, based on the approach described by Marsh and Jackson (1999), a series of multiple-sample CFAs and HCFAs was performed to assess whether the covariances between the coping (i.e., strategies and superfactors) and the goal attainment latent variables were invariant across samples of athletes participating in individual and team sports.

CFAs and HCFAs were performed using EQS 5.7 (Bentler, 1995) with Maximum Likelihood estimates derived from a covariance matrix. The models were evaluated using the chi-square statistic (i.e., exact fit) as well as with relative (CFI and NNFI), absolute (RMSEA and RMSEA 90% CI), and second-order fit indices (Target Coefficient, Marsh, 1987). Because the value of the chi-square statistic increases with sample size and model complexity, the models were not expected to yield non-significant chi-square. Consequently, model fit was documented with the CFI, NNFI, and RMSEA. Simulation studies have provided cutoff guidelines for the evaluation of model fit (Browne & Cudeck, 1993; Hu & Bentler, 1999). Values of .90 and higher for the CFI and NNFI indicate acceptable fit of the model, whereas values of .95 and higher denote a relatively good fit. Values smaller than .08 for the RMSEA suggest acceptable fit of the model whereas values smaller than .05 indicate a relatively good fit. Despite the usefulness of these cutoff criteria, statisticians have urged researchers to use them cautiously and to evaluate relative fit in light of the results of CFAs performed on similar measurement instruments (Bollen, 1989). Coping instruments have generally failed to provide a “so called” relatively good fit. Hence, values above 0.90 would be interpreted as indicative of a reasonable approximation of the data. Based on the argument that fit indices are imprecise estimate of “true” model fit in the population, MacCallum, Browne, and Sugawara (1996) have urged researchers to evaluate the close fit ($RMSEA < .05$) and not-close fit hypotheses ($RMSEA > .08$) using the RMSEA 90% confidence interval. A strong weight was given to RMSEA 90% CI in evaluating the models. When the upper bound of the RMSEA 90% CI was below .05, the not-close fit hypothesis was rejected and the close fit of the model was assumed. In contrast, when the RMSEA 90% CI straddled .05, the not-close fit hypothesis was not ruled out and the close fit of the model could not be assumed. Finally, Marsh

(1987) proposed the Target Coefficient (TC_1) as an index of fit of the second-order components of hierarchical factor models. The TC_1 , which ranges from 0 to 1, provides an estimate of the amount of first-order factors covariance explained by the second-order factors. Values of 0.90 and higher were taken to suggest the reasonable fit of hierarchical models.

As suggested by Vandenberg and Lance (2000), the difference in chi-square statistics ($\Delta\chi^2$) and CFI values (ΔCFI) were used to assess factorial invariance across samples. Considering the high power associated with the $\Delta\chi^2$ statistic, either a ΔCFI of at least -.002 or a stringent significant $\Delta\chi^2$ ($p < .01$) had to be observed to warrant suspicion about the rejection of the null hypothesis of invariance. Although more conservative than the suggested cutoff of ΔCFI -.010 (Cheung & Rensvold, 2002), the current decisional rule was deemed more appropriate given the large number of parameters constrained to equality across the samples. Given evidence of non-invariance, the $LM\chi^2$ were examined to locate the parameter(s) accountable for the significant decrement in model fit. To avoid capitalizing on chance, equality constraints were released only if their corresponding $LM\chi^2$ were highly significant ($p < .01$).

Results and discussion

Data screening

Ten participants from individual sports and 34 participants from team sports have failed to complete more than five items of the CICS and were excluded from subsequent analyses. Sixteen participants from individual sports and 23 participants from team sports have failed to complete an item of the CICS. Considering that these latter missing values were scattered throughout the variables, they were imputed with their respective sample mean. Using the Mahalanobis distance critical value for 39 variables ($\chi^2_{(39)} = 72.06$, $p <$

.001), nine and 14 multivariate outliers were respectively identified in the individual and team sports samples. Results of a series of ANOVAs have shown that multivariate outliers have scored higher than the remaining participants on a series of items representing task-, distraction-, and disengagement-oriented coping. Nonetheless, such a pattern of responses was consistent with an empirically derived cluster of individuals who are using all forms of coping strategies to a larger extent than other individuals (Gaudreau & Blondin, in press; Losiak, 2001; C. A. Smith & Wallston, 1996). Hence, these athletes were clearly a part of the population that we intended to sample. Moreover, none of the multivariate outliers have completed the CICS with a systematic response pattern. Subsequent analyses were performed on samples of 318 and 319 athletes from individual and team sports, respectively.

Distribution of the CICS items

The Mardia's coefficient of multivariate kurtosis was 143.92 (normalized coefficient = 22.69) and 190.73 (normalized coefficient = 30.12) for the individual and team sports samples, respectively. Assuming the multivariate non-normality of the data, the Satorra-Bentler rescaled chi-square statistic, the robust CFI (RCFI), and the robust standard errors of parameter estimates were preferred to their uncorrected counterparts¹. These corrections were tenable because items did not display severe univariate nonnormality (Curran, West, & Finch, 1996).

First-order CFAs

Hypothesized first-order model

Based on exact fit indices (i.e., chi-square statistic), the model was rejected in both samples (see model 1 in Table 3). Nonetheless, the relative fit indices have attained their minimal cutoff of acceptability (RCFI & NNFI > 0.90) and the RMSEA estimate suggested

that the model provided a close fit to the data ($RMSEA < 0.05$). However, the upper bound of the RMSEA 90% CI was slightly above 0.05 which suggested that the hypothesis of not-close fit (i.e., $RMSEA > .08$) could not be ruled out in both samples.

Model respecification

Although the hypothesized model provided a reasonable approximation of the data, modification indices suggested that four pairs of uniquenesses could correlate freely in both samples. These correlated uniquenesses were tenable as they were embedded within the same coping strategy and because they generalized across both samples ($LM\chi^2 > 8.72, ps < .01$).

Based on exact fit indices, the revised first-order model was rejected (see model 2 in Table 3). Compared with the hypothesized model, it yielded a significant improvement in exact fit for the samples of individual ($\Delta\chi^2 = 59.65, \Delta df = 4, p < .01$) and team sports ($\Delta\chi^2 = 46.28, \Delta df = 4, p < .01$). The relative fit indices and the RMSEA estimate have attained their minimal cutoff of acceptability. Furthermore, the entire RMSEA 90% CI was below 0.05, thus ruling out the hypothesis of not-close fit in both samples. This model was retained as the best fitting first-order model in both samples.

The standardized factor loadings ranged from 0.36 to 0.91 ($M = 0.68, SD = 0.12$) in individual sports and from 0.28 to 0.86 in team sports ($M = 0.70, SD = 0.11$). Only three loadings were smaller than 0.50 in both samples (i.e., item 3, distancing; item 6, thought control; item 19, logical analysis). As they were designed specifically for the assessment of their underlying construct and did not cross-load on other factors, these items were retained in subsequent analyses. Standardized inter-scale covariances (see Table 4) suggested that the 10 coping strategies could be regrouped into superfactors, as hypothesized by the hierarchical framework of the CICS (see Table 1). Nonetheless, examination of these

covariances revealed that mental imagery, thought control, and logical analysis correlated strongly with each other ($r > 0.80$). In an alternative 8-factor model, the items from these coping strategies were set to load on a single factor. This model yielded a reasonable fit to the data in individual ($\chi^2_{(670)} = 1136.52$, $SB\chi^2_{(670)} = 1021.75$, $ps < .001$, CFI = .909, Robust CFI = .924, NNFI = .900, RMSEA = .047, RMSEA 90% CI = .042, .051) and team sports ($\chi^2_{(670)} = 1156.70$, $SB\chi^2_{(670)} = 1005.90$, $ps < .001$, CFI = .913, Robust CFI = .930, NNFI = .903, RMSEA = .048, RMSEA 90% CI = .043, .052). Compared to the revised 10-factor model, this alternative model produced a significant increment in exact fit (individual $\Delta\chi^2 = 91.09$, $\Delta df = 17$, $p < .01$; team $\Delta\chi^2 = 89.05$, $\Delta df = 17$, $p < .01$) and a substantial decrement in CFI (individual $\Delta CFI = -0.015$; team $\Delta CFI = -0.012$). Based on RMSEA 90% CI, this model failed to reject the hypothesis of not-close fit. From a conceptual perspective, mental imagery, thought control, and logical analysis have been conceived as separate strategies (e.g., Hardy et al., 1996; Murphy & Tammen, 1998) and were distinguished empirically in prior research on sport-related psychological skills (e.g., Durand-Bush, Salmela, & Green-Demers, 2001; Thomas, Murphy, & Hardy, 1999). In operational terms, the CICS conceives these strategies as distinct, yet correlated, first-order constructs representing a superfactor of task-oriented coping. Given that their high inter-scale correlations was deemed empirically and conceptually tenable, the revised 10-factor model was preferred to an alternative 8-factor model.

Measurement invariance of the revised 10-factor first-order model

A series hierarchically nested models were tested to examine factorial invariance across individual and team sports. As shown in Table 5, the baseline multiple-sample model provided an acceptable fit. Constraining the first-order loadings (see model 2 in Table 5) and the factors' variance (see model 3 in Table 5) to equality across the samples

did not produce a significant decrement in fit whereas constraining the 45 factors covariances (see model 4 in Table 5) produced a significant increase in chi-square ($p < .01$) and a substantial decrement in relative fit ($\Delta\text{CFI} > -.002$). Modification indices suggested the non-invariance of the covariances between distancing and venting of unpleasant emotions ($\text{LM}\chi^2 = 9.99, p < .01$) and between venting of unpleasant emotions and relaxation ($\text{LM}\chi^2 = 9.27, p < .01$). A partial invariance model (see model 4b in Table 5) failed to reject the null hypothesis of invariance with a non-significant $\Delta\chi^2$ ($p > .05$) and a ΔCFI below -0.02 . This result indicated that 43 out of 45 factor covariances could be assumed invariant across individual and team sports. Modification indices suggested that five other covariances could be considered as marginally non-invariant across samples ($p < .05$, see Table 4).

Hierarchical confirmatory factor analyses (HCFA)

Specification and identification of the hierarchical model

HCFA often yield technical (e.g., negative disturbances of first-order factor) and identification problems that can produce biased parameter estimates (Marsh, 1987). Identification problems² occurred because only two first-order constructs represented the superfactors of distraction- and disengagement-oriented coping (Bollen, 1989). This difficulty could have been resolved by modifying the conceptual model of the CICS to include at least three first-order constructs to define each second-order factor. The CICS was developed through a review of the sport-related coping literature. It measures a series of homogeneous and mutually exclusive strategies that are applicable at each stage of a competition. Post hoc addition of non-sport relevant or psychometrically weak coping strategies would unlikely improve the CICS conceptually nor statistically. Therefore, we resisted modifying its first-order conceptual core for the sole purpose of ensuring

identification in HCFAs. Pairs of factor loadings and disturbances can be constrained to equality or set to a predetermined value to ensure the local identification of second-order latent variable (Bentler, 1995; Bollen, 1989; Marsh, 1987). In this study, mental distraction and distancing were constrained to load equally on distraction-oriented coping whereas venting of unpleasant emotions and disengagement/resignation were constrained to load equally on disengagement-oriented coping. These equality constraints have not biased subsequent evaluation of HCFAs as their associated modification indices were non-significant in both individual and team sport samples ($LM\chi^2 < 4.81, ps > .01$).

Hypothesized model with three second-order factors

Based on exact fit indices, the hypothesized hierarchical model was rejected in both samples (see model 4 in Table 3). Moreover, the relative fit indices and the RMSEA estimate have failed to attain their minimal cutoff of acceptability. Despite that all second-order factor loadings were highly significant ($p < .01$), the TC_1 indicated that only 84 and 86% of the covariance among the first-order factors was explained by the second-order factors in the samples of individual and team sports, respectively. Overall, this model provided a marginal representation of the data.

Model respecification

In both samples, modifications indices suggested that effort expenditure could cross-load on disengagement-oriented coping ($LM\chi^2 > 39.83, ps < .01$) whereas seeking support could cross-load on distraction-oriented coping ($LM\chi^2 > 15.43, ps < .01$). These post hoc modifications were tenable empirically as they generalized across samples. From a conceptual standpoint, disengagement-oriented coping represents actions through which athletes disengage from the task whereas effort expenditure involves the mobilisation of one's physical and mental resources to act directly on the demands of the situation. Hence,

it seems tenable that effort expenditure could cross-load negatively on disengagement-oriented coping because it might prevent athletes from disengaging themselves from the task at hand. Additionally, distraction-oriented coping consists of actions through which athletes redirect their attention on mental activities and external stimuli unrelated to the task at hand. Whether talking to other people can furnish sporadic episode of mental distraction, social supporters can also provide advice and feedback usable to enhance the probability of bringing about a desired outcome. As a result, it seems tenable that seeking support could cross-load positively on distraction-oriented coping.

Based on exact fit indices, the revised second-order model was rejected (see model 5 in Table 3). Compared with the hypothesized model, this revised model yielded a significant improvement in exact fit for the samples of individual ($\Delta\chi^2 = 67.30$, $\Delta df = 2$, $p < .01$) and team sports ($\Delta\chi^2 = 71.18$, $\Delta df = 2$, $p < .01$). The relative fit indices have attained (RCFI > 0.90) or approached (NNFI $\cong 0.90$) their minimal cutoff of acceptability and the RMSEA estimate suggested that the model represented a close fit to the data in both samples. Furthermore, the TC₁ indicated that 89 and 91% of the covariance among the first-order factors was explained by the second-order factors in the samples of individual and team sports, respectively. Nonetheless, the upper bound of the RMSEA 90% CI was slightly above 0.05, thus suggesting that the hypothesis of not-close fit could not be ruled out in both samples. Given the acceptable values of relative fit indices and point estimate of RMSEA, and because the upper bound of the RMSEA 90% CI departed clearly from a threshold of mediocre fit (RMSEA > 0.08), these evidences were taken to suggest that the model provided a reasonable fit to the data.

All second-order factor loadings were significant ($p < .01$) and their standardized estimated ranged from -0.42 to 0.97 ($M = |0.66|$, $SD = 0.24$) for individual sports and from

-0.37 to 0.97 for team sports ($M = |0.66|$, $SD = 0.24$). As expected, the three second-order factors were not orthogonal with disengagement-oriented coping correlating negatively with task-oriented coping (individual = -0.17; team = -0.13) and positively with distraction-oriented coping (individual = 0.49; team = 0.56), and task-oriented coping correlating positively with distraction-oriented coping (individual and team = 0.78).

Finally, it has been shown that the fit of the revised hierarchical model was inferior to the fit of the revised first-order model in samples of individual ($\Delta\chi^2 = 132.95$, $\Delta df = 33$, $p < .01$) and team sports ($\Delta\chi^2 = 108.46$, $\Delta df = 33$, $p < .01$). Nonetheless, the revised hierarchical model, though slightly inferior on purely statistical grounds, produced substantive parameter estimates as well as acceptable indices of relative and absolute fit. Furthermore, the 12 second-order factor loadings of the hierarchical model provided a reasonable account of the covariances between the first-order factors. Given the superior fit of the first-order model and the gain in parsimony of the hierarchical model, both models were deemed acceptable with samples of athletes from individual and team sports.

Ancillary HCFAs of competing models

Alternative model with two second-order factors. An alternative model was tested in which distraction- and disengagement-oriented coping strategies loaded on a single superfactor of coping. This model yielded poor fit to the data in individual ($\chi^2_{(688)} = 1365.46$, $SB\chi^2_{(688)} = 1224.31$, $ps < .001$, CFI = .868, Robust CFI = .885, NNFI = .858, RMSEA = .056, RMSEA 90% CI = .051, .060) and team sports ($\chi^2_{(688)} = 1372.67$, $SB\chi^2_{(688)} = 1204.44$, $ps < .001$, CFI = .877, Robust CFI = .893, NNFI = .867, RMSEA = .056, RMSEA 90% CI = .052, .060). The standardized second-order loadings of venting of unpleasant emotions (individual = 0.65; team = 0.50) and disengagement/resignation (individual = 0.95; team = 0.93) were substantially higher than those of distancing

(individual = 0.25; team = 0.46) and mental distraction (individual = 0.36; team = 0.56). Furthermore, the disturbances of distancing and mental distraction could correlate freely in both samples ($LM\chi^2 > 14.67$, $ps < .01$). Distraction- and disengagement-oriented coping strategies should be modelled separately as a more global factor encompassing them failed to account adequately for their conceptual distinctiveness.

Alternative model with four second-order factors. Based on prior studies (e.g., Connor-Smith et al., 2000; Zautra et al., 1996), task-oriented coping strategies were divided in two superfactors representing primary- (thought control, mental imagery, effort expenditure, and logical analysis) and secondary-engagement (i.e., relaxation and seeking support). This model yielded a reasonable fit to the data in individual ($\chi^2_{(686)} = 1213.03$, $SB\chi^2_{(686)} = 1086.91$, $ps < .001$, CFI = .898, Robust CFI = .914, NNFI = .889, RMSEA = .049, RMSEA 90% CI = .045, .054) and team sports ($\chi^2_{(686)} = 1218.68$, $SB\chi^2_{(686)} = 1060.52$, $ps < .001$, CFI = .904, Robust CFI = .922, NNFI = .897, RMSEA = .050, RMSEA 90% CI = .045, .054). However, the standardized covariance between primary- and secondary-engagement coping was extremely high in both samples ($r > 0.90$). To the extent that these two superfactors are highly interdependent, their underlying coping strategies could be clustered into a global superfactor representing task-oriented coping. Based on the rule of parsimony described by Marsh (1987), the revised hierarchical model with three superfactors (see model 5 in Table 3) was preferred because it provided comparable fit indices, while being more grounded with the underlying a priori tenets of the CICS.

Measurement invariance of the revised second-order model

A series of invariance tests was performed to determine whether the revised hierarchical model was invariant across individual and team sports³. As shown in Table 6, the baseline multiple-sample hierarchical model provided an acceptable fit. As illustrated

in the invariance tests performed on the revised first-order model (see Table 5), constraining the first-order loadings to equality across samples (see model 2 in Table 6) did not produce a significant decrement in fit. Furthermore, equality constraints imposed on the 12 second-order factor loadings (see model 3 in Table 6) and on the three second-order factors' covariances did not produce a significant decrement in fit (see model 4 in Table 6). Hence, these parameters could be assumed invariant across samples of individual and team sports. Table 7 presents the standardized second-order factor loadings and covariances derived from this model.

Concurrent validity : Associations with goal attainment indices

First-order model : Coping strategies and goal attainment indices

Hypothesized 13-factor model. A 13-factor model, with 10 first-order coping factors and three goal attainment factors, was evaluated separately for samples of individual and team sports. This model was fitted to assess the concurrent relationships of coping strategies with goal attainment indices. Based on exact fit indices, the model was rejected (see model 1 in Table 8). Nonetheless, the relative fit indices and the RMSEA estimate have attained their minimal cutoff of acceptability and the upper bound of the RMSEA 90% CI suggested that the hypothesis of not-close fit could be ruled out in both samples.

Respecification. A substantive modification index indicated that an item representing mastery goal attainment (item 4 “provided a quality effort”) could cross-load on the effort expenditure coping strategy in both samples ($LM\chi^2 > 21.56, ps < .01$). This problematic item was discarded from subsequent analyses to avoid inflating artificially the covariances between coping strategies and mastery goal attainment. In a revised model (see model 2 in Table 8), the standardized factor loadings ranged between 0.65 and 0.94 in

individual sports ($M = 0.81$, $SD = 0.09$) and between 0.69 and 0.90 in team sports ($M = 0.81$, $SD = 0.08$)⁴.

Invariance of the revised 13-factor model. A series of invariance tests was performed to determine whether relationships between coping strategies and goal attainment indices were invariant across individual and team sports. Based on prior analyses showing the partial invariance of the revised first-order model of the CICS (see model 4b in Table 5), the factor loadings of all coping items, the factor variance of all coping strategies, and 43 of the 45 covariances of coping strategies were constrained to equality across samples. Neither the factor loadings of goal attainment items or the variance/covariance of goal attainment factors were constrained to equality. As shown in Table 8 (see model 3), the baseline multiple-sample 13-factor model provided an acceptable fit. Considering that the main purpose of this analysis was to assess the invariance of the coping-goal attainment relationships, the 30 covariances between the coping and goal attainment factors were constrained to equality across the samples. On a whole, these equality constraints led to a significant increment in chi-square statistics (see model 4 in Table 8). However, the difference in relative fit was small ($\Delta CFI = -.001$) and none of the modification indices pertaining to the coping – goal attainment covariances were significant at $p < .01$. Although the modification indices of the covariances of effort expenditure with mastery goal attainment ($LM\chi^2 = 6.63$, $p = .01$), distancing with mastery goal attainment ($LM\chi^2 = 6.10$, $p = .014$), and venting of unpleasant emotions with normative goal attainment ($LM\chi^2 = 5.58$, $p = .018$) were marginally significant, these three covariances were nonetheless assumed invariant across the samples. These standardized covariances are presented in Table 9.

Hierarchical model : Coping dimensions and goal attainment indices.

Invariance of the 6-factor model. A multiple-sample HCFAs with three second-order factors of coping and three factors of goal attainment was tested. Based on prior analyses showing the invariance of the revised hierarchical model of the CICS (see model 4 in Table 6), the first- and second-order factor loadings of coping and the second-order factors' covariances were constrained to equality across samples⁵. Neither the factor loadings of goal attainment items or the variance/covariance of goal attainment factors were constrained to equality. As shown in Table 8 (see model 5), the baseline multiple-sample 6-factor model provided an acceptable fit. Considering that the main purpose of this analysis was to assess the invariance of the coping-goal attainment relationships, their nine covariances were constrained to equality across samples. Results indicated that these equality constraints did not produce a significant decrement in model fit (see model 6 in Table 8). Hence, the relationships between superfactors of coping and goal attainment factors could be assumed invariant across samples. These standardized covariances are presented in Table 9.

STUDY 2

The CICS was developed for the assessment of sport-related coping before and during sport competition. Using data collected across two stages of a sport competition, this study revisited the trait- vs. state-like controversy on the nature of coping (e.g., Schwartz et al., 1999; Somerfeld, 1997). As a first goal, it was expected that each of the 10 coping strategies would display configural, metric, and scalar invariance across waves. In order to take full advantage of the time-structured nature of the data, a second goal was to investigate the mean-level and differential consistency of each coping strategy within the confines of LCFAs (Vandenberg & Lance, 2000). Based on a prior study in the sport

domain (Gaudreau et al., 2001), it was expected that the use of task-oriented coping strategies would decrease whereas the use of disengagement-oriented coping strategies would increase from pre-competition to the competition per se. Because test-retest correlations may have underestimated the “true” differential consistency of coping (Fan, 2003), it was hypothesized that latent factors of coping would display higher rank-order consistency coefficients than what was shown in prior studies. On one hand, a dispositional approach would receive support if coping utilization shared as much as 50% of variance across waves. On the other hand, a situational approach would receive support if coping utilization shared less than 10% of variance across waves (see Schwartz et al., 1999). A final goal was to complement the group-level statistics with an individual-level analysis examining the proportion of athletes displaying substantial changes across the stages of the competition (Roberts et al., 2001). Given the small to moderate effect sizes in prior literature and the low to moderate rank-order consistency of coping, we hypothesized that a modest, yet significant, percentage of athletes would reliably change across the stages of the competition.

Method

Participants

Three hundred and fifty-nine athletes (49% male) ranging from 14 to 28 years of age ($M = 17.85$, $SD = 3.10$) participated in this study. On average, they have been competing in their sport for 7 years ($SD = 3.79$). They were competing in team sports (81%) like basketball (21%), soccer (23%), hockey (17%), volleyball (16%), broom ball (4%), and individual sports (19%) like swimming (3%), tennis (4%), badminton (6%), and mogul skiing (6%). They were participating in regional (32%), provincial (62%), and national (7%) levels of competition.

Of these participants, 38 (10.6%) failed to complete the questionnaire at Time 2. Results of attrition analyses showed that these nonparticipants were significantly younger ($M = 16.6, SD = 2.68$ vs. $M = 18, SD = 3.12$; $F_{(1, 323)} = 6.62, p < .05$) than the retest participants who completed both Time 1 and 2 questionnaires. The nonparticipants were more male than female (66 vs. 34%; $\chi^2_{(1)} = 4.70, p < .05$) and less national level (0%) than regional (45%) and provincial (55%) levels athletes ($\chi^2_{(2)} = 5.60, p = .06$). However, nonparticipants and retest participants were not significantly different either on years of competitive experience ($M = 6.92, SD = 2.68$ vs. $M = 7.11, SD = 3.90$; $F_{(1, 355)} = 0.09, p > .05$) and perceived importance of the competition ($M = 3.76, SD = 0.79$ vs. $M = 3.87, SD = 0.77$; $F_{(1, 346)} = 0.66, p > .05$) nor on any of the 10 coping strategies assessed at Time 1 (Wilk's $\lambda = 0.97, F_{(1, 348)} = 1.13, p > .05$). Although the retest participants differed significantly from the original pool of respondents on some demographic variables, no significant difference was found on the variables under study. Hence, the differential attrition should not bias subsequent analyses (Goodman & Blum, 1996).

Measures

The French version of the CICS was used as per Study 1. The descriptive and reliability estimates of the coping strategies are shown in Table 10.

Procedure

Participants were contacted and treated as per Study 1 and were informed that they could put an end to their participation at any time. Questionnaires were distributed in an envelope on which participants were asked to indicate their father's and mother's initial for matching purposes. Envelopes were destroyed as soon as responses were entered in the data base. The pre-competition CICS (Time 1) was completed during the last training session before the competition. On average, this questionnaire was completed 66.5h ($SD =$

23.83) before the competition. Athletes were asked to indicate the extent to which the items represented the things they were doing or thinking about to prepare for the upcoming competition. The intra-competition CICS (Time 2) was completed during the first training session after the competition. On average, the questionnaire was completed 62h ($SD = 28.40$) after the competition. Athletes were asked to indicate the extent to which the items represented the things they had done or thought during the competition.

Analytical strategy for the Longitudinal Confirmatory Factor Analysis (LCFA)

LCFAs were performed to assess the structural, differential, and latent mean consistency of each coping strategy across two stages of a competition. Using the methodological strategy of Conroy et al. (2003), each coping strategy was modelled separately⁶. This strategy was deemed appropriate given that prior studies have supported the first-order structure of the CICS and because each of the 10 factors measures a mutually exclusive (i.e., no cross-loadings), homogeneous, and theoretically-driven coping strategy. LCFAs were performed using the AMOS 4.0 software (Arbuckle, 1999)⁷. Assuming the multivariate non-normality of the data (Mardia's multivariate kurtosis = 446.38), the p value of the chi-square statistic was corrected using with the Bollen-Stine bootstrapped procedure (Fouladi, 2000). The fit of the model was evaluated as per Study 1. However, the habitual cutoff criteria of relative fit (CFI and NNFI) were not useful to discriminate good and bad models (see Table 11). Accordingly, models were evaluated using the Bollen-Stine bootstrapped p value of the chi-square statistic ($p > .05$) as well as the RMSEA. Considering that the RMSEA improves with increasing number of manifest variables (Kenny & McCoach, 2003) and loses power with decreasing degrees of freedom (Hancock & Freeman, 2001; MacCallum et al., 1996), the entire RMSEA 90% CI was not

expected to lay bellow 0.05. Given the limited degrees of freedom in the estimated models, a RMSEA estimate smaller than 0.05 and a RMSEA 90% CI with an upper bound inferior to 0.08 were interpreted as yielding reasonable fit.

For each coping strategy, a series of hierarchically nested models was fitted to assess configural, metric, and scalar invariance. In these models, the differential consistency was estimated by allowing the two latent constructs (i.e., Time 1 and Time 2) to correlate freely. Also, the uniquenesses of the same manifest variable were allowed to correlate across waves. Significant autocorrelated uniquenesses were retained in the model to avoid overestimation of the differential consistency (Schutz, 1998). Inasmuch as items within each latent construct measure similar coping actions, their uniquenesses from the same wave were allowed to correlate only if modification indices were significant at both waves ($p < .05$). As per Study 1, nested models were compared using the difference in chi-square statistics ($\Delta\chi^2$) and CFI values (ΔCFI).

In the baseline model, the same pattern of fixed and free loadings was specified across the two waves, with no equality constraints imposed on the parameters. Configural invariance was assumed if the fit indices attained their minimal cutoff of acceptability and the parameter estimates reached significance (i.e., loadings, uniquenesses, and autocorrelated errors). In the second model, a weak test of invariance was performed by setting the factor loadings to equality across waves. Upon evidence of inadequate fit, constraints were released one-by-one to pinpoint parameters accountable for decrement in model fit (Horn, 1991). When a partial invariance model was supported, the intercept of each item was set to equality across waves to assess scalar or strong invariance. At least two intercepts needed to be invariant to ensure the identification of the latent means (Steenkamp & Baumgartner, 1998). Non-invariant intercepts were pinpointed and released

as per the metric invariance model. This procedure was deemed appropriate given that partial invariance is a sufficient condition for the estimation and comparison of latent means (Byrne, Shavelson, & Muthén, 1989; Steenkamp & Baumgartner, 1998). In the full and partial scalar invariance models, the latent mean was fixed to 0 at Time 1 and it was estimated freely at Time 2. Inasmuch as the Time 1 mean was fixed to zero, rejection of the Time 2 latent mean null hypothesis ($H_0 : \kappa_2 = 0$) would indicate a significant difference in latent mean across waves. The significance level of these tests was corrected using a Bonferroni-type adjustment ($p < .005$, $Z > 2.80$). Cohen's effect size was estimated using the calculation of Hancock (2003)⁸.

Results and discussion

Data screening

Forty-six participants failed to complete less than five items. These missing values were scattered throughout variables and waves. They were imputed with the sample mean. Using the Mahalanobis distance critical value for 78 variables ($\chi^2_{(78)} = 122.35$, $p < .001$), 18 multivariate outliers were located. As per Study 1, results of a series of ANOVAs have shown that multivariate outliers have scored higher than the remaining participants on a series of items representing all types of coping. Consistent with the rationale given in Study 1, subsequent analyses were performed on a sample of 321 athletes.

Structural consistency of each coping strategy

Mental imagery (see model 1 in Table 11 and panel 1 in Figure 1)

The baseline model could not be rejected because it yielded a non-significant chi-square and a RMSEA 90% CI with an upper bound below 0.08. Nonetheless, the autocorrelated uniquenesses of item 21 was non-significant ($p > .05$). A respecified baseline model did not yield a significant decrement in fit. Constraining the loadings to

equality produced a significant increase in chi-square statistics ($p < .01$). Based on modification indices ($MI = 9.09, p < .01$), the loading of item 21 was estimated freely at each wave. The fit of this partial invariance model was comparable to the respecified baseline model. Only one loading could be assumed non-invariant across waves.

Constraining the intercepts to equality also produced a significant increase in chi-square ($p < .01$) and a substantial decrease in relative fit ($\Delta CFI > -.002$). Based on modification indices ($MI = 19.97, p < .01$), the intercept of item 31 was estimated freely at each wave. The fit of this partial invariance model was comparable to the partial invariance loadings' model. Only one intercept could be assumed non-invariant across waves. These results have indicated that the configural, partial metric, and partial scalar invariance of mental imagery could be assumed.

Venting of unpleasant emotions (see model II in Table 11 and panel 2 in Figure 1)

The baseline model was rejected because it yielded a significant chi-square ($p < .05$) and a RMSEA 90% CI with an upper bound above 0.08, thus ruling out the hypothesis of close-fit. Autocorrelated uniquenesses of items 22 and 32 were non-significant ($p > .05$). Modifications indices ($MI > 4.58, ps < .05$) suggested that uniquenesses of item 2 and 12 could correlate freely at both waves. A respecified baseline model provided a non-significant chi-square and a RMSEA 90% CI with an upper bound below 0.08. Constraining the loadings to equality did not produce a significant decrement in fit whereas constraining the intercepts led to a significant increase in chi-square statistics ($p < .01$). Based on modification indices ($MI = 12.07, p < .01$), the intercept of item 12 was estimated freely at each wave. The fit of this partial invariance model was comparable to the invariance loadings' model. Only one intercept could be assumed non-invariant across

waves. These results indicated that the configural, metric, and partial scalar invariance of venting of unpleasant emotions could be assumed.

Distancing (see model III in Table 11 and panel 3 in Figure 1)

The baseline model could not be rejected because it yielded a non-significant chi-square and a RMSEA 90% CI with an upper bound below 0.08. Nonetheless, the autocorrelated uniquenesses of items 13 and 33 were non-significant ($p > .05$). A respecified baseline model did not yield a significant decrement in fit. Constraining the loadings to equality did not produce a significant decrement in fit whereas constraining the intercepts produced an increase in chi-square ($p < .01$) and a substantial decrement in relative fit ($\Delta\text{CFI} = -.002$). Despite these results, no modification indices stood apart in term of their absolute magnitude ($ps > .01$) or in comparison with others. Furthermore, the reasonable fit of this model (upper bound of RMSEA 90% CI below 0.08) suggested that all intercepts could be assumed invariant across waves (Steenkamp & Baumgartner, 1998). These results were taken to suggest that the configural, metric, and scalar invariance of distancing could be assumed.

Effort expenditure (see model IV in Table 11 and panel 4 in Figure 1)

The effort expenditure subscale contains only three items, thus producing a baseline model with five degrees of freedom⁹. Based on the chi-square statistic, the baseline model could not be rejected. Yet, the autocorrelated uniquenesses of items 4, 14, and 24 were non-significant ($p > .05$). A respecified baseline model did not yield a significant decrement in fit. Constraining the loadings to equality did not produce a significant decrement in fit whereas constraining the intercepts produced an increase in chi-square ($p < .01$) and a substantial decrement in relative fit ($\Delta\text{CFI} = -.002$). Based on modification indices ($\text{MI} = 20.58, p < .01$), the intercept of item 14 was estimated freely at each wave.

The fit of this partial invariance model was comparable to the invariance loadings' model. Only one intercept could be assumed non-invariant across waves. These results indicated that the configural, metric, and partial scalar invariance of effort expenditure could be assumed.

Mental distraction (see model V in Table 11 and panel 5 in Figure 1)

The baseline model could not be rejected because it yielded a non-significant chi-square and a RMSEA 90% CI with an upper bound below 0.08. Nonetheless, the autocorrelated uniquenesses of item 25 was non-significant ($p > .05$). A respecified baseline model did not yield a significant decrement in fit. Constraining the loadings and the intercepts to equality did not produce a significant decrement in fit. These results indicated that the configural, metric, and scalar invariance of mental distraction could be assumed.

Thought control (see model VI in Table 11 and panel 6 in Figure 1)

The baseline model could not be rejected because it yielded a non-significant chi-square and a RMSEA 90% CI with an upper bound below 0.08. Nonetheless, the autocorrelated uniquenesses of item 26 was non-significant ($p > .05$). Moreover, the factor loading of item 6 was around 0.20 at both waves. This item was deleted from subsequent analyses¹⁰. A respecified baseline model could not be rejected. Constraining the loadings and the intercepts to equality did not produce a significant decrement in fit. These results indicated that the configural, metric, and scalar invariance of thought control could be assumed.

Seeking support (see model VII in Table 11 and panel 7 in Figure 1)

The baseline model was rejected because it yielded a significant chi-square ($p > .05$) and a RMSEA 90% CI with an upper bound above 0.08, thus ruling out the hypothesis of

close-fit. Modification indices ($LM\chi^2 > 4.58, ps < .05$), suggested that uniquenesses of items 27 and 35 could correlate freely at both waves. A respecified baseline model provided a non-significant chi-square and a RMSEA 90% CI with an upper bound below 0.08. Constraining the loadings and the intercepts to equality did not produce a significant decrement in fit. These results indicated that the configural, metric, and scalar invariance of seeking support could be assumed.

Relaxation (see model VIII in Table 11 and panel 8 in Figure 1)

The baseline model could not be rejected because it yielded a non-significant chi-square and a RMSEA 90% CI with an upper bound equalling 0.08. Nonetheless, the autocorrelated uniquenesses of items 18 and 36 were non-significant ($p > .05$). A respecified baseline model did not yield a significant decrement in fit. Constraining the loadings to equality did not produce a significant decrement in fit whereas constraining the intercepts produced an increase in chi-square ($p < .01$). Based on modification indices ($MI = 7.18, p < .01$), the intercept of item 36 was estimated freely at each wave. The fit of this partially invariance model was comparable to the invariance loadings' model. Only one intercept could be assumed non-invariant across waves. These results indicated that the configural, metric, and partial scalar invariance of relaxation could be assumed.

Logical analysis (see model IX in Table 11 and panel 9 in Figure 1)

The baseline model could not be rejected because it yielded a non-significant chi-square and a RMSEA 90% CI with an upper bound below 0.08. Yet, the autocorrelated uniquenesses of item 37 was non-significant ($p > .05$). A respecified baseline model did not yield a significant decrement in fit. Constraining the loadings to equality did not produce a significant decrement in fit whereas constraining the intercepts produced a substantial decrement in relative fit ($\Delta CFI = -.002$). Despite these results, no modification

indices stood apart in term of their absolute magnitude ($ps > .01$) or in comparison with others. Furthermore, the reasonable fit of this model (upper bound of RMSEA 90% CI bellow 0.08) suggested that all intercepts could be assumed invariant across waves (Steenkamp & Baumgartner, 1998). These results were taken to suggest that the configural, metric, and scalar invariance of logical analysis could be assumed.

Disengagement/resignation (see model X in Table 11 and panel 10 in Figure 1)

The baseline model could not be rejected because it yielded a non-significant chi-square and a RMSEA 90% CI with an upper bound below 0.08. Nonetheless, the autocorrelated uniquenesses of items 10 and 38 were non-significant ($p > .05$). A respecified baseline model did not yield a significant decrement in fit. Constraining the loadings to equality produced a significant increase in chi-square ($p < .01$) and a substantial decrement in relative fit ($\Delta CFI = -.002$). Based on modification indices ($MI = 8.88, p < .01$), the loading of item 30 was estimated freely at each wave. The fit of this partial invariance model was comparable to the respecified baseline model. Only one loading could be assumed non-invariant across waves. Constraining the intercepts to equality did not produce a significant decrement in model fit. These results indicated that the configural, partial metric, and scalar invariance of disengagement/resignation could be assumed.

Mean-level consistency

Results of latent mean analyses were consistent with prior literature as they indicated that task- and disengagement-oriented coping respectively decreased and increased significantly from pre-competition to the competition per se (see Table 12). Distraction-oriented, for which no hypothesis was formulated, decreased significantly

across waves. Cohen's effect size were small to moderate, with the absolute magnitude of normative change ranging between $|0.18|$ and $|0.53|$, with an average of $|0.33|$.

Differential consistency

The rank-order consistency, estimated within the confines of each LCFA model, varied somewhat across coping strategies (see Table 12). The standardized latent covariance exceeded conventional minimal cutoff for mental imagery, seeking support, relaxation, and logical analysis ($r > 0.70$, see Nunnally & Bernstein, 1994; Schwartz et al., 1999). Compared to coping strategies (i.e., venting of unpleasant emotions and effort expenditure) exhibiting the lowest levels of rank-order consistency ($r < 0.50$), mental distraction, distancing, thought control, and disengagement/resignation displayed some degree of consistency across the stages of the competition ($r > 0.57$). Considering that LCFAs provide unbiased estimates of rank-order consistency (Fan, 2003), it can be assumed that the relative position of athletes within the group was, in the most part, moderately consistent across the stages of a competition.

Individual-level consistency

Based on their Relative Change Index (RCI), athletes were classified as having increased, decreased, or not changed on each coping strategy taken separately (for details on calculation of the RCI, see Roberts et al., 2001). Also, athletes were classified using a less stringent criteria of change in absolute score ($x_1 - x_2$). Both the RCI and change in absolute scores indicated that a modest, yet significant, amount of athletes changed substantially across the stages of the competition. However, the amount of absolute change that was required to assume reliable change (see cutoff value in Table 13) increased with decreasing reliability of a subscale (Christensen & Mendoza, 1986). Given that the minimal threshold of absolute change ranged between ± 0.88 for effort expenditure and

± 1.45 for thought control, it was difficult to compare individual-level change across variables with the RCI. Although the RCI and absolute change indices yielded similar results for subscales with higher reliability, the former approach should be interpreted cautiously with subscales with lower reliability. In the meantime, classifying the athletes based on their change in absolute scores facilitated comparison across variables. Based on change in absolute scores, 24 to 37% of the athletes have decreased or increased (i.e., a full-point variation on the 5-point rating scale) their utilization of coping strategies across stages of the competition. The overall direction of change was consistent with the mean-level analyses as a majority of athletes that were classified as “changers” have decreased on task- and distraction-oriented coping on one hand, and increased on disengagement-oriented coping on the other hand.

Comparing one variable at a time has led, at least to some extent, to an understatement concerning the proportion of “changers” across stages of a competition (see Roberts et al., 2001). Examination of change in absolute scores revealed that 13% of the athletes changed on one variable whereas 24% changed on two variables, 21% on three variables, 16% on four variables, 7% on five variables, 8% on six variables, 2% on seven variables, and 1% on more than seven variables. In contrast to the variable-by-variable analyses, these results suggested that 92% of athletes have changed substantially on at least one strategy across stages of the competition.

GENERAL DISCUSSION

The primary goal of this research was to investigate unresolved issues pertaining to hierarchical organization of coping, the dispositional vs. situational nature of coping strategies, and their effectiveness in bringing about goal attainment. Overall, the results of two studies provided encouraging evidence for the between-group and longitudinal factorial

invariance of the CICS, a self-report measure of sport-related coping strategies. The findings pertaining to hierarchical factor structure and to concurrent validity gave support to the functional homogeneity and distinctiveness (Skinner et al., 2003) of a hierarchical model regrouping sport-related coping strategies in three superfactors. Through an examination of coping across two stages of a sport competition, it was also found that coping strategies displayed substantial mean- and individual-level changes as well as moderate levels of differential consistency. These results are discussed in light of their contributions to the general and sport-specific coping literatures.

Hierarchical structure of sport-related coping

A focal purpose of this research was to extend the validation of the CICS. Results of CFAs provided encouraging evidence for the hypothesized first-order factor structure of the CICS. Contrary to prior validation research, however, the close fit of the first-order model was obtained by allowing four pairs of uniquenesses to correlate freely. These respecifications are suggesting that athletes were not responding to each item anew, but that their responses were rather influenced by previous items measuring similar coping instances. Hence, the inclusion of four correlated uniquenesses accounted for some redundancy among items and improved the fit of the model substantially across samples of athletes from individual and team sports. Correlated uniquenesses can be appropriate for items that are embedded within a same latent construct (MacCallum, 1995), which was the case in this study. Meanwhile, these respecifications suggest that some items are measuring somewhat redundant coping instances. Hence, newly developed items could be inserted in an upcoming version CICS to improve its content generalizability.

A noteworthy finding concerns the measurement and structural invariance of the first-order revised model of the CICS across samples of athletes from individual and team

sports. As hypothesized, it seems that the CICS measures coping strategies that hold an equivalent psychological meaning across different types of sport activities. It was found that the first-order loadings and the factors' variance, as well as 43 of the 45 correlations between coping strategies could be assumed invariant. Furthermore, the standardized factors' covariances brought support for the convergence between coping strategies hypothesized to represent a given superfactor of coping (see Table 4). The average correlation between the hypothesized task-oriented strategies ($r = 0.59$) was substantially higher than their average correlations with distraction- ($r = 0.37$) and disengagement-oriented strategies ($r = -0.05$). Similarly, the correlations between the hypothesized distraction-oriented strategies on one hand ($r = 0.47$), and between the disengagement-oriented strategies on the other hand ($r = 0.58$), were substantially higher than their average correlation with one another ($r = 0.26$).

Considering the partial invariance of the factors' covariances as well as the convergence of similar coping strategies, it seems that coping strategies could be regrouped into meaningful and invariant superfactors of coping. Results of HCFAs lent credence to the underlying postulates of the CICS by showing the reasonable fit of a hierarchical model with three superfactors of coping. Consistent with prior literature on hierarchical models of coping (e.g., Ayers et al., 1996; Connor-Smith et al., 2000; Walker et al., 1997), the hypothesized model failed to reach minimal cutoff of acceptability. Based on post hoc model respecifications, it was found that effort expenditure cross-loaded negatively on disengagement-oriented coping whereas seeking support cross-loaded positively on distraction-oriented coping. In other conceptual frameworks (e.g., Ayers et al., 1996; Carver et al., 1989), instrumental and emotional seeking support have been modeled separately to represent task-oriented and accommodative forms of coping, respectively.

The CICS measures these two subcategories of seeking support within a single subscale. Whether seeking support can be used to direct one's attention away from the competition, social supporters can also provide advice and feedback usable to enhance the probability of bringing about a desired outcome. As a result, it seems tenable that seeking support could load positively on both distraction- and task-oriented coping. Likewise, disengagement-oriented coping represents actions through which an athlete disengages himself from the process of striving to attain desired goals. In contrast, the effort expenditure coping strategy involves the mobilisation of one's physical and mental resources to act directly on the demands of the situation. Hence, it seems tenable that effort expenditure could cross-load negatively on disengagement-oriented coping because it might prevent athletes from disengaging themselves from the task at hand.

At first glance, these cross-loadings are at odds with the postulates of the CICS as they imply that superfactors are not mutually exclusive (Skinner et al., 2003). Meanwhile, the presence of substantive cross-loadings is congruent with the assumption that coping strategies can serve more than one function during a specific stressful encounter (Lazarus, 2000). Besides their conceptual suitability, these respecified second-order loadings were cross-validated across individual and team sports. Of great interest for the factorial validity of the hierarchical framework of the CICS, it was shown that each of the 12 second-order loadings as well as the three correlations between superfactors of coping could be assumed invariant. In accordance with the postulates of the CICS, these results suggest that the hierarchical organization of sport-related coping strategies is equivalent across individual and team sports settings. Furthermore, the respecified three-factor model was superior to an alternate model separating coping strategies into engagement- and disengagement-oriented coping. Although the fit of a four-factor model was reasonable, the high

correlation ($r > 0.90$) between the two task-oriented factors (primary- and secondary-engagement) indicated that they were not empirically distinguishable. Altogether, results of HCFAs provided considerable evidence for the tenability of the respecified three-factor model.

Coping and goal attainment in the sport domain

Results of a meta-analysis of nine published studies have shown that goal attainment is associated strongly with psychological well-being (Koestner, Lekes, Powers, & Chicoine, 2002). In performance-related domains, sparse empirical attention has been devoted to processes that could promote attainment of achievement-related goals. In the sport domain, however, it has been shown that athletes' utilization of coping strategies correlates with objective (Gaudreau et al., 2002) and subjective indices of goal attainment (Amiot et al., in press; Gaudreau & Blondin, 2002).

Using a theoretically driven measure of multidimensional goal attainment (Gaudreau et al., 2003), this study contributes to the literature by showing meaningful associations of coping strategies and superfactors of coping with mastery, self-referenced, and normative indices of goal attainment. As expected, the coping strategies nested within a same superfactor of coping have displayed a similar pattern of associations with goal attainment indices. This particular finding brings support for the functional homogeneity of the three superfactors of coping included in the CICS (Skinner et al., 2003). In addition, each superfactor of coping correlated differently with goal attainment indices, thus providing support for their functional distinctiveness (Skinner et al., 2003). Precisely, task- and disengagement-oriented coping displayed moderately high positive and negative associations with goal attainment indices, respectively. In the meantime, distraction-oriented coping exhibited very weak positive associations ($r < 0.14$) with mastery and self-

referenced indices of goal attainment and a moderate positive association with normative goal attainment. Evaluating these correlations within the confines of CFAs and HCFAs enabled the demonstration of their invariance across samples of athletes from individual and team sports. Therefore, these results can be taken to suggest that superfactors of coping can predict relevant outcomes across different types of sport activities. Despite these promising findings, future studies are warranted to examine whether sport-related superfactors of coping can exhibit functional homogeneity and distinctiveness in their relationships with dispositional, cognitive, and motivational antecedents on one hand, and with emotional and physical outcomes on the other hand.

Trait-like versus state-like nature of coping across the stages of a competition

Longitudinal factorial invariance

Prior literature on the consistency of coping has failed to examine whether the underlying structure and parameter estimates of coping measures were invariant across stages of stressful situations (for an exception, see Sorlie & Sexton, 2001). When developing the CICS, a particular effort was made to ensure that each of the 10 coping strategies would hold an equivalent psychological meaning across preparation and performance stages of a sport competition. Using a series of hierarchically nested LCFAs, it was found that configural invariance of each coping strategy could be assumed. Evidence of strong factorial invariance was provided for distancing, mental distraction, thought control, seeking support, and logical analyses. It was shown that all other coping strategies displayed partial factorial invariance, with only two factor loadings and four intercepts being non-invariant across stages of the competition. Overall, these results have provided sufficient support for the postulates of longitudinal invariance, which permitted

subsequent examination of the differential and mean-level consistency of coping scores across stages of a competition (Byrne et al., 1989).

Mean-level consistency

This research took advantage of structural equation modeling by examining the mean-level and differential consistency of coping strategies within the confines of LCFAs. Small to moderate mean-level changes were found in the utilization of coping strategies across stages of the competition, thus replicating prior literature in performance-related domains (e.g., Carver & Scheier, 1994; Folkman & Lazarus, 1985; Gaudreau et al., 2001). There was two noteworthy patterns of changes, with decreasing utilization of task- and distraction-oriented strategies across waves on one hand, and increasing levels of disengagement-oriented coping on the other hand. In agreement with a situational position on coping (Lazarus & Folkman, 1984), these results have shown that athletes are coping differently with the changing normative demands of a sport competition. The pre-competition stage represents a situation in which proactive and corrective steps can be taken to maximize the likelihood of goal attainment. In an effort to prepare themselves for the competition and to manage their internal states, athletes are using task-oriented coping in a somewhat proactive manner and are relying on disengagement-oriented coping to a lesser extent. The higher use of distraction-oriented coping can also be explained as momentary efforts to redirect one's attention away from the upcoming event. Such coping utilization may facilitate the preservation of cognitive and physical resources which generally will be put to test in subsequent stages of the competition. The performance stage of the competition is a situation in which athletes must use their knowledge in a somewhat automated ways to perform a series of physical, technical, and tactical skills (Starkes & Ericsson, 2003). Meanwhile, their attention must be directed toward the task at hand to

enable adaptation in the face of constantly changing environmental demands. Combined with our limited attentional resources, the fact that attention is mainly allocated on the performance of skills may explain a decrease in the utilization of distraction- and task-oriented coping during the competition. Also, it should be noted that negative affect increases and positive affect decreases during competition, and these changes become more pronounced with increasing levels of performance-goal discrepancy (Gaudreau et al., 2002). During the course of a competition, an athlete inevitably makes mistakes, takes some bad decisions, and reacts impulsively to his environment. These micro-situations and their inherent performance-goal discrepancy component may explain, to some extent, the increase of venting of unpleasant emotions and disengagement/resignation during the competition.

Differential consistency

In the most part, prior research reported uncorrected test-retest coefficients, which might have underestimated the true differential consistency of coping strategies (Conroy et al., 2003; Yali & Lobel, 2002). Results of the LCFAs provided some evidence for this contention. In the Gaudreau et al. (2001) study, the average test-retest correlation was 0.41 whereas the average standardized covariances between latent variables was 0.63 in the present one. This somewhat higher level of differential consistency should not be interpreted as providing evidence for the absence of change in coping utilization. Of greater bearing for the controversy on the trait-like vs. state-like nature of coping, these results support the importance of reporting both mean-level and differential statistics as the latter indicate the presence of moderate consistency despite substantial normative changes. For the most part, the estimates of rank-order consistency of sport-related coping strategies exceeded what would be expected from a situational approach ($r < 0.30$, see Schwartz et al.,

1999). This finding can be taken to suggest that athletes “are not approaching each coping context anew, but rather brings to bear a preferred set of coping strategies that remains relatively fixed across times and circumstances” (Carver et al., 1989, p. 270). In the meantime, however, the rank-order of athletes was far from perfectly consistent across the stages of a sport competition. Precisely, only four coping strategies have reached the minimal threshold supporting a dispositional position on coping ($r > 0.70$, see Nunnally & Bernstein, 1994; Schwartz et al., 1999). On average, coping utilization shared 42% of variance across stages of a sport competition. These results are similar to recent multilevel studies in which 19 to 40% of the variability in daily utilization of coping (Dunkley, Zuroff, & Blankstein, 2003) and 15 to 42% of the variability in its momentary utilization (Schwartz et al., 1999) were explained by trait-like influences. Overall, the moderate differential consistency suggests that athletes may have a certain predisposition toward coping utilization that can nonetheless be tailored according to the changing demands across times and situations. These results demonstrate the importance of considering both situational and dispositional influences rather than holding a dichotomous position on the trait- vs. state-like nature of coping strategies.

Individual-level consistency

This research contributes to the literature on coping by examining the degree to which each athlete changes across stages of a competition. In the most part, the individual-level findings were consistent with mean-level and differential consistency estimates. Most notably, analyses using change in absolute scores indicated that a modest proportion of athletes changed substantially (i.e., a full point on a five-point Likert-type scale) across the stages of the competition. This finding suggests that the statistically significant mean-level changes in coping utilization may have been caused by a minority of individuals whose

magnitude of change was substantial. Specifically, 24 to 37% of the athletes have decreased or increased their utilization of specific coping strategies across stages of the competition. The overall direction of change was consistent with the mean-level analyses. A majority of athletes who were classified as “changers” have decreased on task- and distraction-oriented coping on one hand, and increased on disengagement-oriented coping on the other hand. Meanwhile, 10 to 34% of these “changers” have changed their coping utilization in a different direction than the general pattern of mean-level changes. For instance, although the mean-level utilization of venting of unpleasant emotions and disengagement/resignation have increased significantly, approximately 30% of the “changers” have changed in the opposite direction. This finding suggests that the magnitude of mean-level changes in coping strategies was underestimated by the presence of two opposite patterns of substantial individual-level changes. In other words, the strength of group-level changes across the stages of a competition was somewhat masked by the presence of different, yet meaningful, patterns of individual-level changes. This finding demonstrates the importance of reporting individual-level change indices in coping research and to investigate why different individuals have different patterns of changes across situations and stages of a given situation. Moreover, variable-by-variable analyses were somewhat limited as a striking 92% of the athletes have changed on at least one coping strategy. These results can be taken to suggest that multivariate approaches, such as longitudinal cluster analyses, could be used to classify individuals based on their multivariate profiles of coping changes (Morizot & Le Blanc, in press).

Limitations, future directions, and conclusions

Research on sport-related coping is still at a genesis stage. As shown in this research, the trait- vs. state-like controversy is very complex because different

methodological approaches can lead to somewhat different conclusions. Furthermore, it has been assumed that coping strategies could change across life domains, across different situations within a particular life domain, and across different episodes of a same situation (Lazarus & Folkman, 1984). The current research provided evidence for the somewhat changing properties of sport-related coping strategies across two stages of a sport competition. Yet, Crocker and Isaak (1997) have shown that mean-level of coping utilization changes across competitions within a given cycle of competition. It has also been demonstrated that student-athletes change their coping utilization across sport and academic domains (Sellers, 1995). Given this evidence, future investigations should obtain multiple assessments of how athletes cope with a variety of situations in the sport domain and abroad. Such a methodological approach has the potential to yield a comprehensive evaluation of temporal stability and situational consistency of coping strategies, while enabling the evaluation of their trait- and state-like nature through LCFAs, hierarchical linear modeling (Dunkley et al., 2003; Schwartz et al., 1999), and longitudinal cluster analyses (Morizot & Le Blanc, in press).

Multiple methods of assessment have rarely been used in research on coping. A notable exception concerns the development of self- and parent-report versions of the Connor-Smith et al. (2000) coping measure for adolescents. Subsequent research using the CICS could implement a similar approach using a coach- or teammate-report of coping utilization. In this study, the concurrent relationships between coping and goal attainment indices revolved entirely on self-reported data. Yet, prior sport-related studies have shown meaningful associations of coping strategies with objective indices of performance-goal discrepancy (Gaudreau & Blondin, 2003; Gaudreau et al., 2002). Based on these promising findings, future studies should use a multitrait-multimethod design to explore the

associations of self- and coach-report of coping with self- and coach-report of goal attainment indices. Such an analytical approach would provide unbiased estimates of the relationships of coping with goal attainment indices, by controlling for the common method variance effect (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

In this research, each superfactor of coping was shown to correlate differently with goal attainment indices. As with the majority of published studies on sport-related coping, these relationships were based on cross-sectional analyses. Given that coping utilization can change across competitions (Crocker & Isaak, 1997), athletes should be followed across unfolding stages of a season to examine whether intra-individual changes in coping can predict intra-individual changes in goal attainment, motivation, and emotional adjustment (Tennen, Affleck, Armeli, & Carney, 2000). Furthermore, Skinner et al. (2003) have proposed that each superfactor of coping should mediate the relationships between coping antecedents and their outcomes. For the most part, coping literature has overlooked the mediating role of sport-related coping. Up to now, sparse evidence have supported the mediating role of sport-related coping in the relationships of motivational climate, goal orientation (Ntoumanis, Biddle, & Haddock, 1999), self-determined motivation (Amiot et al., in press), and cognitive appraisals (Kim, 1999) with emotional adjustment and well-being. Given its factorial invariance across different categories of sport activities, the CICS appears to be a well-suited tool for the pursuit of this promising line of sport-related research. Besides providing sport psychologists with a validated measurement instrument, the CICS has the potential to improve our understanding of how athletes, and maybe even coaches, are coping within the sport domain and beyond.

 Notes

¹ Rescaled statistics are not yet available for multiple-sample analyses.

² As a whole, the second-order model was identified because we have 55 pieces of information ($10[10 + 1]/2$) and only 23 parameters to be estimated. However, local parts of the model were non-identified as two second-order factors were represented by only two first-order factors. For these two second-order factors, we have 3 pieces of information ($2[2+1]/2$) and four parameters to be estimated (i.e., two loadings and two disturbances).

³ Two equality constraints that were included to ensure the identification of the hierarchical model were linearly dependent with the cross-groups equality constraints imposed on the second-order loadings. These constraints were replaced by fixing four disturbances (venting of emotions, disengagement/resignation, distancing, and mental distraction) to the values obtained in the HCFAs performed independently on each sample. Along with ensuring the identification of the model, this procedure enabled the imposition of cross-groups equality constraints on each second-order factor loadings without impacting the overall goodness-of-fit of the model.

⁴ The goal attainment factors were not orthogonal with mastery goal attainment correlating with self-referenced (individual = 0.75; team = 0.79) and normative goal attainment (individual = 0.76; team = 0.69), and self-referenced goal attainment correlating with normative goal attainment (individual = 0.67; team = 0.62).

⁵ Because the results from the 13-factor model indicated that an item from the mastery goal attainment could cross-load significantly on effort expenditure, this item was deleted from the HCFAs in both samples.

⁶ This strategy was deemed more appropriate given that the sample size precluded the reliable estimation of a 20-factor model (i.e., 10 factors at Time 1 and Time 2, respectively).

⁷ A goal of this study was to estimate mean-level consistency within the confines of LCFAs. Considering the rather complex procedure for modelling the latent means with the EQS 5.7 software, we decided to perform the LCFAs with the AMOS 3.5 software.

⁸ Effect size of the latent mean was calculated as $d = \kappa_2 / \phi^{1/2}$, where κ_2 represents the estimated latent mean at Time 2 and ϕ represents the average of the Time 1 and Time 2 variances of the latent variable.

⁹ The RMSEA loses power with decreasing degrees of freedom. The effort expenditure subscale contains three items, thus resulting in models containing fewer degrees of freedom. In this case, the RMSEA 90% CI provided an extremely stringent test of model fit. Therefore, evaluation of overall model fit was based entirely on the corrected p value of the chi-square statistic.

¹⁰ This result is consistent with the results of Gaudreau and Blondin (2002) and with those of Study 1. Given the consistent evidence showing its unreliability, this item was deleted from subsequent analyses. Exploratory analyses revealed that inclusion of this item resulted in a distrustful estimate of differential ($r = 0.08$) and mean-level consistency ($\kappa_2 = -0.098$, $S.E. = 0.03$, $d = -0.34$) of thought control.

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Table 1

Hypothesized hierarchical model of the CICS

	First-order coping strategies									
Superfactors of coping	Mental imagery	Effort expenditure	Thought control	Logical analysis	Seeking support	Relaxation	Distancing	Mental distraction	Disengagement/ resignation	Venting of unpleasant emotions
1. Task-oriented coping Coping instances that are used to master the internal and external requirements of a sport competition. This superfactor includes coping strategies through which athletes are trying to manage the objective demands and their internal states.	X	X	X	X	X	X				
2. Distraction-oriented coping Coping instances that are used to focus momentarily on external stimuli and cognitive activities that are unrelated to the sport competition per se. This superfactor includes strategies through which athletes momentarily direct their attention away from the competition							X	X		
3. Disengagement-oriented coping Coping instances that are used to disengage oneself from the process of striving to achieve one's desired goals. This superfactor includes strategies through which athletes produce actions that could potentially hinder the attainment of their goal									X	X

Table 2

Study 1 : Descriptive statistics and reliability of coping and goal attainment factors

	Range	Individual sports				Team sports			
		<i>M</i>	<i>SD</i>	α	<i>H</i>	<i>M</i>	<i>SD</i>	α	<i>H</i>
Coping first-order factors									
1. Mental imagery	1-5	3.18	0.98	.778	.890	2.94	1.02	.794	.819
2. Venting of unpleasant emotions	1-5	2.20	1.08	.885	.914	2.48	1.08	.879	.917
3. Distancing	1-5	2.21	0.85	.705	.709	2.00	0.95	.792	.803
4. Effort expenditure	1-5	3.87	0.84	.848	.859	4.02	0.78	.837	.868
5. Mental distraction	1-5	1.93	0.85	.782	.808	1.62	0.81	.819	.844
6. Thought control	1-5	3.20	0.90	.671	.686	3.03	0.91	.666	.708
7. Seeking support	1-5	2.25	1.04	.784	.811	1.98	0.95	.782	.808
8. Relaxation	1-5	2.83	1.06	.851	.840	2.41	1.04	.850	.842
9. Logical analysis	1-5	2.69	0.86	.627	.648	2.84	0.92	.726	.759
10. Disengagement/resignation	1-5	1.78	0.86	.801	.798	1.63	0.79	.788	.786
Coping second-order factors ^a									
1. Task-oriented coping	1-5	3.00	0.69	----	.969	2.87	0.70	----	.968
2. Disengagement-oriented coping	1-5	1.99	0.84	----	.889	2.08	0.79	----	.858
3. Distraction-oriented coping	1-5	2.07	0.69	----	.612	1.88	0.74	----	.639
Goal attainment factors									
1. Mastery-oriented	1-7	4.94	1.11	.813	.753	4.92	1.20	.839	.788
2. Self-referenced	1-7	3.71	1.88	.934	.849	3.87	1.60	.908	.914
3. Normative-oriented	1-7	3.69	1.55	.892	.903	3.60	1.70	.899	.924

Note. ^a Calculated in accordance with the hypothesized hierarchical structure presented in Table 1.

H = Hancock's coefficient of reliability.

Table 3

Study 1 : Fit indices of confirmatory factor analyses for samples of athletes from individual and team sports

	χ^2	SB χ^2	df	CFI	Robust CFI	NNFI	RMSEA	90% CI RMSEA	TC
Sample 1: Individual sports									
First-order models									
1. 10-factor oblique	1105.08	989.27	657	.913	.928	.902	.046	.042 - .051	---
2. 10-factor oblique modified ^a	1045.43	939.16	653	.924	.938	.914	.044	.039 - .048	---
3. 10-factor orthogonal ^a	2108.29	1914.91	698	.726	.738	.709	.080	.076 - .084	---
Hypothesized hierarchical model ^a									
4. 3-factor	1245.68	1118.26	688	.892	.907	.883	.051	.046 - .055	.839
5. 3-factor with two cross-loadings ^b	1178.38	1057.35	686	.904	.920	.897	.048	.043 - .052	.887
Sample 2 : Team sports									
First-order models									
1. 10-factor oblique	1113.93	967.67	657	.918	.935	.907	.047	.042 - .051	---
2. 10-factor oblique modified ^a	1067.65	926.59	653	.925	.943	.915	.045	.040 - .049	---
3. 10-factor orthogonal ^a	2233.92	1970.37	698	.724	.735	.707	.083	.079 - .087	---
Hypothesized hierarchical model ^a									
4. 3-factor	1247.29	1086.83	688	.899	.917	.892	.051	.046 - .055	.856
5. 3-factor with two cross-loadings ^b	1176.11	1083.35	686	.911	.918	.904	.049	.044 - .053	.907

Note. All chi-square statistics were significant at $p < .001$.^a Four pairs of uniquenesses were allowed to correlate freely (items 3 & 13; items 16 & 26; items 18 & 36; items 10 & 38).^b Disengagement/resignation cross-loaded on task- and disengagement-oriented coping; seeking support cross-loaded on task- and distraction-oriented coping.

Table 4

Study 1 : Standardized covariances between the coping strategies of the CICS

	1	2	3	4	5	6	7	8	9	10
First-order factors										
1. Mental imagery	---	-0.10	0.51	0.40	0.21	0.86	0.51	0.62	0.80	-0.14
2. Venting of unpleasant emotions	-0.06	---	0.11 ^a	-0.07 ^b	0.26	-0.07	0.10	-0.08 ^a	0.04	0.50
3. Distancing	0.54	0.32 ^a	---	0.11	0.45	0.48	0.49 ^b	0.57	0.55	0.37 ^b
4. Effort expenditure	0.51	-0.21 ^b	0.13	---	-0.05	0.48	0.18	0.37	0.42	-0.50
5. Mental distraction	0.29	0.28	0.47	-0.11	---	0.45	0.35	0.36	0.25	0.46 ^b
6. Thought control	0.88	-0.11	0.52	0.55	0.37	---	0.66	0.68	0.88	-0.17
7. Seeking support	0.51	0.15	0.34 ^b	0.23	0.41	0.56	---	0.62 ^b	0.67	0.19
8. Relaxation	0.64	0.19 ^a	0.66	0.34	0.34	0.74	0.46 ^b	---	0.75	-0.07
9. Logical analysis	0.77	0.23	0.58	0.42	0.31	0.86	0.65	0.74	---	-0.01
10. Disengagement/resignation	-0.19	0.58	0.14 ^b	-0.45	0.31 ^b	-0.32	0.17	-0.09	0.04	---

Note. Individual sports are presented below the diagonal and team sports are presented above the diagonal.

^a Parameters that were significantly non-invariant across samples ($p < .01$). ^b Parameters that were marginally non-invariant across samples ($p < .05$).

Table 5

Study 1 : Tests of invariance across individual and team sports samples for the respecified first-order model

	χ^2	<i>df</i>	CFI	NNFI	RMSEA	90% CI	$\Delta\chi^2$	Δdf	ΔCFI
1. Baseline 10-factor modified model	2113.07	1306	.925	.914	.031	.029 - .034	----	----	----
2. Invariant first-order loadings Model 2 vs. 1	2138.06	1335	.925	.917	.031	.028 - .033		24.99	29 < .001
3. Invariant factors' variance Model 3 vs. 2	2157.90	1345	.924	.916	.031	.028 - .033		19.84*	10 < .001
4. Invariant factors' covariances Model 4 vs. 3	2237.35	1390	.921	.916	.031	.029 - .033		79.45**	45 < .003
4b. Partially invariant factors' covariances ^a Model 4b vs. 3	2216.74	1388	.923	.917	.031	.028 - .033		58.84	43 < .001

Note. All chi-square statistics were significant at $p < .001$ ^a Two factors' covariances were not constrained to equality across samples (distancing & disengagement/resignation; distancing & venting of unpleasant emotions). ** $p < .01$ * $p < .05$

Table 6

Study 1 : Tests of invariance across individual and team sports samples for the respecified hierarchical model with three superfactors

	χ^2	<i>df</i>	CFI	NNFI	RMSEA	90% CI	$\Delta\chi^2$	Δdf	ΔCFI
1. Baseline 3-factor modified model	2354.50	1372	.908	.901	.034	.032 - .036	----	---	---
2. Invariant first-order loadings Model 2 vs. 1	2379.87	1401	.908	.903	.034	.031 - .036			
3. Invariant second-order loadings Model 3 vs. 2	2392.57	1413	.908	.903	.034	.031 - .036	25.37	29	<.001
4. Invariant second-order factors' covariances Model 4 vs. 3	2395.38	1416	.908	.904	.034	.031 - .036	12.70	12	<.001
							2.81	3	<.001

Note. All chi-square statistics were significant at $p < .001$.

Table 7

Study 1 : Standardized second-order loadings from the respecified hierarchical model

	Second-order factors			<i>R</i> ²
	TOC	DISEN	DIST	
First-order factors				
1. Mental imagery	.859	----	----	.737
2. Venting of unpleasant emotion	----	.580	----	.336
3. Distancing	----	----	.699	.488
4. Effort expenditure	.447	-.405	----	.417
5. Mental distraction	----	----	.603	.301
6. Thought control	.979	----	----	.959
7. Seeking support	.339	----	.425	.521
8. Relaxation	.794	----	----	.630
9. Logical analysis	.911	----	----	.829
10. Disengagement/resignation	----	.930	----	.865
Second-order factors				
1. Task-oriented coping	----	----	----	
2. Disengagement-oriented coping	-.149	----	----	
3. Distraction-oriented coping	.788	.519	----	

Note. TOC = task-oriented coping, DISEN = disengagement-oriented coping, DIST = distraction-oriented coping. *R*² = Percentage of first-order factor variance explained by the second-order factor. All loadings and covariances were invariant across the samples. Newly added loadings are presented in italic characters. Loadings set to zero are represented with dashes. All parameters were significant at $p < .05$.

Table 8

Study 1 : Fit indices for the models assessing the concurrent associations between coping and goal attainment indices

	χ^2	SB χ^2	df	CFI	Robust CFI	NNFI	RMSEA	90% CI RMSEA	$\Delta \chi^2$	Δdf	ΔCFI
First-order models											
Individual sports											
1. 12 goal attainment items	1872.43	1711.64	1142	.913	.926	.903	.045	.041 - .049	---	---	---
2. 11 goal attainment items ^a	1771.34	1620.44	1093	.916	.929	.906	.044	.040 - .048	---	---	---
Team sports											
3. 12 goal attainment items	1852.51	1631.99	1142	.917	.934	.907	.045	.041 - .048	---	---	---
4. 11 goal attainment items ^a	1753.36	1537.97	1093	.920	.938	.910	.044	.040 - .048	---	---	---
Tests of invariance ^a											
5. Multiple-sample baseline ^b	3626.40	NA	2268	.917	NA	.910	.031	.029 - .033	---	---	---
6. Invariant coping-goal attainment covariances	3672.52	NA	2298	.916	NA	.910	.031	.029 - .033	---	---	---
Model 6 vs. 5									46.12*	30	-.001
Hierarchical model with three second-order coping dimensions											
Test of invariance ^a											
7. Multiple-sample baseline ^c	3938.16	NA	2338	.902	NA	.897	.033	.031 - .035	---	---	---
8. Invariant coping-goal attainment covariances	3951.93	NA	2347	.901	NA	.897	.033	.031 - .035	---	---	---
Model 8 vs. 7									13.77	9	-.001

Note. All chi-square statistics were significant at $p < .001$. NA = non-available. ^a An item from mastery goal attainment (item 4) was deleted. ^b First-order loadings, factors' variance, and 43 factors' covariances of the CICS were constrained to equality across groups. ^c First- and second-order loadings as well as the second-order factors' covariances of the CICS were constrained to equality across samples. ** $p < .01$ * $p < .05$.

Table 9

Study 1 : Standardized covariances of coping strategies and superfactors of coping with goal attainment indices

	Mastery goal attainment		Self-referenced goal attainment		Normative goal attainment	
	Individual Team	Team	Individual Team	Team	Individual Team	Team
First-order factors						
1. Mental imagery	.535**	.503**	.292**	.353**	.410**	.389**
2. Venting of unpleasant emotions	-.271**	-.255**	-.181**	-.219**	-.033	-.031
3. Distancing	.203**	.164**	.084	.088	.293**	.239**
4. Effort expenditure	.673**	.633**	.389**	.471**	.383**	.363**
5. Mental distraction	-.006	-.006	.057	.069	.133**	.126**
6. Thought control	.564**	.518**	.293**	.347**	.413**	.382**
7. Seeking support	.220**	.207**	.149**	.181**	.147**	.140**
8. Relaxation	.336**	.316**	.156**	.189**	.239**	.227**
9. Logical analysis	.440**	.414**	.204**	.247**	.319**	.303**
10. Disengagement/resignation	-.568**	-.534**	-.303**	-.367**	-.315**	-.298**
Second-order factors						
1. Task-oriented coping	.557**	.518**	.283**	.345**	.395**	.371**
2. Disengagement-oriented coping	-.636**	-.591**	-.348**	-.424**	-.309**	-.295**
3. Distraction-oriented coping	.133*	.125*	.105*	.128*	.275**	.263**

Note. All parameters were invariant across samples. ** $p < .01$ * $p < .05$.

Table 10

Study 2 : Descriptive statistics and reliability of the coping strategies

Coping strategies	Range	Time 1			Time 2				
		Pre-competition			Intra-competition				
		M	SD	α	M	SD	α		
1. Mental imagery	1-5	3.52	0.92	.778	.800	3.04	0.95	.794	.819
2. Venting of unpleasant emotions	1-5	2.21	1.08	.885	.914	2.48	1.13	.879	.917
3. Distancing	1-5	2.31	0.91	.705	.709	2.12	0.91	.792	.803
4. Effort expenditure	1-5	4.23	0.67	.848	.859	4.04	0.76	.837	.868
5. Mental distraction	1-5	1.97	0.82	.782	.808	1.78	0.79	.819	.844
6. Thought control	1-5	3.47	0.81	.671	.686	3.22	0.85	.666	.708
7. Seeking support	1-5	2.59	1.02	.784	.811	2.13	0.97	.782	.808
8. Relaxation	1-5	2.85	1.03	.851	.840	2.60	0.98	.850	.842
9. Logical analysis	1-5	3.16	0.85	.627	.648	2.99	0.85	.726	.759
10. Disengagement/resignation	1-5	1.55	0.68	.801	.798	1.67	0.82	.788	.786

Table 11

Study 2 : Tests of longitudinal invariance for each of the 10 coping strategies

Coping strategies	χ^2	<i>df</i>	BS <i>p</i>	CFI	TLI	RMSEA \pm 90% CI	$\Delta\chi^2$	Δdf	ΔCFI
I. Mental imagery									
1. Baseline	20.32	15	.247	.999	.998	.033 \pm .000 - .067	-----	---	---
1b. Baseline (respecified)	20.34	16	.327	.999	.998	.029 \pm .000 - .063	-----	---	---
2. Invariant loadings	31.93	19	.052	.998	.996	.046 \pm .014 - .073			
Model 2 vs. 1b							11.59**	3	-.001
2b. Partially invariant loadings	22.84	18	.303	.999	.998	.029 \pm .000 - .061			
Model 2b. vs. 1b							2.50	2	<.001
3. Invariant intercepts	48.26	21	.001**	.996	.993	.064 \pm .040 - .087			
Model 3 vs. 2b							25.42**	3	-.003
3b. Partially invariant intercepts	28.29	20	.159	.999	.998	.036 \pm .000 - .064			
Model 3b vs. 2b							5.84	2	<.001
II. Venting of unpleasant emotions									
1. Baseline	35.84	15	.020*	.996	.991	.066 \pm .038 - .094	-----	---	---
1b. Baseline (respecified)	24.87	15	.112	.998	.996	.045 \pm .000 - .076	-----	---	---
2. Invariant loadings	26.08	18	.183	.998	.997	.037 \pm .000 - .067			
Model 2 vs. 1b							1.21	3	<.001
3. Invariant intercepts	38.39	21	.020*	.997	.998	.051 \pm .024 - .076			
Model 3 vs. 2							12.31**	3	-.001
3b. Partially invariant intercepts	26.32	20	.255	.999	.998	.031 \pm .000 - .061			
Model 3b vs. 2							0.24	2	+.001
III. Distancing									
1. Baseline	24.46	15	.199	.998	.995	.044 \pm .000 - .075	-----	---	---
1b. Baseline (respecified)	26.56	17	.239	.998	.996	.042 \pm .000 - .071	-----	---	---
2. Invariant loadings	29.12	20	.251	.998	.997	.038 \pm .000 - .066			
Model 2 vs. 1b							2.56	3	<.001
3. Invariant intercepts	43.03	23	.028*	.996	.993	.052 \pm .000 - .066			
Model 3 vs. 2							13.91**	3	-.002

(Table 11 continues on next page)

Table 11 (Continued)

Coping strategies	χ^2	<i>df</i>	BS <i>p</i>	CFI	TLI	RMSEA \pm 90% CI	$\Delta\chi^2$	Δdf	ΔCFI
IV. Effort expenditure									
1. Baseline	11.07	5	.096	.999	.996	.062 \pm .001 - .111	-----	---	-----
1b. Baseline (respecified)	14.88	8	.167	.999	.997	.052 \pm .000 - .092	-----	---	-----
2. Invariant loadings	22.34	10	.092	.998	.996	.062 \pm .027 - .097			
Model 2 vs. 1b							7.46*	2	-.001
3. Invariant intercepts	42.96	12	.008**	.996	.992	.090 \pm .062 - .120			
Model 3 vs. 2							20.62**	2	-.002
3b. Partially invariant intercepts	22.38	11	.116	.998	.997	.057 \pm .021 - .091			
Model 3b vs. 2							0.04	1	<.001
V. Mental distraction									
1. Baseline	18.66	15	.610	.999	.998	.028 \pm .000 - .063	-----	---	-----
1b. Baseline (respecified)	18.70	16	.665	.999	.999	.023 \pm .000 - .059	-----	---	-----
2. Invariant loadings	23.04	19	.650	.999	.998	.026 \pm .000 - .058			
Model 2 vs. 1b							4.34	3	<.001
3. Invariant intercepts	25.53	22	.673	.999	.999	.022 \pm .000 - .054			
Model 3 vs. 2							2.49	3	<.001
VI. Thought control									
1. Baseline	22.68	15	.187	.999	.997	.040 \pm .000 - .072	-----	---	-----
1b. Baseline (respecified)	6.16	6	.405	1.00	1.00	.000 \pm .000 - .064	-----	---	-----
2. Invariant loadings	7.63	8	.471	1.00	1.00	.001 \pm .000 - .064			
Model 2 vs. 1b							1.47	2	<.001
3. Invariant intercepts	11.24	10	.466	1.00	.999	.020 \pm .000 - .066			
Model 3 vs. 2							3.61	2	<.001
VII. Seeking support									
1. Baseline	30.61	15	.044*	.997	.992	.057 \pm .027 - .086	-----	---	-----
1b. Baseline (respecified)	10.87	13	.677	1.00	1.00	.000 \pm .000 - .047	-----	---	-----
2. Invariant loadings	13.28	16	.721	1.00	1.00	.000 \pm .000 - .043			
Model 2 vs. 1b							2.41	3	<.001
3. Invariant intercepts	15.48	19	.749	1.00	1.00	.000 \pm .000 - .039			
Model 3 vs. 2							2.20	3	<.001

(Table 11 continues on next page)

Table 11 (Continued)

Coping strategies	χ^2	df	BS <i>p</i>	CFI	TLI	RMSEA \pm 90% CI	$\Delta\chi^2$	Δdf	ΔCFI
VIII. Relaxation									
1. Baseline	27.13	15	.080	.998	.995	.050 \pm .016 - .080	-----	---	-----
1b. Baseline (respecified)	27.73	17	.143	.998	.996	.044 \pm .004 - .073	-----	---	-----
2. Invariant loadings	29.40	20	.223	.998	.997	.038 \pm .000 - .066			
Model 2 vs. 1b							1.67	3	< .001
3. Invariant intercepts	41.05	23	.060	.997	.995	.050 \pm .023 - .074			
Model 3 vs. 2							11.65**	3	-.001
3b. Partially invariant intercepts	33.87	22	.143	.998	.997	.041 \pm .000 - .067			
Model 3b. vs. 2							4.47	2	< .001
IX. Logical analysis									
1. Baseline	12.56	15	.745	1.00	1.00	.000 \pm .000 - .045	-----	---	-----
1b. Baseline (respecified)	13.50	16	.781	1.00	1.00	.000 \pm .000 - .042	-----	---	-----
2. Invariant loadings	21.46	19	.510	1.00	.999	.020 \pm .000 - .055			
Model 2 vs. 1b							7.96*	3	< .001
3. Invariant intercepts	30.70	22	.279	.998	.998	.035 \pm .000 - .062			
Model 3 vs. 2							9.24*	3	-.002
X. Disengagement/resignation									
1. Baseline	14.26	15	.809	1.00	1.00	.000 \pm .000 - .005	-----	---	-----
1b. Baseline (respecified)	14.99	17	.869	1.00	1.00	.000 \pm .000 - .045	-----	---	-----
2. Invariant loadings	26.25	20	.566	.998	.997	.031 \pm .000 - .061			
Model 2 vs. 1b							11.26**	3	-.002
2b. Partially invariant loadings	17.37	19	.873	1.00	1.00	.000 \pm .000 - .045			
Model 2b vs. 1b							2.38	2	< .001
3. Invariant intercepts	20.46	22	.841	1.00	1.00	.000 \pm .000 - .043			
Model 3 vs. 2b							3.09	3	< .001

Note. BS *p* = Bollen-Stine adjusted probability of the chi-square statistic based on 2 500 bootstrapped samples. In the invariant- and partially invariant intercepts models, the latent mean (κ_j) was fixed to 0 at Time 1 and was freely estimated at Time 2. ** $p < .01$ * $p < .05$.

Table 12

Study 2: Differential and mean-level consistency of coping strategies for the full and partial invariance of intercepts models

Coping strategies	Differential consistency			Mean-level consistency				
	ϕ_{12}	<i>S.E.</i>	<i>SEM r</i>	κ_2	<i>S.E.</i>	ϕ_1	ϕ_2	<i>d</i>
Mental imagery								
Invariant intercepts	0.29***	0.049	0.75	-0.360***	0.039	0.412	0.377	-0.57
Partially invariant intercepts	0.31***	0.051	0.74	-0.308***	0.040	0.451	0.395	-0.47
Venting of unpleasant emotions								
Invariant intercepts	0.42***	0.071	0.46	0.225***	0.061	0.863	0.952	0.24
Partially invariant intercepts	0.42***	0.071	0.46	0.197***	0.061	0.868	0.958	0.21
Distancing								
Invariant intercepts	0.22***	0.042	0.63	-0.134***	0.036	0.332	0.364	-0.33
Effort expenditure								
Invariant intercepts	0.15***	0.027	0.44	-0.183***	0.042	0.270	0.407	-0.32
Partially invariant intercepts	0.15***	0.027	0.45	-0.243***	0.044	0.269	0.393	-0.42
Mental distraction								
Invariant intercepts	0.40***	0.062	0.58	-0.212***	0.052	0.724	0.657	-0.26
Thought control								
Invariant intercepts	0.35***	0.063	0.62	-0.256***	0.050	0.571	0.570	-0.34
Seeking support								
Invariant intercepts	0.48***	0.068	0.75	-0.422***	0.048	0.666	0.615	-0.53
Relaxation								
Invariant intercepts	0.52***	0.073	0.74	-0.206***	0.042	0.734	0.669	-0.25
Partially invariant intercepts	0.51***	0.072	0.74	-0.262***	0.047	0.742	0.660	-0.31
Logical analysis								
Invariant intercepts	0.31***	0.068	0.76	-0.137***	0.040	0.410	0.412	-0.21
Disengagement/resignation								
Invariant intercepts	0.29***	0.044	0.63	0.122***	0.042	0.364	0.562	0.18

Note. ϕ_{12} = Covariance between Time 1 and Time 2. *S.E.* = Standard error of estimate.

r = Standardized covariance. κ_2 = Time 2 latent mean. ϕ_1 = Factor variance Time 1.

ϕ_2 = Factor variance Time 2. *d* = Cohen's effect size based on Hancock's formula. Latent mean (κ_1) was fixed to 0 at Time 1 and was freely estimated at Time 2. *** $p < .005$ ** $p < .01$ * $p < .05$.

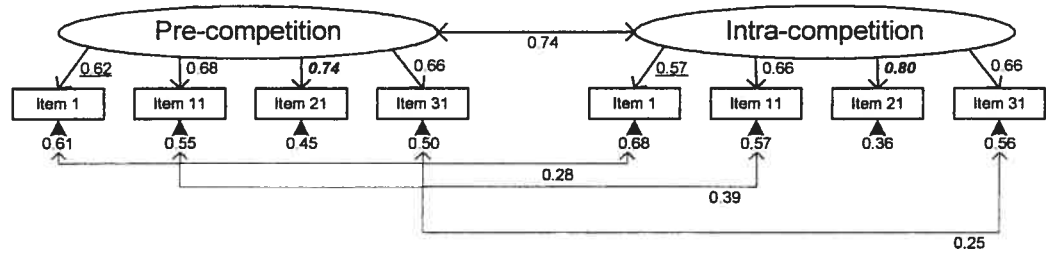
Table 13

Study 2 : Individual-level changes in coping strategies based on RCI and full-point changes in absolute score on a 5-point Likert-type scale

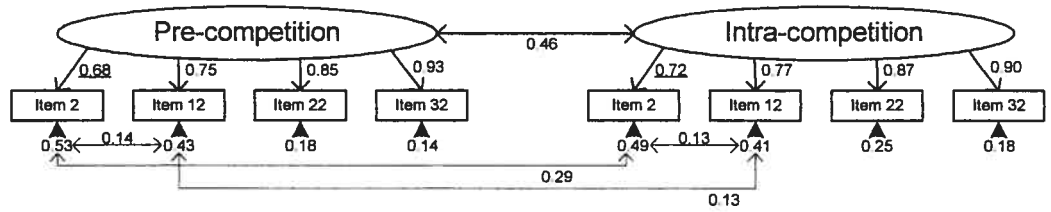
	Relative Change Index (RCI)				Change in absolute score			
	Cutoff ($S_{diff}^* 1.96$)	Decreased (%)	Stayed the same (%)	Increased (%)	$\chi^2_{(2, N 321)}$	Decreased (%)	Stayed the same (%)	Increased (%)
Mental imagery	± 1.27	19.9	79.5	0.6	406.00***	26.8	70.1	3.1
Venting of unpleasant emotions	± 1.04	12.1	63.3	24.6	784.36***	12.1	63.3	24.6
Distancing	± 1.23	12.5	81.0	6.5	155.76***	21.5	67.3	11.2
Effort expenditure	± 0.88	19.3	72.9	7.8	417.15***	19.0	74.5	6.5
Mental distraction	± 0.98	16.5	74.2	9.3	328.34***	16.5	74.4	9.1
Thought control	± 1.45	8.4	88.8	2.8	46.56***	21.8	70.4	7.8
Seeking support	± 1.25	18.1	79.4	2.5	320.70***	31.5	64.1	4.4
Relaxation	± 1.11	12.8	82.2	5.0	149.64***	21.5	69.8	8.7
Logical analysis	± 1.37	6.2	92.6	1.2	20.21***	15.6	76.3	8.1
Disengagement/resignation	± 1.02	7.8	75.9	16.3	257.28***	7.8	76.9	16.3

Note. Cutoff = Magnitude of difference in absolute score needed to assume that an individual's change exceeded what would be expected by measurement error. In the categorization based on RCI, Decreased = RCI < -1.96 whereas Increased = RCI > 1.96. The chi-square examines whether the proportion of changers differed from the expected distribution if change was random (2.5% decrease, 95% remain the same, 2.5% increase). In the categorization based on change in absolute score, Decreased corresponds to < -0.99 whereas Increased corresponds to > 0.99. *** $p < .001$ ** $p < .01$. * $p < .05$.

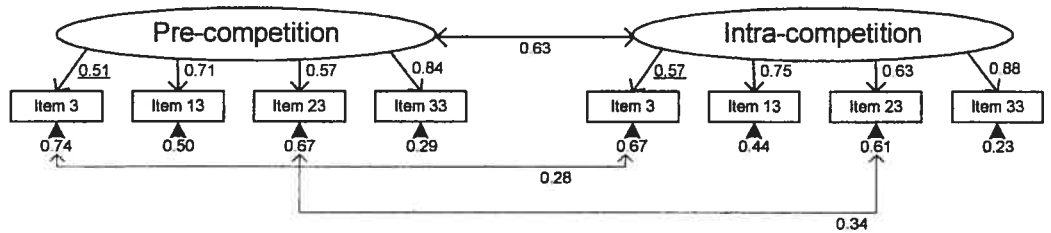
Panel 1. Mental imagery



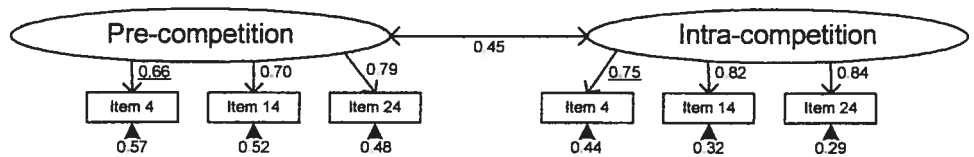
Panel 2. Venting of unpleasant emotions



Panel 3. Distancing



Panel 4. Effort expenditure



Panel 5. Mental distraction

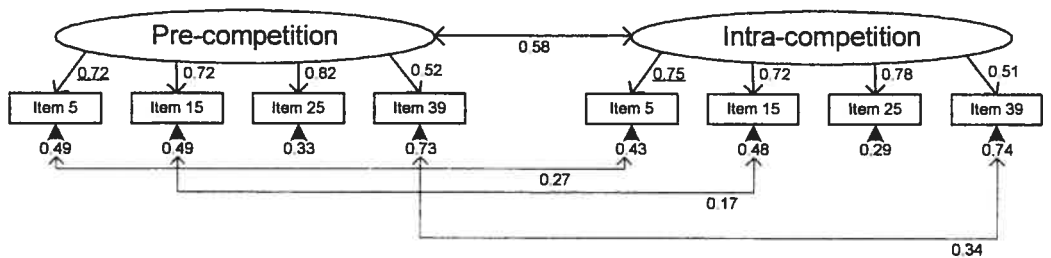
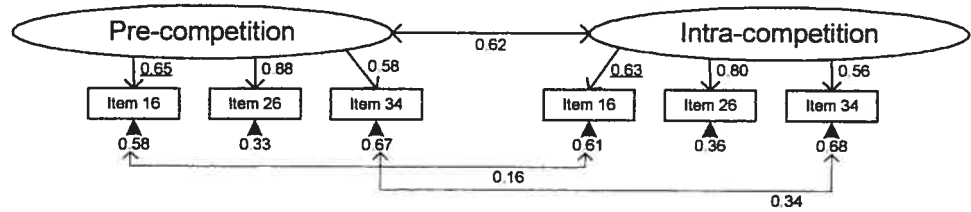
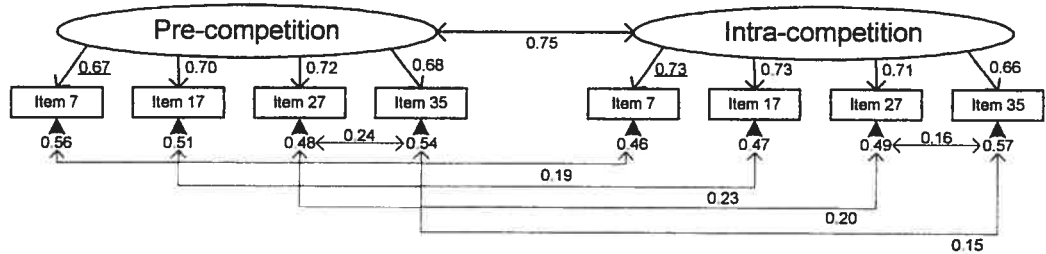


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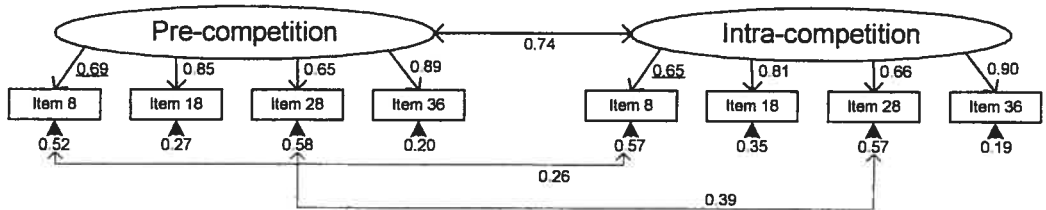
Panel 6. Thought control



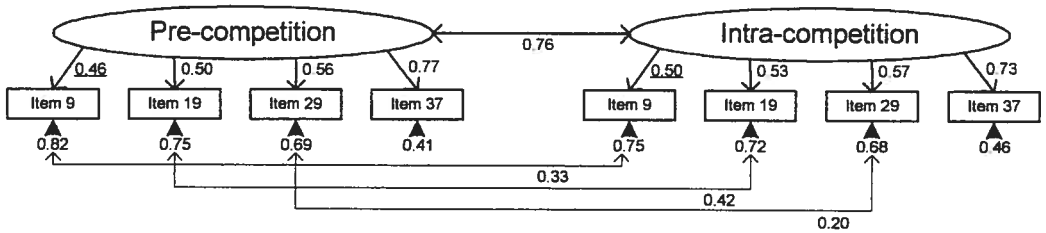
Panel 7. Seeking support



Panel 8. Relaxation



Panel 9. Logical analysis



Panel 10. Disengagement/resignation

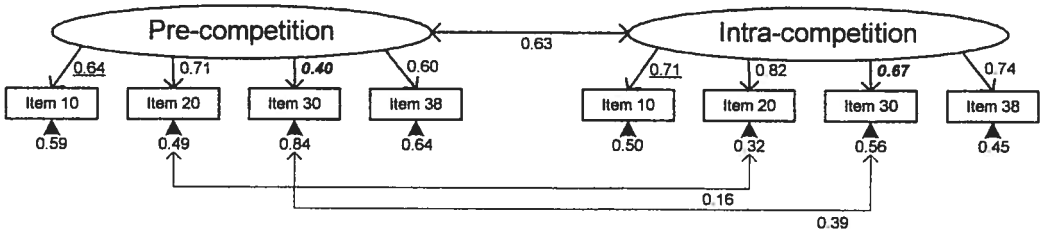


Figure 1. Differential consistency and standardized parameter estimates from the LCFAs. Underlined factor loadings were set to unity for model identification. Factor loadings set in italic were non-invariant across waves. All other factor loadings were invariant across waves. All parameters were significant at $p < .05$.

APPENDIX

INVENTAIRE DES STRATÉGIES DE COPING EN COMPÉTITION SPORTIVE
(ISCCS; Gaudreau & Blondin, 2002)

Consignes

Ce questionnaire contient 39 énoncés. Chacun des énoncés représente des choses que les athlètes peuvent faire ou penser durant une compétition sportive. Pour chacun des énoncés, tu dois indiquer à quel point il représente ce que tu as fait pendant la compétition que tu as disputée aujourd'hui. Pour ce faire, tu dois utiliser le choix de réponses ci-contre. Encerle la réponse qui représente le mieux ce que tu as fait durant la compétition d'aujourd'hui. Ne passe pas trop de temps sur chaque énoncé. Tes réponses doivent être spontanées et sincères. Il n'y a pas de bonnes ou de mauvaises réponses. Nous voulons savoir ce que **TU as fait pendant la compétition que tu as disputée aujourd'hui**.

- ① Ne représente pas du tout ce que j'ai fait ou ce que j'ai pensé
 ② Représente un peu ce que j'ai fait ou ce que j'ai pensé
 ③ Représente modérément ce que j'ai fait ou ce que j'ai pensé
 ④ Représente beaucoup ce que j'ai fait ou ce que j'ai pensé
 ⑤ Représente énormément ce que j'ai fait ou ce que j'ai pensé

	Pas du tout	Un peu	Modérément	Beaucoup	Énormément
1. J'ai visualisé que j'étais en plein contrôle de la situation.....	1	2	3	4	5
2. J'ai sacré (jurons, blasphèmes, etc.) dans ma tête ou à haute voix pour passer ma colère.....	1	2	3	4	5
3. Je me suis éloigné des autres athlètes.....	1	2	3	4	5
4. Je me suis appliqué en fournissant un effort constant.....	1	2	3	4	5
5. Je me suis occupé l'esprit pour penser à autre chose que la compétition..	1	2	3	4	5
6. J'ai essayé de ne pas me laisser intimider par les autres athlètes.....	1	2	3	4	5
7. J'ai demandé des conseils concernant ma préparation mentale.....	1	2	3	4	5
8. J'ai tenté de détendre mon corps.....	1	2	3	4	5
9. J'ai analysé mes performances antérieures.....	1	2	3	4	5
10. J'ai perdu tout espoir de pouvoir atteindre mon objectif.....	1	2	3	4	5
11. J'ai répété mentalement l'exécution de mes mouvements.....	1	2	3	4	5
12. Je me suis fâché.....	1	2	3	4	5

	Pas du tout	Un peu	Modérément	Beaucoup	Énormément
13. Je me suis isolé dans un endroit favorable à la réflexion.....	1	2	3	4	5
14. J'ai fourni un effort acharné.....	1	2	3	4	5
15. J'ai pensé à mes loisirs favoris pour ne pas penser à la compétition.....	1	2	3	4	5
16. J'ai tenté d'éliminer mes doutes en pensant à des choses positives.....	1	2	3	4	5
17. J'ai demandé conseil à d'autres athlètes.....	1	2	3	4	5
18. J'ai essayé de réduire ma tension musculaire.....	1	2	3	4	5
19. J'ai analysé les faiblesses de mes adversaires.....	1	2	3	4	5
20. Je me suis laisser-aller au découragement.....	1	2	3	4	5
21. Je me suis imaginé en train de faire une bonne performance.....	1	2	3	4	5
22. J'ai exprimé mon mécontentement.....	1	2	3	4	5
23. J'ai fait le vide autour de moi.....	1	2	3	4	5
24. J'ai fourni mon maximum d'effort.....	1	2	3	4	5
25. J'ai fait des choses divertissantes pour ne pas penser à la compétition...	1	2	3	4	5
26. J'ai remplacé mes pensées négatives par des pensées positives.....	1	2	3	4	5
27. Je me suis confié à une personne digne de confiance.....	1	2	3	4	5
28. J'ai fait des exercices de relaxation.....	1	2	3	4	5
29. J'ai pensé à des solutions possibles pour gérer la situation.....	1	2	3	4	5
30. J'ai souhaité que la compétition se termine immédiatement.....	1	2	3	4	5
31. J'ai visualisé ma meilleure performance à vie.....	1	2	3	4	5
33. J'ai recherché le silence.....	1	2	3	4	5
34. J'ai pensé à mes bons coups plutôt qu'à mes erreurs.....	1	2	3	4	5
35. J'ai parlé à une personne qui est capable de me motiver.....	1	2	3	4	5
36. J'ai relaxé les muscles de mon corps.....	1	2	3	4	5
37. J'ai analysé les exigences de la compétition.....	1	2	3	4	5
38. J'ai cessé de croire en ma capacité d'atteindre mon but.....	1	2	3	4	5
39. J'ai pensé à ma famille ou à mes amis pour me distraire.....	1	2	3	4	5

CHAPITRE 4

ARTICLE 2

The differential role of dispositional optimism and pessimism in athletes' coping, goal attainment, and emotional adjustment during sport competition

ARTICLE 2

1. Identification de l'étudiant et du programme

Patrick Gaudreau
Ph.D. en psychologie, option recherche

2. Description de l'article

Titre : The differential role of dispositional optimism and pessimism in athletes' coping, goal attainment, and emotional adjustment during sport competition

Auteur : Patrick Gaudreau et Jean-Pierre Blondin

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3. Contribution des auteurs

- | | |
|---------------|---|
| P. Gaudreau | <ul style="list-style-type: none"> • Élaboration du plan de la recherche • Recherche documentaire • Cueillette des données et préparation de la base des données • Analyses des données • Rédaction et correction de l'article |
| J.-P. Blondin | <ul style="list-style-type: none"> • Relecture et correction de l'article |

4. Déclaration de tous les coauteurs autres que l'étudiant

À titre de coauteur de l'article identifié ci-dessus, je suis d'accord pour que Patrick Gaudreau inclut cet article dans sa thèse doctorale qui a pour titre « Les stratégies de coping utilisées par les athlètes en situation de compétition sportive : Développement d'un modèle multidimensionnel du coping, de ses antécédents et de ses conséquences ».

JEAN-PIERRE BLONDIN

Coauteur

Signature

Date

12 février 2004

Running head : OPTIMISM AND COPING IN SPORT COMPETITION

The differential role of dispositional optimism and pessimism in athletes' coping, goal attainment, and emotional adjustment during sport competition

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Abstract

This study examined the associations of dispositional optimism and pessimism with athletes' coping, goal attainment, and affective states during a sport competition. Results of path analyses showed that dispositional optimism and pessimism correlated differently with coping and affective variables. Mediating analyses indicated that task-oriented coping partially mediated the relationship of optimism with post-competition positive affective state whereas disengagement-oriented coping fully mediated the relationship of pessimism with post-competition anger/dejection. Ancillary hierarchical regressions also indicated that distraction-oriented coping may lead to positive outcomes when used in concordance with task-oriented coping. Overall, these results lent credence to the utility of a bidimensional model of optimism and pessimism as they correlated differently with coping and psychological adjustment.

Key words : coping, optimism, pessimism, emotion, goal attainment

Introduction

On a daily basis, individuals are facing various stressful situations across different domains of their life. Whether individuals adapt themselves successfully to these stressful experiences may depend on a variety of dispositional, contextual, and situational factors (e.g., Bolger & Zuckerman, 1995; Moos & Schaefer, 1993). Of particular interest, coping mechanisms have been pinpointed as potential mediators of the relationship between these factors and psychological adjustment. Based on the seminal work of Lazarus and Folkman (1984), hundreds of studies have assessed coping responses across a very broad range of stressful situations (see Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001; Zeidner & Endler, 1996, for reviews). However, little attention has been devoted to coping in the sport domain. This research aimed at expanding the literature by examining the relationships of coping with dispositional optimism, goal attainment, and affective states in the context of sport competition.

Coping, goal attainment, and emotional adjustment

In the last decade, sport scientists have devoted growing empirical attention to athletes' coping in sport settings. At first, several researchers (see Crocker, Kowalski, & Graham, 1998, for a review) invested effort into the sport-related adaptation and validation of well-established instruments such as the COPE Inventory (Carver, Scheier, & Weintraub, 1989) and the Ways of Coping Checklist (Lazarus & Folkman, 1984). More recently, however, researchers have created and validated a series of measures designed specifically for sport and exercise settings (e.g., Gaudreau & Blondin, 2002; Kowalski & Crocker, 2001). Using these generic and sport-related questionnaires, researchers have provided compelling support for the assertion that coping plays an important role in emotional regulation during stressful situations (Lazarus & Folkman, 1984). Specifically,

studies have shown that task-oriented coping correlated positively with positive affective states (e.g., Ntoumanis, Biddle, & Haddock, 1999) whereas disengagement-oriented coping correlated positively with negative affective states and competitive state anxiety (e.g. Haney & Long, 1995). Noteworthy, distraction-oriented coping did not correlate significantly with affective states in these previous studies. Despite the appealing nature of these results, Crocker and Graham (1995) suggested that coping and affective states should be examined more thoroughly in order to determine whether their relationship could be explained by other variables.

In line with this suggestion, Gaudreau, Lapierre, and Blondin (2002) tested the mediating role of performance goal attainment in the relationship of coping strategies with affective states during and 24h after a competition. Recent studies performed with college students (e.g., Sheldon & Houser-Marko, 2001) and sport participants (Graham, Kowalski, & Crocker, 2002) showed that goal attainment relates positively to emotional adjustment. Interestingly, results by Gaudreau et al. (2002) expanded this literature by showing that goal attainment mediated partially the coping-affect relationship. On one hand, task-oriented coping strategies (i.e., positive reappraisal, active coping, and planning) correlated positively with goal attainment which in return led to more positive affect during and after competition. On the other hand, disengagement-oriented coping was associated negatively with goal attainment, which in return led to more negative affect during the competition.

Despite yielding support for the mediating role of goal attainment, the study by Gaudreau et al. (2002) was limited both methodologically and conceptually. At a methodological level, goal attainment was assessed using a single index of performance-goal discrepancy. This strategy provided an interesting, yet incomplete, portrait because individuals can use distinctive criteria to assess whether they have attained their goals in a

given situation. Based on the recent expansion in achievement goal theory (Elliot & McGregor, 2001), the present study will rely on a multidimensional self-reported measure of goal attainment (i.e., mastery, self-referenced, and normative) and on objective indices of self-referenced and normative goal discrepancy.

From a conceptual standpoint, previous studies investigated the bivariate association of coping strategies with external variables without considering that individuals use more than one coping strategy during a stressful situation. Of particular interest, results of cluster analytical studies (Gaudreau & Blondin, in press; Smith & Wallston, 1996) lent credence to the assumption that the effect of a given coping dimension depends on whether an individual uses it in combination with other coping dimensions (Suls & David, 1996). Although initial evidence indicated that athletes' distraction-oriented coping does not correlate with either subjective goal attainment or affective states (Gaudreau & Blondin, 2002), it may be that the use of distraction-oriented coping in combination with task-oriented coping leads to more positive outcomes than the use of this functional dimension of coping alone. Clearly, more empirical attention should be devoted to this issue in order to provide a complete portrait of the ways in which coping can influence outcome variables in the sport domain.

A final issue concerns the limited empirical attention devoted to the variables that can potentially influence athletes' use of coping strategies. Some studies performed with athletes have already shown the influence of situational factors such as cognitive appraisals (Haney & Long, 1995) and perceived stress (Kowalski & Crocker, 2001). Based on evidence in other life domains, sport scientists have proposed that dispositional variables should also be investigated as antecedents of coping (e.g., Anshel, Kim, Kim, Chang, &

Eom, 2001). Hence, dispositional optimism is a genuine candidate because of its theoretically association with the coping construct.

Dispositional optimism, coping, and adjustment

Research on dispositional optimism has been popularised by the development (Scheier & Carver, 1985) and subsequent revision (Scheier, Carver, & Bridges, 1994) of the Life Orientation Test (LOT and LOT-R). Based on Carver and Scheier's self-regulation theory (see Scheier & Carver, 1985), researchers have conceived dispositional optimism as a personal resource promoting the use of adapted coping and fostering psychological adjustment (for a review, see Chang, 2001). As such, dispositional optimism was shown to promote task-oriented coping strategies and to abate distraction- and disengagement-oriented coping strategies (e.g., Chang, 1998; Peacock & Wong, 1996). Prospective studies (e.g., Chemers, Hu, & Garcia, 2001; Mäkikangas & Kinnunen, 2003) have also shown that dispositional optimism correlates positively with psychological adaptation and negatively with psychological distress.

Although limited, empirical evidence has linked optimism to coping and psychological adaptation of athletes. For instance, Grove and Heard (1997) showed that optimism was associated positively with task-oriented coping and negatively with avoidance-oriented coping in a sample of athletes recalling a recent performance slump. In a sample of national level rowers, Baltzell (1996) also found a significant association of optimism with task-oriented coping and psychological well being. Similarly, Wilson, Raglin, and Pritchard (2002) indicated that pessimists and defensive pessimists experienced more pre-competition anxiety than their optimists counterparts.

Because dispositional optimism can predict both coping and adjustment, researchers have hypothesized and demonstrated empirically that coping strategies act as mediators in

the relationship of optimism with psychological adjustment in health-related (Carver, Pozo, Harris, Noriega, & et al., 1993; Fournier, de Ridder, & Bensing, 2002), academic (Aspinwall & Taylor, 1992), and occupational settings (Long, 1998). Results showed that optimism was associated positively with task-oriented coping and negatively with disengagement-oriented coping, which in return led to securing psychological adjustment and incurring emotional distress, respectively. Despite these evidence, mediation analyses have yet to be performed to determine whether coping carries the effect of optimism on athletes' psychological adjustment in sport competition.

Optimism and task performance

Compared to pessimists, people with an optimistic view about the future are expected to try harder to reduce the discrepancy between a situation and one's desired goal. Hence, predictions about goal attainment and task performance can clearly be derived from the theoretical tenets of dispositional optimism. Despite this contention, unsystematic results have been reported for the optimism-performance relationship. On one hand, studies have shown that students' academic performance was predicted positively by dispositional optimism (Chemers, Hu, & Garcia, 2001) and by dispositional hope (Curry, Snyder, Cook, Ruby, & Rehm, 1997), over and above the effect of baseline level of scholastic ability (i.e., grade point average). Similar results were found in daily activities (Brenes, Rapp, Rejeski, & Miller, 2002) as well as in an occupational setting (Begley, Lee, & Czajka, 2000). In the sport domain, Curry et al. (1997) also reported that athletes' dispositional hope correlated positively with performance, even after partialing out the effect of their coach's rating of their athletic ability. On the other hand, however, several studies conducted in academic (Aspinwall & Taylor, 1992; Robbins, Spence, & Clark, 1991; Stewart, Lam, Betson, Wong, & Wong, 1999), work (McColl-Kennedy & Anderson, 2002), and sport (Wilson et al.,

2002) have failed to find a significant association between dispositional optimism and performance. In some circumstances, failure to show a significant linear relationship between two variables may hide an interesting non-linear association (Cohen, Cohen, West, & Aiken, 2003). As such, a series of studies by Brown and Marshall (2000) indicated that low performance expectancies were associated with low performance in a laboratory task whereas medium and high expectancies were associated with equally high level of performance. Whether this quadratic trend can translate to dispositional optimism outside the laboratory is an issue awaiting more empirical attention. Neglecting this potential non-linear relationship could bias our understanding of the true relationship between optimism and performance.

Differential influence of optimism and pessimism

Despite the advances in research on optimism, some scholars have recently questioned the unidimensional conception of the LOT and conceived optimism and pessimism as separate constructs (e.g., Dember, 2001; Olason & Roger, 2001). Although the LOT and LOT-R were created as unidimensional measures of optimism, evidence from confirmatory factor analyses (e.g., Marshall, Wortman, Kusulas, Hervig, & Vickers, 1992; Robinson-Whelen, Kim, MacCallum, & Kiecolt-Glaser, 1997) revealed the superiority of a model in which positively and negatively worded items load on different factors representing optimism and pessimism. In these studies, the correlation between optimism and pessimism was small to moderate, thus providing further evidence for their conceptual distinctiveness. Interestingly, evidence from cross-sectional (e.g., Long & Sangster, 1993; Marshall et al., 1992; Puskar, Sereika, Lamb, Tusaie-Mumford, & McGuinness, 1999) and prospective (Robinson-Whelen et al., 1997) studies have also indicated that optimism and pessimism display differential associations with coping and psychological adjustment. In

general, optimism correlates predominantly with task-oriented coping and psychological adjustment whereas pessimism correlates with disengagement-oriented coping and psychological distress.

Purposes of this study

Researchers in the sport domain have yet to investigate dispositional optimism and pessimism as separate constructs. Based on a growing body of literature, this study addressed the differential associations of dispositional optimism and pessimism with coping, subjective and objective goal attainment, and positive and negative affective states during a competitive sport encounter. On one hand, we hypothesized that optimism would lead to greater use of task-oriented coping during the competition, which in turn would yield greater levels of goal attainment and post-competitive positive affective states. On the other hand, we expected that pessimism would lead to greater use of disengagement-oriented coping during the competition, which in turn would yield lower levels of goal attainment and higher levels of post-competition anger/dejection. Within the confines of a structural equation modeling, performed with manifest variables, we tested and compared three competing models in which (1) goal attainment mediated completely or (2) partially the relationship of coping with post-competition affective states. We also compared them to a model in which (3) coping mediated partially the optimism-positive affect and the pessimism-negative affect relationships (see Figure 1 for an illustration of these three models). Finally, we tested whether different combinations of coping dimensions could lead to different outcomes (Suls & David, 1996) and we examined both the linear and quadratic association of goal attainment indices with dispositional optimism and pessimism (Brown & Marshall, 2000).

Method

Participants

Participants were recruited at the 2002 provincial championship of the Amateur Quebec Golf Association. A total of 144 French-Canadian male golfers volunteered to participate in this study, yielding a participation rate of 69%. Their average age was 27 years ($SD = 7.48$) and they had been competing in their sport for 9.5 years ($SD = 6.70$). Their skill level, evaluated with their official handicap index, varied from -2 to 11 ($M = 2.99$, $SD = 2.49$). Eighty-eight golfers were participants in the Amateur Championship whereas 56 participated in the Junior Championship. All participants provided written informed consent prior to the competition and it should be noted that the data of the amateur golfer ($n = 88$) will be included in a larger data bank ($N = 640$) used for the ongoing validation of the CICS (see Study 1, Gaudreau & Blondin, 2003). None of the specific results presented in this research have been reported in any prior work.

Instruments

Optimism and pessimism. The French-Canadian version of the LOT-R (Trottier, 1999) was used to assess dispositional optimism and pessimism. For each item, respondents were asked to indicate their agreement on a 8-point scale ranging from 1 (*strongly disagree*) to 8 (*strongly agree*). In this sample, results of a confirmatory factor analysis showed that a two-factor model provided a good fit to the data ($\chi^2_{(8)} = 8.68$, $p > .05$, NNFI = .985, CFI = .991, RMSEA = .025) whereas a one-factor model yielded a marginal fit to the data ($\chi^2_{(9)} = 17.21$, $p < .05$, NNFI = .828, CFI = .897, RMSEA = .082). Insofar that the standardized factors' covariance was significant ($r = -0.65$, $p < .05$), optimism and pessimism only shared 42% of their variance thus supporting the view that they represent independent, yet interrelated, constructs. In this sample, the internal consistency of

optimism ($\alpha = 0.56$) and pessimism ($\alpha = 0.54$) was low. This result was expected given that each scale contains only three items and because previous studies reported similar reliability estimates (e.g., Chang, Sanna, & Yang, 2003; Roysamb & Strype, 2002).

Coping. The French version of the Coping Inventory for Competitive Sport (CICS: Gaudreau & Blondin, 2002) was used to assess coping strategies. All items were rated on a five-point Likert-type scale ranging from 1 (*does not correspond at all*) to 5 (*corresponds very strongly*). The CICS contains nine four-item and one three-item subscales and relies on a hierarchical framework of coping that regroups coping strategies in three second-order dimensions of coping : task-oriented coping (i.e., mental imagery, thought control, effort expenditure, logical analysis, relaxation, and seeking support), distraction-oriented coping (i.e., distancing and mental distraction), and disengagement-oriented coping (i.e., venting of unpleasant emotions and disengagement/resignation). Results of CFAs lent credence to the factorial validity and to the reliability of the first-order components of the French-Canadian CICS (Gaudreau & Blondin, 2002). In this sample, the Cronbach's estimate of reliability of the coping strategies ranged from 0.57 to 0.86 ($M = 0.74$, $SD = 0.09$). More recently, results of hierarchical CFAs brought support for the whole hierarchical structure of the French-Canadian CICS across samples of individual and team sports athletes (Gaudreau & Blondin, 2003b). Task- ($H = 0.97$)¹ and disengagement-oriented coping ($H = 0.89$) exhibited very good construct reliability whereas distraction-oriented coping exhibited a reasonable construct reliability ($H = 0.61$). These three second-order factors were used in upcoming analyses.

Affective states. A French-Canadian translation of the Positive and Negative Affective Schedule (PANAS: Watson, Clark, & Tellegen, 1988) was used to assess positive and negative affect. All items were rated on a five-point Likert-type scale from 1 (*not at all*

or a little) to 5 (*extremely*). Results by Mehrabian (1997) have suggested that the negative affect scale subsumes two independent factors : anger-dejection (irritable, ashamed, guilty, hostile, and upset) and anxiety (distressed, nervous, scared, jittery, and afraid). More recently, a confirmatory factor analysis, with two samples of French-Canadian athletes, have shown that a three-factor model fitted the data better than a two-factor model (Gaudreau & Blondin, 2003a). A three-factor model representing positive affect ($\alpha = 0.91$), anger-dejection ($\alpha = 0.76$), and anxiety ($\alpha = 0.69$) was used in this study and their Cronbach's estimate of reliability were acceptable.

Perceived goal attainment. The French version of the Attainment of Sport Achievement Goals Scale (A-SAGS: Gaudreau, Amiot, Blondin, & Blanchard, 2002) was used to assess goal attainment. All items were rated on a 7-point Likert-type scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds completely*). This questionnaire consists of 12 items representing three distinctive yet interrelated first-order dimensions of goal attainment : mastery ("I mastered the difficulties of the situation"), self-referenced ("I did better than my usual performances"), and normative ("I outperformed other athletes"). In this sample, Cronbach's estimate of reliability ranged from 0.82 to 0.92 ($M = 0.86$, $SD = 0.05$). Furthermore, results of hierarchical CFAs (Gaudreau, Amiot et al., 2002) provided evidence for the validity of a hierarchical model in which the three first-order factors subsumed into a second-order dimension representing global goal attainment. The second-order goal attainment construct exhibited adequate construct reliability ($H = 0.91$) and correlated meaningfully with affective variables. In this study, a global score of goal attainment was computed by summing up the three subscales mean scores.

Performance-goal discrepancy (PGD). The day before the competition, golfers were asked to report their scoring goal for the first round of the tournament. The objective

PGD index was created by subtracting one's scoring goal from the number of strokes played during the first round of the tournament (see Gaudreau, Blondin et al., 2002). PGD scores ranged from -4 to 19 ($M = 5.03$, $SD = 4.06$). A score of zero indicated that athletes reached their goal ($n = 7$), whereas negative and positive scores indicated that golfers performed better ($n = 11$) or worse ($n = 126$) than their scoring goal, respectively.

Performance-norm discrepancy (PND). After the first round of the tournament, the scoring average of the junior and amateur golfers was displayed on the scoreboards, thus enabling them to compare their performance to the average performance of their fellow competitors. Because junior and amateur golfers played in different venues, we created their PND scores separately by using their respective scoring average. The objective PND index was created by subtracting the scoring average from the number of strokes played by each golfer during the first round of the tournament. PND ranged from -10 to 12 ($M = 0.003$, $SD = 4.70$), with negative scores ($n = 80$) and positive scores ($n = 64$) indicating that a golfer either performed better or worse than the average score obtained by their fellow competitors.

Procedure

The first author of this research contacted the tournament committee and asked for permission to conduct a research during the 2002 provincial championship. Golfers were introduced to the research project by members of the tournament committee, by the first author of this research, and by a research assistant before the practice round held the day prior to the competition. They were invited to participate in a research on the mental aspects of competitive golf and were assured that their answers would remain confidential and would serve for research purposes only. They were also informed that they could put an end to their participation at any time and were asked not to write their name on the

questionnaire. To ensure confidentiality and matching purposes, all questionnaires were put in an envelope and participants were asked to write their date of birth on the envelope rather than on the questionnaires per se.

Research participants completed a questionnaire divided in two sections. The first section was completed immediately after the practice round held the day prior to the competition. Participants provided written informed consent, demographic and relevant sport information (i.e., age, gender, years of experience in competition, handicap, etc.), and they completed the LOT-R. When completing the LOT-R, participants were asked to rate each item according to their life in general rather than to their experience in the sport domain. Based on their actual level of ability and on the difficulty of the golf course, they were also instructed to report a realistic scoring goal for the first round of the tournament.

The second section of the questionnaire was completed within 12h after the completion of the first round of the tournament. All questionnaires were completed overnight and returned to research assistants before the start of the second round of the tournament. Participants were instructed to complete their questionnaire alone and away from distraction. This section of the questionnaire contained the CICS, the A-SAGS, and the PANAS. When completing the CICS and the A-SAGS, golfers were asked to indicate the extent to which each item represented what they had done or thought and how they had performed during the competition in which they had just taken part, respectively. For the PANAS, participants were instructed to indicate the extent to which each item corresponded to their current mood.

Overview of main analyses

A series of path analyses was performed using structural equation modeling in order to assess and compare the models presented in Figure 1. Accounting for the small sample

size, all models were tested using manifest variables. In order to correct for unreliability of the endogenous variables, each error variance was set as the variance of the variable multiplied by one minus its reliability (Hoyle, 1999). Considering that path coefficients are not biased by unreliability of dependent variables (Cohen et al., 2003), only the mediating variables' error variance were corrected. These corrections were based on Hancock's coefficient of construct reliability (Hancock, 2001), which assumes that the reliability of a construct should never be worse than using its best indicator alone¹. Accounting for the consistent evidence showing that second-order dimensions of coping correlate with one another (Compas et al., 2001), as do measures of negative affective states (Watson & Clark, 1997) and indices of goal attainment (e.g., Graham et al., 2002), residuals of the coping variables were allowed to correlate freely, as were those of negative affects and goal attainment indices, respectively. This procedure has been used extensively when modeling correlated, yet conceptually distinct, variables (e.g., Fournier et al., 2002; Ntoumanis et al., 1999).

All analyses were performed with Maximum Likelihood estimation procedure derived from the covariance matrix provided in the EQS 5.7 software (Bentler, 1995). Several indices were used to assess the fit between the model and the observed data. The exact fit of the model was tested using the chi-square statistic. A non-significant ($p > .05$) chi-square statistic implies that a model is tenable as the sample covariance matrix does not depart significantly from the model's covariance matrix. As the chi-square statistic can sometimes lead to biased model evaluation with small samples (Hoyle, 1999), other indices were used to assess the relative (CFI and NNFI) and the absolute fit (RMSEA) of the model. Values of .90 and higher for the CFI and NNFI indicate acceptable fit of the model, whereas values of .95 and higher indicate a relatively good fit (Hu & Bentler, 1999). Values

smaller than .08 for the RMSEA indicate acceptable fit of the model, whereas values smaller than .06 indicate a relatively good fit.

A first model, assuming complete mediating effects, was tested and compared to a second model including direct paths leading from coping dimensions to post-competition affective states, as well as to a third model with additional paths leading from dispositional optimism to positive affect and from pessimism to anger/dejection (see Figure 1 for an illustration of these three models). Because the fully mediated model (i.e., model 1) and the partially mediated models (i.e., models 2 & 3) were nested, their fit was compared using the difference in chi-square statistics (i.e., $\Delta\chi^2$). Furthermore, each hypothesized mediated relationship was decomposed into indirect and indirect effects (Mackinnon, Lockwood, Hoffman, West, & Sheets, 2002). Whether a direct effect represents the direct association of an independent variable with a dependent variable, indirect effect corresponds to the effect of one or more mediating variables in that relationship. Evidence for a fully mediated relationship necessitates its indirect effect to be significant and its direct effect to be non-significant. In contrast, evidence for a partially mediated relationship only requires its indirect effect to be significant.

Results

Data screening

Eight participants failed to complete either the LOT-R ($n = 4$), the CICS ($n = 3$), or the A-SAGS ($n = 1$) and were excluded from further analyses. Although no participant was identified as multivariate outlier (Mahalanobis $\chi^2_{(11)} < 31.26$, $p > .001$), an influential case was nonetheless detected through graphical examination of the scatterplot of the bivariate relationships included in our models. This participant, which scored very high on PGD ($Z = 3.40$), was deleted to avoid distorting the results of further correlational, path, and

regression analyses. Results of attrition analyses showed that participants ($n = 135$) and deleted participants ($n = 9$) were not significantly different on expertise level (i.e., junior vs. amateur, $\chi^2_{(1)} = 0.16, p > .10$), age ($F_{(1, 142)} = 0.70, p > .10$), years of competitive experience ($F_{(1, 142)} = 0.49, p > .10$), and level of ability (i.e., index of handicap, $F_{(1, 142)} = 2.42, p > .10$).

Based on the 11 variables included in our model (see Figure 1), the Mardia's coefficient of multivariate kurtosis was 5.75 ($Z = 1.98, p < .05$). Assuming the multivariate non-normality of the data, the Satorra-Bentler rescaled chi-square (i.e., $SB\chi^2$) and the robust standard error of parameter estimates were preferred to their uncorrected counterparts in all structural equation models. Nested models were compared using the difference in $SB\chi^2$ (Satorra & Bentler, 2001) rather than the difference in uncorrected chi-square². These statistical adjustments were appropriate given that none of the variables deviated severely (skewness < 1.00 ; kurtosis < 2) from univariate normality (Curran, West, & Finch, 1996).

Preliminary analyses

Considering previous studies showing that level of ability can correlate with variables under study (e.g., Curry et al., 1997; Gaudreau & Blondin, 2002), the potential effect of this variable was examined with correlations, partial correlations, and moderated hierarchical regressions³. The latter analyses were necessary to determine whether level of ability (i.e., index of handicap) could moderate the relationships included in the hypothesized models. As shown in Table 1, the index of handicap (i.e., reversed score of athletic ability) correlated negatively with optimism and positive affect, and positively with PGD, PND, and anger/dejection. Nonetheless, results of the partial correlations indicated

that the strength of the relationships included in our models did not differ substantially after controlling for the index of handicap. Although some variables correlated with this index of athletic ability, results indicated that neither the strength or the direction the relationships included in the hypothesized model were affected by this variable. Level of ability was not accounted for in subsequent analyses.

Structural equation modeling

A first analysis tested a fully mediated model, which provided a poor fit to the data ($\chi^2_{(33)} = 103.78, p < .001$; $SB\chi^2_{(33)} = 98.27, p < .001$; CFI = .880; NNFI = .801, RMSEA = .127). A second analysis tested a partially mediated model in which three direct paths leading from coping to post-competition affective states were included (see Figure 1 for an illustration of this model). All newly specified paths were significant and the Satorra-Bentler scaled difference suggested that this model fitted the data more adequately than a fully mediated model ($\Delta SB\chi^2_{(3)} = 42.60, p < .001$). Although the relative fit indices suggested the good fit of this model (CFI = .972; NNFI = .949), the significant Satorra-Bentler chi-square implied that this model should be rejected ($\chi^2_{(30)} = 46.48, p = .03$; $SB\chi^2_{(30)} = 45.25, p = .04$) whereas the RMSEA of .064 failed to reach the threshold suggesting good fit (i.e., < 0.06). A final analysis tested a second partially mediated model including two additional direct paths leading from dispositions to affect (see Figure 1 for an illustration of this model). The relationship between pessimism and post-competition anxiety was not estimated in this model because it was not significant in zero-order correlations (see Table 1)⁴. The path leading from optimism to post-competition positive affect was significant whereas the path leading from pessimism to post-competition anger/dejection was non-significant. Nevertheless, the Satorra-Bentler scaled difference

($\Delta SB\chi^2_{(2)} = 9.55, p < .01$) suggested that this model fitted the data better than the previous partially mediated model. Moreover, the Satorra-Bentler chi-square revealed that the model could not be rejected ($\chi^2_{(28)} = 39.84, p = .07$; $SB\chi^2_{(28)} = 37.91, p = .10$) whereas the relative (CFI = .980; NNFI = .961) and absolute (RMSEA = .057) fit indices both reached the threshold suggesting a good approximation to the data. This model was retained as the best fitting model and the standardized path coefficients are displayed in Figure 2.

In order to further test the mediating effects of coping and goal attainment, the significance tests of direct and indirect effects were examined (Mackinnon et al., 2002). Because of space limitation, these results are presented in Table 2 and will be addressed more extensively in the discussion section.

Hierarchical regression with coping interactions

Six moderated hierarchical regressions were performed to evaluate whether the interactions between coping dimensions could predict goal attainment indices and post-competition affective states. For each analysis, coping scores were entered in the first step, followed by the two-way multiplicative terms (i.e., Disengagement X Task; Distraction X Task; Distraction X Disengagement) in the second step. Coping variables were centered before the creation of multiplicative scores (Cohen et al., 2003). In interpreting the results of these analyses, it is important to note that an interaction accounting for more than 1% of the total variance should be treated as a substantial finding (Cohen et al., 2003) because second-order effects are generally difficult to detect.

As shown in Table 3, the coping interactions accounted for a significant ($p < .05$) amount of variance in PGD ($\Delta R^2 = 5\%$) and PND ($\Delta R^2 = 6\%$), as well as for a substantial, yet statistically marginal ($p < .10$), amount of variance in subjective goal attainment ($\Delta R^2 =$

4%) and positive affect ($\Delta R^2 = 4\%$). Specifically, the Distraction X Task interaction was significant for predicting PND ($p < .01$) and marginally significant for predicting PGD and positive affect ($p < .10$). To illustrate these interactions, we plotted each dependent variable on distraction-oriented coping at high and low levels of task-oriented coping (i.e., one *SD* above and below the mean, respectively), using the simple slope procedure described in Cohen et al. (2003). These substantial interactions are illustrated in Figure 3 (panel A to D). The relationship of distraction-oriented coping with PGD (High TOC : $B = -1.61$, $SE = 0.72$, $p < .05$; Low TOC : $B = 0.85$, $SE = 0.91$, $p > .10$; see Figure 3, panel A), PND (High TOC : $B = -2.14$, $SE = 0.88$, $p < .05$; Low TOC : $B = 1.53$, $SE = 1.10$, $p > .10$; see Figure 3, panel B), and post-competition positive affect (High TOC : $B = 0.51$, $SE = 0.16$, $p < .05$; Low TOC : $B = -0.05$, $SE = 0.20$, $p > .10$; see Figure 3, panel C) were significant at high levels of task-oriented coping. Finally, the Distraction X Disengagement interaction was significant for predicting subjective goal attainment ($p < .05$). The relationship of subjective goal attainment with distraction-oriented coping was significant at high levels of disengagement-oriented coping (High DISEN : $B = 0.67$, $SE = 0.22$, $p < .05$; Low DISEN : $B = 0.07$, $SE = 0.24$, $p > .10$; see Figure 4, panel D).

Polynomial regressions of optimism and pessimism. Three polynomial regressions were performed to examine the potential quadratic relationship of each goal attainment index with dispositional optimism and pessimism. For each analysis, the centered scores of optimism and pessimism were entered at the first step, followed by the square of the optimism and pessimism variables, at the second step (Cohen et al., 2003). As shown in Table 4, the square optimism and the square pessimism accounted for a non-significant portion of variance in PGD and PND, but nonetheless explained 10% of variance in subjective goal attainment over and above the effect of raw scores of optimism and

pessimism. More specifically, subjective goal attainment was associated significantly with squared pessimism and marginally with squared optimism. The shape of these relationships are displayed in Figure 4.

Discussion

Coping, goal attainment, and adjustment

In their daily life as well as in acute stressful situations such as sport competition, athletes are facing a variety of psychological, interpersonal, and sport-related demands. Considering the salient role that sport plays in the life of an athlete, failure to cope effectively with these requirements may lead to performance decrements and psychological distress. In accordance with this assertion, this study replicated the findings of Gaudreau et al. (2002) by showing that the use of task-oriented coping and disengagement-oriented coping during a sport competition respectively played facilitative and debilitating roles in reducing performance-goal discrepancy. Unlike previous investigations (e.g., Graham et al., 2002; Sheldon & Houser-Marko, 2001), which have relied on a single indicator of objective or subjective goal attainment, this study expanded the literature by showing significant associations of coping dimensions with an objective index of normative discrepancy as well as with a subjective measure of global goal attainment based on mastery, self-referenced, and normative criteria. Not only did task-oriented coping help athletes to master the requirements of a task itself and to attain their self-set performance goal, it also allowed them to reduce the discrepancy between their own performance and the one of their fellow competitors. Despite some concerns for the possibility that level of ability may have contaminated these associations, no such evidence was demonstrated as the strength of the relationships under study remained unchanged after controlling for this variable. As coping contributes to goal attainment over and above the effect of ability, applied psychologists

and coaches should consider integrating coping skills training into the regular training regimen of athletes.

The model tested in this study revealed more information on the effect of goal attainment on emotional adjustment. In line with previous studies (Graham et al., 2002; Sheldon & Houser-Marko, 2001), goal attainment indices were significant predictors of post-situation affective states. Contrary to expectations, however, results of the path analysis yielded a non-significant association between PGD and positive affect and between PND and anger/dejection. At first glance, this finding may suggest that the normative index of goal attainment is a stronger predictor of positive affect than the self-referenced criterion whereas the latter is a stronger predictor of anger/dejection than the former. However, these non-significant associations have limited theoretical implications as goal attainment indices were strongly correlated with one another, which might explain why some of them failed to account for unique variance in post-competitive affective states. A finding with clearer theoretical implications was that goal attainment indices partially mediated the coping-affect relationships. Although coping dimensions played a direct role in post-competition affective states, their indirect effects through goal attainment indices were significant. Specifically, the indirect effect of task-oriented coping on positive affect explained approximately 50% of the total effect whereas the indirect effect of disengagement-oriented coping on anger/dejection accounted for approximately 20% of the total effect. However, regardless of goal attainment, it seems that coping influences post-competition affective states directly. The limited time delay between the end of the competition and the post-competition evaluation of affective states may explain that coping played a direct effect in this study. As task-oriented coping is valued by performers and reinforced by coaches, the mere effort to strive actively toward goal attainment or to

disengage from such efforts may be sufficient to impact emotional experience in the short term. Whether this effect is sustained across longer period of time is an issue needing further clarification.

Differential effect of optimism and pessimism

Consistent with recent studies performed in other life domains (e.g., Long & Sangster, 1993; Puskar et al., 1999; Robinson-Whelen et al., 1997), our results outlined the utility of a bidimensional model as optimism and pessimism exhibited a differential pattern of association with coping and post-competition affective states. Because they believe that good things will happen in their future, optimists should expend effort to reduce the discrepancy between a situation and a desired goal (Scheier & Carver, 1985). In accordance with this assertion, optimism correlated positively with task-oriented coping, which help securing goal attainment. As they believe that bad things will happen in their future, pessimists should disengage from goal-directed behaviors whenever overt withdrawal is possible and withdraw mentally in situation precluding overt disengagement (Scheier & Carver, 1985). Lending support to this hypothesis, results showed that pessimism correlated positively with disengagement- and distraction-oriented coping, which hindered and did not facilitate goal attainment, respectively.

As optimism and pessimism correlated significantly with coping and post-competition affective states, we also tested whether coping dimensions mediated the relationships of optimism and pessimism with adjustment (e.g., Carver et al., 1993; Long, 1998). On one hand, the direct effect of pessimism on anger/dejection was non-significant whereas its indirect effect was significant and accounted for 65% of the total effect. This result indicated that the relationship of pessimism with anger/dejection was fully mediated by disengagement-oriented coping. As observed in previous studies (e.g., Carver et al.,

1993; Long, 1998), it seems that a very large amount of the negative effect of dispositional pessimism on post-situation emotional adjustment is carried by disengagement-oriented coping. A practical implication of this result may be that the detrimental effect of dispositional pessimism could be reduced by suppressing the use of disengagement/resignation and venting of unpleasant emotions during the course of a stressful situation. On the other hand, the relationship of optimism with positive affect was partially mediated by task-oriented coping as its indirect effect was marginally significant and explained 30% of the total effect. Regardless of coping effort during a stressful situation, it seems that being optimistic about one's future is sufficient to promote the maintenance of positive emotional states (e.g., Aspinwall & Taylor, 1992; Fournier et al., 2002; Long, Kahn, & Schutz, 1992). However, the partial mediation effect also indicated that task-oriented coping nonetheless accounted for a substantial portion of the association of optimism with post-competition positive affective experience. Hence, task-oriented coping strategies should be promoted by coaches and applied psychologists because they can provide additional benefits over and above the positive effect of being optimistic.

Interaction of coping dimensions

Although these findings are fairly consistent with theoretical expectations, our ancillary analyses provided evidence for a more complex portrait of coping and adjustment. In line with previous studies conducted in sport (Gaudreau & Blondin, 2002, 2003b), the results of the path analyses revealed that distraction-oriented coping did not correlate significantly with goal attainment and post-competition affective state. Interestingly, however, hierarchical regression analyses showed that the effect of distraction-oriented coping on goal attainment and positive affect depended on whether athletes are using this dimension of coping alone or in combination with task-oriented coping. The sole reliance

on distraction-oriented coping does not help or preclude athletes from attaining their self-referenced goal (PGD), from performing better than their fellow competitors (PND), and from experiencing positive affective states after the competition. In and of themselves, mental distraction and distancing may not lead to goal attainment because they don't enable athletes to manage the task-related demands of the situation. However, as the use of task-oriented coping increases, so does the advantage of using distraction-oriented coping. These synergistic interactions, if they withstand the rigors of replication, would indicate that individuals should not be discouraged from using distraction-oriented coping in performance-related situations, as long as they do so in concordance with strategies enabling them to address the requirements of the task more directly. Although related to positive outcomes, the use of task-oriented coping in sport competition can be cognitively and physically demanding. Relying exclusively on task-oriented coping without allowing oneself to take some sporadic periods of mental distraction may lead to emotional and physical exhaustion during long lasting competitions or in situations encountered daily in various performance-related domains (i.e., school, work, training). As such, the relative benefit of distraction-oriented coping could be explained by its potentially positive effect on the preservation of physical and mental resources that are necessary to optimal performance. Clearly, the synergistic effect of coping dimensions should be replicated in sport and extended to other life domains in order to capture the multidimensional nature of coping and to understand how different combinations of coping lead to short-term and long-term outcomes.

Linear versus quadratic effects of optimism and pessimism

A final issue concerns the relationship of goal attainment indices with dispositional optimism and pessimism. Whether some studies reported that performance increases with

dispositional optimism (e.g., Chemers et al., 2001), others failed to show a significant linear association between these variables (e.g., Wilson et al., 2002). In accordance with the latter studies, our results failed to provide evidence for a significant linear effect of neither optimism or pessimism on goal attainment indices. At first glance, this finding contradicts theoretical expectations (Scheier & Carver, 1985) and suggests that task performance is not affected significantly by one's level of optimism and pessimism. Interestingly, however, results of the polynomial regressions showed that optimism and pessimism displayed an inverted curvilinear relationship with subjective goal attainment. For pessimism, the shape of the relationship indicated that low and medium levels of pessimism were associated with high goal attainment whereas high levels of pessimism were associated with lower goal attainment (see Figure 4, panel A). For optimism, the shape of the marginally significant relationship replicated the results of studies performed in laboratory (Brown & Marshall, 2000). Whereas low levels of optimism were detrimental to goal attainment, medium and high levels of optimism showed a tendency to be equally beneficial (see Figure 4, panel B). Interestingly, these results suppose that a person may not need to be extremely optimistic or non-pessimistic to achieve one's achievement goal. From a theoretical standpoint, this finding calls into question the assertion that greater optimism and lower pessimism are necessary to produce better levels of functioning. Because previous studies have only examined the linear association of optimism and pessimism with task performance, it is difficult to determine whether these curvilinear relationships could generalize across samples in other performance-related domains. Also, it is worth noting that the quadratic relationships of optimism and pessimism with objective indices of goal attainment (i.e., PGD and PND) were non-significant. Hence, future studies should investigate whether the quadratic trends observed in this study are endemic to subjective measures of goal

attainment or whether they can be obtained with objective measures of goal attainment or at least with subjective evaluation of task performance provided by external observers.

Limitations, future directions, and conclusions

This study expanded the literature on optimism and pessimism by showing their differential associations with coping and adjustment during a performance-related situation. However, the mechanisms whereby optimism and pessimism influence coping remain unclear. As secondary appraisals correlate simultaneously with dispositional optimism and coping strategies (Chang, 1998; Peacock & Wong, 1996), it would seem reasonable to assume their mediating role in the optimism-coping relationships. Based on a bidimensional model of optimism, it could be hypothesized that perceived control, perceived challenge, and self-efficacy could carry the effect of optimism on task-oriented coping whereas perceived threat and perceived stress could mediate the association of pessimism with disengagement-oriented coping. Moreover, dispositional rather than situation-specific optimism and pessimism were used as correlates of coping in this research. Considering that optimism-pessimism can be conceived at different levels of abstraction (Peterson, 2000), future studies should also examine situation-specific outcomes expectancies in order to clarify the differential role of “big-versus-little” optimism and pessimism in performance-related situations.

Although this study included sophisticated data analyses, some methodological limitations need to be outlined and addressed in future investigations. Specifically, the measures of coping, goal attainment, and affective states were completed at the same point in time after a sport competition. However, the data were collected so that coping represents the actions of athletes during the competition whereas affect represents their concurrent post-competition affective states. Although prospective inference can be derived

from this design, it is difficult to ascertain that self-reported measures of coping and goal attainment were not biased by post-competition affective states. Clearly, future research should assess coping and goal attainment immediately after a performance-related situation in order to limit retrospective delays and to assess their prospective effects on affective states hours or even days after the situation. Despite this limitation, critics should remember that the sport literature on coping and emotion is based almost exclusively on cross-sectional data. As such, the design used in this study contributes to the literature by showing theoretically sound associations between variables assessed at two points in time.

Despite some limitations, this study provided some empirical evidence for the mediating role of goal attainment in the coping-affect relationship as well as for the mediating role of coping in the differential associations of optimism and pessimism with emotional adjustment. Knowing that pessimists cannot be turned readily into optimists, intervention needs to focus on empirically-documented mediating variables that can either disentangle the negative effect of dispositional pessimism or add to the beneficial impact of dispositional optimism. Whether task-oriented coping strategies seem to carry the positive impact of dispositional optimism during sport competition, applied psychologists should also remember that distraction-oriented coping may lead to positive outcomes when used in concordance with these coping strategies. As such, researchers should scrutinize the synergistic coping interactions demonstrated in this study in order to evaluate if different combinations of coping strategies lead to different performance and emotional outcomes across various performance-related situations.

¹ Like Cronbach's alpha coefficient, the Hancock's coefficient ranges from 0 to 1 and increases as the number of indicators increases. In contrast, however, its calculation relies on standardized factor loadings derived from confirmatory factor analysis rather than on item-total correlations. Coefficient H represents the proportion of the construct variance explained by its indicators and will never be smaller than the reliability of the most reliable indicator. Considering that the perceived goal attainment and coping variables (mediators) were measured with instruments developed within the confines of hierarchical confirmatory factor analysis, and because alpha coefficient was not created to provide estimates of second-order score reliability, we corrected the error variance of the mediating variables using Hancock's coefficient.

² This test was performed with a computer program developed by John Crawford. It can be accessed at www.psyc.abdn.ac.uk/homedir/jccrawford/sbdiff.htm.

³ A series of moderated hierarchical regression analysis was performed to examine whether level of ability moderated the 21 relationships included in the hypothesized model. In each analysis, golfers' index of handicap (i.e., moderator) was entered at the first step to assess whether the effect of the independent variable (step 2) remained significant after controlling for the golfers' level of ability. The product of the independent and moderator variables was entered at the third step. All the relationships included in the hypothesized model remained significant after controlling for golfers' level of ability. Furthermore, none of the relationships was moderated significantly ($ps > .05$) by golfers' level of ability.

⁴ A model including a direct path leading from pessimism to post-competition anxiety was estimated and did not fit better than the current model ($\chi^2_{(27)} = 39.70, p = .05$; $SB\chi^2_{(27)} = 37.77, p = .08$; CFI = .979; NNFI = .956; RMSEA = .060). The newly estimated path was non-significant (direct effect = 0.017, $SE = 0.045, Z = 0.376$). Nonetheless, the indirect effect was significant (indirect effect = 0.070, $SE = 0.026, Z = 2.678$) and accounted for approximately 80% of the total effect (total effect = 0.086). This result suggests that disengagement-oriented coping mediated completely the relationship between dispositional pessimism and post-competition anxiety.

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Table 1

Zero-order and partial correlations controlling for level of ability

	1	2	3	4	5	6	7	8	9	10	11	12
1. Index of ability (handicap)	----											
2. Dispositional optimism	.18*	----	-.30**	-.04	.22**	.04	.10	.13	.09	.21*	-.07	-.11
3. Dispositional pessimism	.08	-.30**	----	.26**	-.04	.31**	-.02	-.08	-.15	-.01	.15	.19*
4. Disengagement-oriented coping	.01	-.06	.26**	----	.03	.40**	-.19*	.28**	.24**	-.16	.44**	.54**
5. Task-oriented coping	.03	.21*	-.04	.03	----	.57**	.41**	-.26**	-.30**	.49**	.15	-.11
6. Distraction-oriented coping	.09	.03	.31**	.40**	.57**	----	.28**	-.10	-.15	.33*	.32**	.20*
7. Subjective goal attainment	-.11	.11	-.03	-.20*	.41**	.28**	----	-.65**	-.68**	.63**	-.03	-.41**
8. Performance-goal discrepancy	.18*	.09	-.07	.29**	-.25**	.10	-.65**	----	.85**	-.47**	.11	.50**
9. Performance-norm discrepancy	.64**	-.05	-.06	.24**	-.22**	.10	-.59**	.76**	----	-.50**	.08	.43**
10. Positive affect	-.20*	.25**	-.02	-.17*	.48**	.32**	.64**	-.49**	-.51**	----	.03	-.37**
11. Anxiety	.17	-.10	.16	.44**	.15	.32**	-.05	.14	.16	.01	----	.54**
12. Anger/dejection	.22*	-.14	.20*	.55**	-.10	.20*	-.42**	.52**	.46**	-.40**	.56**	----

Note. $N = 135$. Zero-order correlations are presented below the diagonal and partial correlations are presented above the diagonal.

* $p < .05$. ** $p < .01$.

Table 2

Total, direct, and indirect effects of hypothesized mediated relationships

	Total			Direct			Indirect		
	<i>B</i>	<i>SE</i>	<i>Z</i>	<i>B</i>	<i>SE</i>	<i>Z</i>	<i>B</i>	<i>SE</i>	<i>Z</i>
Task coping → positive affect	0.683	0.325	0.111	2.913*	0.359	0.084	4.280*		
Disengagement coping → anger-dejection	0.698	0.543	0.096	5.642*	0.155	0.048	3.238*		
Optimism → positive affect	0.173	0.119	0.043	2.749*	0.054	0.029	1.874 [†]		
Pessimism → anger-dejection	0.163	0.056	0.035	1.632 [†]	0.106	0.037	2.869*		

Note. *B* = Unstandardized effect. *SE* = standard error. * $p < .05$ [†] $p < .10$

Table 3
Unstandardized estimates of the hierarchical regressions of coping and coping interactions on goal attainment indices and post-competition affect

	Subjective goal attainment			Performance-goal discrepancy			Performance-norm discrepancy			Positive affect post-competition			Anger-dejection post-competition			Anxiety post-competition			
	ΔR^2	B	SE	ΔR^2	B	SE	ΔR^2	B	SE	ΔR^2	B	SE	ΔR^2	B	SE	ΔR^2	B	SE	
Step 1: Coping dimensions	0.24**			0.16**			0.12**			0.29**			0.32**			0.22**			
Distraction-oriented (DIST)		0.35 ¹	0.20		-0.34	0.65		-0.31	0.79		0.22	0.14		0.16			0.14	0.12	
Disengagement-oriented (DISEN)		-0.57**	0.14		1.61**	0.46		1.77**	0.56		-0.35**	0.10		0.62**	0.10		0.39**	0.09	
Task-oriented (TOC)		0.56**	0.19		-1.55*	0.61		-1.68*	0.75		0.58**	0.14		-0.26*	0.13		0.08	0.11	
Step 2: Interactions	0.04 ¹			0.05*			0.06*			0.04 ¹			0.01			0.01			
DIST X TOC		0.22	0.27		-1.56 ¹	0.88		-2.88**	1.08		0.36 ¹	0.19		-0.17	0.19		-0.12	0.16	
DISEN X TOC		-0.24	0.30		-1.55	0.96		-0.37	1.17		0.04	0.21		-0.10	0.21		0.15	0.18	
DIST X DISEN		0.49*	0.23		0.97	0.73		0.39	0.89		0.11	0.16		-0.01	0.16		-0.09	0.14	
Intercept		3.14**	0.12		5.01**	0.39		0.55	0.48		2.68**	0.09		2.05**	0.08		1.90**	0.07	

Note. ** $p < .01$ * $p < .05$ ¹ $p < .10$

Table 4

Polynomial regressions of optimism and pessimism on goal attainment indices

	Subjective goal attainment			Performance-goal discrepancy			Performance-norm discrepancy		
	ΔR^2	B	SE	ΔR^2	B	SE	ΔR^2	B	SE
Step 1: Raw scores	0.01			0.01			0.01		
Dispositional optimism		0.07	0.12		0.27	0.38		-0.27	0.46
Dispositional pessimism		0.07	0.09		-0.26	0.29		-0.38	0.35
Step 2 : Quadratic scores	0.10**			0.02			0.01		
Squared optimism		-0.09 [†]	0.05		0.05	0.18		0.08	0.21
Squared pessimism		-0.12**	0.04		0.19	0.13		0.16	0.15
Intercept		3.60**	0.13		4.52**	0.43		-0.41	0.52

Note. ** $p < .01$ * $p < .05$ [†] $p < .10$

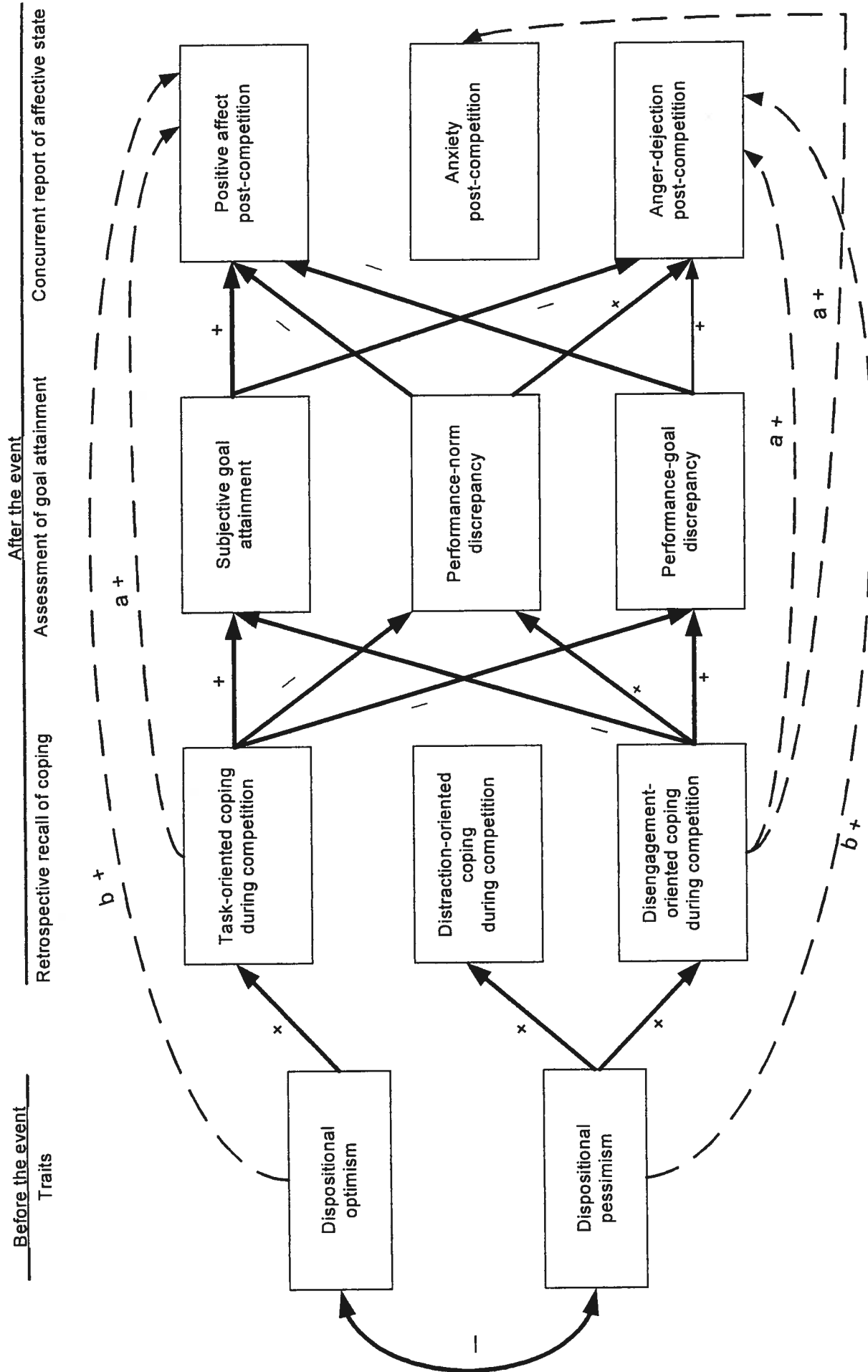


Figure 1. Hypothesized models assuming either complete or partial mediating effects. Perforated arrows represent direct effects included in the partially mediated models. ^a Direct effects included in the first and second partially mediated models. ^b Direct effects added in the second partially mediated model. + Hypothesized positive relationship. - Hypothesized negative relationship.

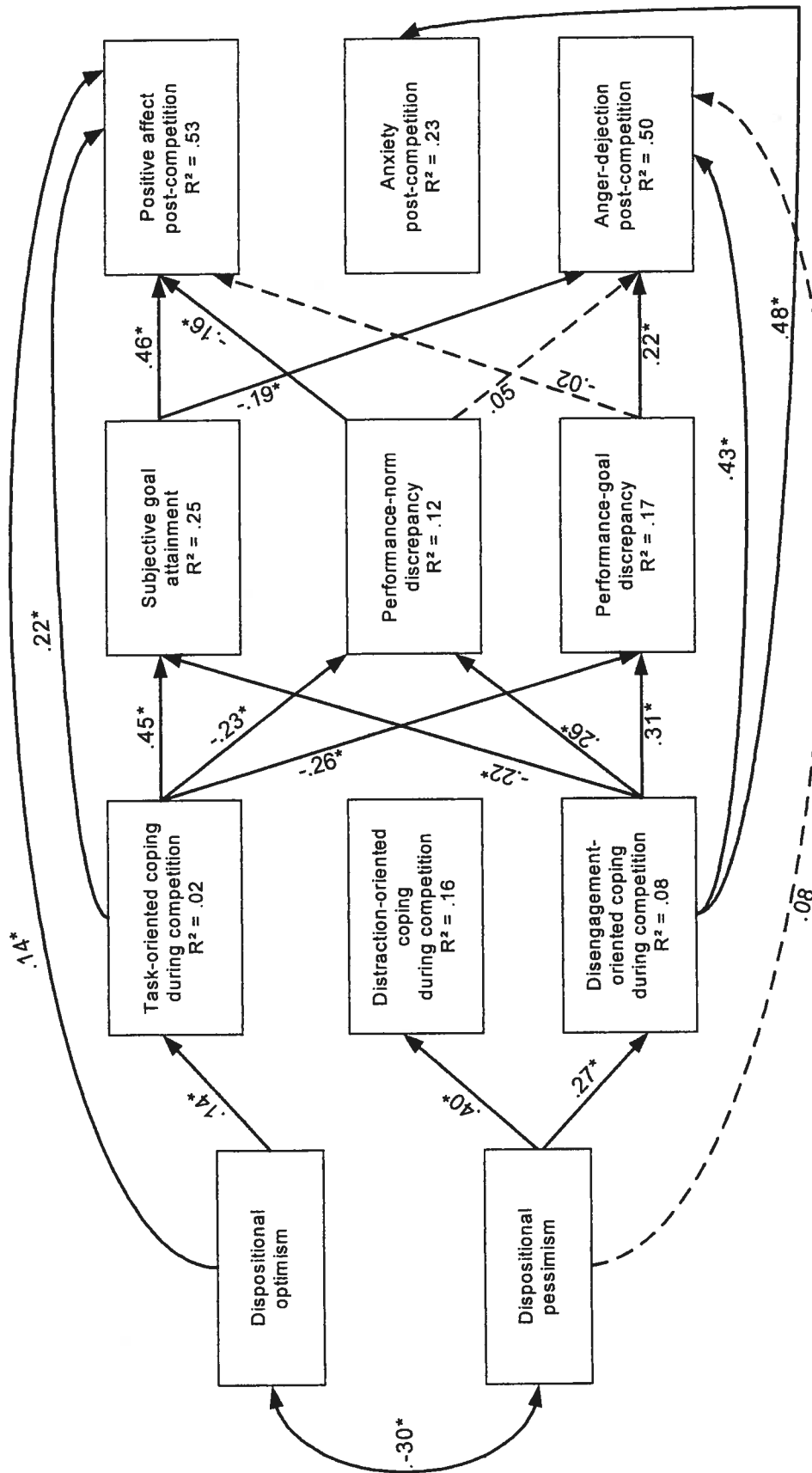


Figure 2. Standardized path coefficients for the final partially mediated model. Perforated arrows represent non-significant paths. * p < .05

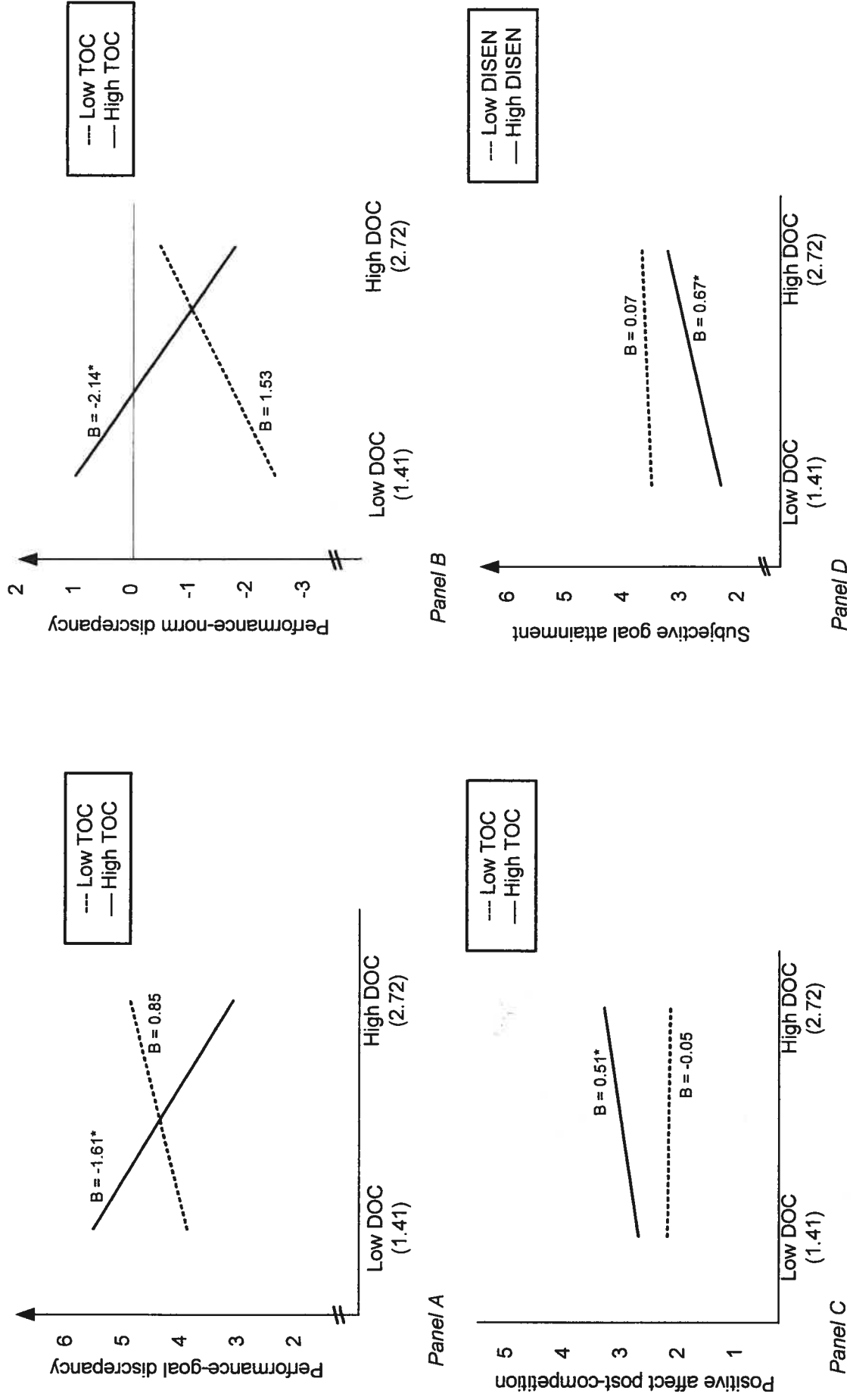


Figure 3. Interaction of the coping dimensions in predicting performance-goal discrepancy (panel A), performance-norm discrepancy (panel B), post-competition positive affect (panel C), and subjective goal attainment (panel D). DOC = distraction-oriented coping. TOC = task-oriented coping. DISEN = disengagement-oriented coping. * $p < .05$. † $p < .10$.

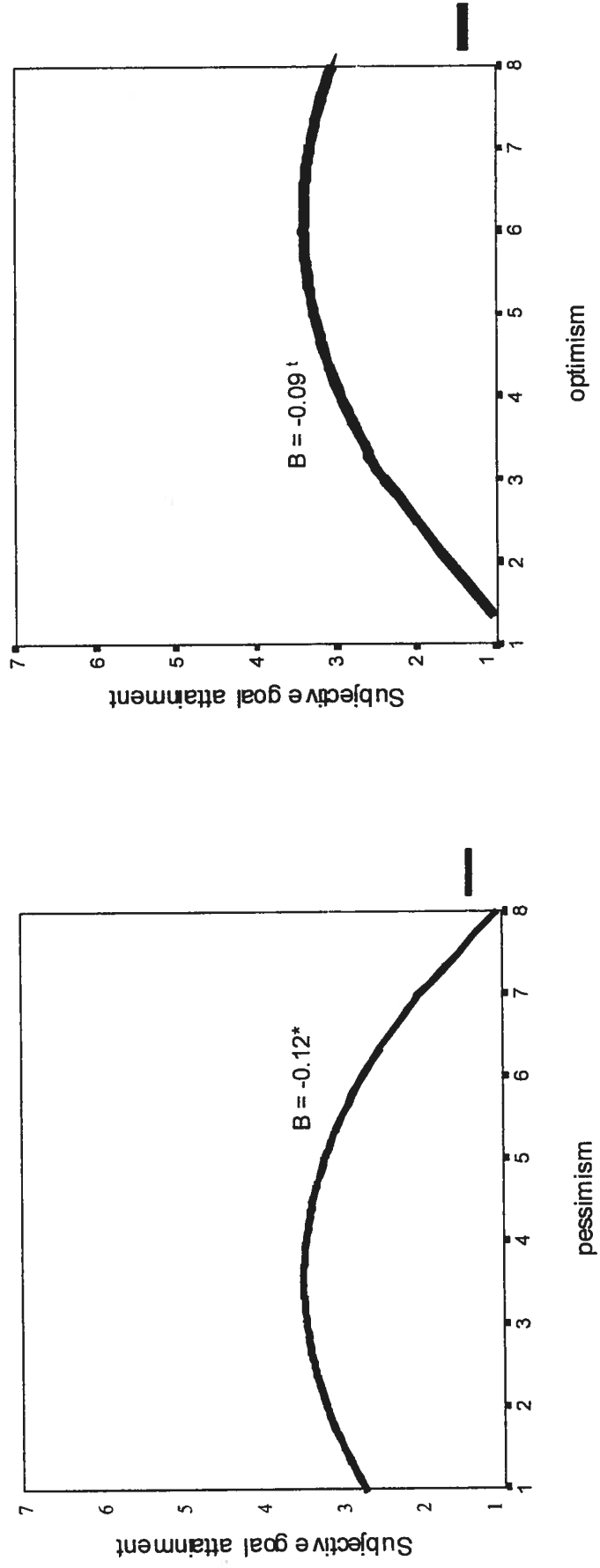


Figure 4. Quadratic relationship of subjective goal attainment with dispositional pessimism (panel A) and dispositional optimism (panel B).
* $p < .05$. $^\dagger p < .10$.

CHAPITRE 5

ARTICLE 3

Does it really hurt to be a perfectionist? Examining changes in psychological well-being and the mediating role of motivation and coping

ARTICLE 3

1. Identification de l'étudiant et du programme

Patrick Gaudreau
Ph.D. en psychologie, option recherche

2. Description de l'article

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3. Contribution de l'auteur

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- Élaboration du plan de la recherche
 - Recherche documentaire
 - Cueillette des données et préparation de la base des données
 - Analyses des données
 - Rédaction et correction de l'article

Running head : PERFECTIONISM, MOTIVATION, AND COPING

Does it really hurt to be a perfectionist? Examining changes in psychological well-being
and the mediating role of motivation and coping

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Abstract

This study examined the associations of dispositional perfectionism, contextual motivation, sport-related coping, goal attainment, and changes in subjective well-being during a sport competition. Results of structural equation modeling brought support for a model in which self-determined and nonself-determined motivations mediated partially the relationships between different styles of perfectionism and coping. It was also shown that coping mediated the negative relationship between evaluative concern perfectionism and changes in well-being. Results of moderated regressions indicated that goal attainment moderated the relationships between perfectionistic dispositions (i.e., evaluative concern and personal standard perfectionism) and post-competition well-being. In the most part, these results were consistent with the motivational components attributed to different styles of perfectionism and with literature on their diathesis-stress effects.

Key words : coping, perfectionism, goal attainment, well-being, self-determination

Introduction

In the sport domain, perfectionism is perceived as an attribute that can contribute to the development of expertise and to higher levels of athletic performance (Gould & Diefenbach, 2002). Despite the importance attributed to perfectionism, sparse attention has been devoted to the potential risks and benefits of striving toward perfection while being engaged in involving levels of sport competition. Sport scientists have shown that self-critical components of the perfectionism disposition relate to increase levels of competitive anxiety (Frost & Henderson, 1991; Hall, Kerr, & Matthews, 1998), burnout (Gould, Udry, Tuffey, & Loehr, 1996), and social-physique anxiety (Haase, Prapavessis, & Owens, 2002), as well as to lower levels of confidence (Frost & Henderson, 1991; Hall et al., 1998) and self-esteem (Gotwals, Dunn, & Wayment, 2003). The goal of this study was to examine the motivational and behavioral pathways through which different forms of perfectionism exert their influence on athletes' achievement and well-being in the sport domain.

Personal standard and evaluative concern perfectionism

The construct of perfectionism has received increasing research attention since the development and validation of the Frost (F-MPS, Frost, Marten, Lahart, & Rosenblate, 1990) and the Hewitt and Flett (HF-MPS, Hewitt & Flett, 1991) Multidimensional Perfectionism Scales. Despite differences in their theoretical foundations, the subscales in each questionnaire share some meaningful conceptual similarities. In recent confirmatory factor analytical studies (e.g., Bieling, Israeli, & Antony, in press; Cox, Enns, & Clara, 2002; Dunkley, Blankstein, Halsall, Williams, & Winkworth, 2000), a two-factor model provided a reasonable account of the variance shared by these subscales. A first factor, which was labelled *personal standard perfectionism* (e.g., Bieling et al., in press; Dunkley, Zuroff, & Blankstein, 2003) or positive striving (Frost, Heimberg, Holt, Mattia, &

Neubauer, 1993), incorporates scales measuring self-oriented perfectionism (HF-MPS), high personal standards, and organization (F-MPS). Personal standard perfectionism (PSP) involves a tendency to set highly demanding standards for oneself, to strive actively toward their attainment, and to engage in stringent self-evaluation. Studies have supported, at least to some extent, the adaptive function of PSP by showing positive associations of its components with variables such as positive affect (Bieling, Israeli, Smith, & Antony, 2003; Frost et al., 1993), self-efficacy (Martin, Flett, Hewitt, Krames, & Szanto, 1996; Mills & Blankstein, 2000), conscientiousness (Cox et al., 2002; Enns, Cox, Sareen, & Freeman, 2001), and academic achievement (Bieling et al., 2003; Brown et al., 1999; Cox et al., 2002). A second factor, which was labelled *evaluative concern perfectionism* (Bieling et al., in press; Frost et al., 1993) or self-critical perfectionism (Dunkley et al., 2000), incorporates scales measuring socially prescribed perfectionism (HF-MPS), concerns over mistakes, doubts about actions, and parental criticism (F-MPS). Evaluative concern perfectionism (ECP) entails the tendency to evaluate oneself harshly, to doubt about one's capacity to bring about desired outcomes, to fear the consequences of failure, and to perceived that significant others require perfection from oneself. Indicative of the maladaptive function of ECP, its components related positively with variables such as depression (e.g., Cox et al., 2002; Dunkley & Blankstein, 2000; Flett, Hewitt, & Blankstein, 1991), negative affect (Bieling et al., 2003; Dunkley et al., 2003; Frost et al., 1993), psychosomatic symptoms (Dunkley & Blankstein, 2000), neuroticism (Cox et al., 2002; Enns et al., 2001), and anger (Dunkley & Blankstein, 2000).

According to Flett and his colleagues (1991), different forms of perfectionism should relate differently to the manners through which individuals cope with the requirements of a particular situation. Such assumption is consistent with the idea that

coping actions are influenced by dispositions and motives, rather than by situational and cognitive factors alone (e.g., Bolger & Zuckerman, 1995; Lazarus, 1999). The underlying self-critical components of ECP might bring feelings of helplessness because of the perceived incapacity to bring about desired outcomes (Flett, Hewitt, Blankstein, Solnik, & Van Brunschot, 1996). As shown in the literature, individuals with an helplessness or a pessimistic orientation tend to disengage themselves from ego-involving situations (e.g., Aspinwall & Taylor, 1992; Long, 1998), a tendency also exhibited by individuals with lower levels of perceived self-efficacy and control (e.g., Haney & Long, 1995). In contrast, PSP entails a mastery orientation (Dunn, Dunn, & Syrotuik, 2002) and a tendency to strive toward fulfilment of one's potential, which can both promote perseverance and goal-oriented behaviors. Therefore, it can be hypothesized that ECP and PSP should respectively bring about more disengagement- and task-oriented coping in ego-involving and demanding situations.

The existent literature has provided evidence for this assumption, with components of ECP and PSP correlating meaningfully with a myriad of adaptation and self-regulation processes (e.g., Chang, 2002; Flett, Hewitt, Blankstein, & Dynin, 1994; Flett, Hewitt, Blankstein et al., 1991; Flett et al., 1996; Mills & Blankstein, 2000; Stöber, 1998). In recent studies, coping actions have been modelled as potential mediating pathways of the relationships between perfectionism and emotional outcomes. Consistent with expectations, Dunkley and Blankstein (2000) have shown that self-oriented perfectionism related positively to task-oriented coping whereas socially prescribed perfectionism correlated positively with emotion- and avoidance-oriented coping. Results of a structural equation analysis demonstrated the mediating role of avoidance-oriented coping in the association of ECP with emotional distress and hassles (Dunkley & Blankstein, 2000). In a

similar study (Dunkley et al., 2000), the relationship between ECP and hassles was partially mediated by avoidance-oriented coping. Albeit meaningful, these studies have relied on dispositional measures that failed to account for the changing nature of coping (Lazarus, 1999). Recently, this limitation was addressed in a 7-day daily diary methodology study (Dunkley et al., 2003). Inasmuch as this study should be commended for its sophisticated methodology, daily measures were aggregated into a trait-like composite variable that failed to account fully for substantial intra-individual changes in coping. Notwithstanding, this research brought additional support for a model in which avoidance-oriented coping, through its effect on hassles and perceived stress, partially mediated the relationship between ECP and negative affect.

In spite of these encouraging evidence, PSP, or at least some of its components, have sometime failed to correlate significantly with task-oriented coping (Dunkley et al., 2003; O'Connor & O'Connor, 2003) and with emotional outcomes (e.g., Dunkley & Blankstein, 2000; Dunkley et al., 2000). Therefore, the mediating role of coping in the relationship between PSP and emotional outcomes has yet to provide convincing support. Likewise, socially prescribed perfectionism had failed to correlate with avoidance-oriented coping in two studies (Hewitt, Flett, & Endler, 1995; O'Connor & O'Connor, 2003) and the mediating role of this superfactor of coping has not emerged consistently across research (Rice & Lapsley, 2001). In the most part, however, coping actions are generally associated significantly with perfectionism and with emotional outcomes. Hence, more research should examine their mediating role in the relationships between perfectionistic dispositions and both positively and negatively laden emotional outcomes.

Motivational components of perfectionism

Flett and his collaborators (1991) have attributed the greater persistence and goal-oriented behaviors of self-oriented perfectionists to their underlying mastery orientation and intrinsic motivation. They also have suggested that socially prescribed perfectionists could develop an amotivated style of motivation because of the highly controlling and pressuring environment in which they are evolving. In line with such postulates, Slade and Owens (1998) have suggested that a motivation to approach success is underlying adaptive perfectionism whereas a motivation to avoid failure is underlying maladaptive perfectionism. In their dual-process model, they proposed that behaviors of adapted perfectionists are the result of autonomous motivation whereas those of maladapted perfectionists are driven by coerced forms of motivation.

Despite these postulates, research has yet to investigate perfectionism within a well articulated theory of motivation. Self-determination theory (SDT, Deci & Ryan, 2002) is gaining widespread acceptance as an integrative framework for the study of motives underlying behaviors within achievement-related domains (e.g., Chatzisarantis, Hagger, Biddle, Smith, & Wang, 2003). SDT focuses on organismic integration and proposes a taxonomy that categorize the various reasons for which an activity is being pursued into six types of motivations aligned on a self-determination continuum : intrinsic, integrated, identified, introjected, external, and amotivation. Self-determined behaviors are performed for intrinsic pleasure, to fulfil inherent part of the self (i.e., integrated), and to pursue goals that are valuable and important for a person (i.e., identified). In contrast, nonself-determined behaviors are performed to avoid guilt and shame (i.e., introjected), to obtain rewards or to avoid punishments (i.e., external), and whenever a person perceives no particular reasons sustaining his actions (i.e., amotivation). Based on this taxonomy, SDT

postulates that self-determined motives should lead to positive behavioral, cognitive, and emotional outcomes. Much research in achievement-related domains brought support for the tenets of this model by revealing that self-determination relates positively to well-being whereas nonself-determination relates positively to emotional distress (for a review, see Vallerand, 1997). Recently, tenants of SDT have proposed that self-determined individuals should cope more actively than their nonself-determined counterparts when dealing with stressful situations (Skinner & Edge, 2002). In the most part, studies in the academic (Knee, Patrick, Vietor, Nanayakkara, & Neighbors, 2002; Knee & Zuckerman, 1998; Zuckerman & Gagné, 2003) and interpersonal domains (Knee et al., 2002) have supported this contention. In a short-term prospective study, self-determined (i.e., intrinsic and identified) and nonself-determined sport-related motivations (i.e., external and amotivation) have been associated with more utilization of task- and disengagement-oriented coping, respectively (Amiot, Gaudreau, & Blanchard, in press). Furthermore, task-oriented coping mediated the positive relationship between self-determination and changes in positive affect whereas disengagement-oriented mediated the positive relationship between nonself-determination and changes in negative affect. Overall, these results yielded promising evidence for the mediating role of coping, while supporting tenets of SDT.

Linking the hypothetical motivational components of perfectionism within the confines of SDT naturally leads to the assumption that personal standard and evaluative concern perfectionists perform achievement-related activities for self-determined and nonself-determined reasons, respectively. Albeit promising, these potential associations have received sparse empirical attention. In the academic domain, research by Mills and Blankstein (2000) offered equivocal support as self-oriented perfectionism correlated

positively with both intrinsic and extrinsic motivation whereas socially prescribed perfectionism failed to correlate significantly with any motivational style. Nonetheless these results should be interpreted cautiously given that the measurement instrument was marginally consistent with premises of the SDT. Meanwhile, the measure of task value, which was a good proxy of identified motivation, correlated meaningfully with self-oriented perfectionism. Within the confines of a SDT study, Miquelon, Tremblay and Vallerand (2002) have shown that self-oriented perfectionism correlated positively with self-determination (i.e., intrinsic and identified) whereas socially prescribed perfectionism related positively with nonself-determination (i.e., introjected and external). Furthermore, nonself-determination mediated the relationships between socially prescribed perfectionism and emotional distress. In contrast, the mediating role of self-determination could not be tested because self-oriented perfectionism was unrelated with emotional distress. For the most part, however, results of this prospective study lent encouraging support for the associations between different styles of motivation and the components of PSP and ECP. Given their meaningful associations with perfectionism and coping, motivational styles should be investigated as potential pathways of the relationship between perfectionism and coping in involving achievement-related situations.

The direct and moderating role of goal attainment in well-being

Perfectionists have high personal standards and their psychological well-being may depend on the fulfilment of demanding expectations that they and others set for themselves. Although some studies have shown a positive association between PSP and academic achievement (e.g., Bieling et al., 2003; Cox et al., 2002), striving toward perfection is by no mean a guarantee to goal attainment. As concurred by Flett and Hewitt (2002b), discrepancy, which entails the perception that one's standards of achievement are not being

reached (Slaney, Rice, Mobley, Trippi, & Ashby, 2001), should be conceived as a separate construct closely related to perfectionistic dispositions. Clearly, perception of discrepancy can lead to increasing psychological distress (Bieling et al., 2003) and decreasing subjective well-being (Gilman & Ashby, 2003). Studies in the field of motivation and coping have revealed that objective (e.g., Gaudreau & Blondin, 2003a; Gaudreau, Blondin, & Lapierre, 2002) and subjective evaluation of goal attainment (for a meta-analytical review see Koestner, Lekes, Powers, & Chicoine, 2002) relate concurrently and prospectively to more positive emotional outcomes. Of particular interest, perceived attainment (Amiot et al., in press) and progress toward one's goal (Sheldon & Houser-Marko, 2001) can render positive changes in emotional states across the stages of involving situations.

Besides these evidences, goal attainment also has the potential to modulate the association of perfectionistic dispositions with psychological well-being. Within the confines of a diathesis-stress hypothesis, prior research have demonstrated an increasing detrimental effect of ECP and PSP under adverse life situations (e.g., Chang & Rand, 2000; Dunkley et al., 2003; Lynd-Stevenson & Hearne, 1999). Researchers have proposed, rather implicitly, that perfectionists are unduly affected by failure and never satisfied by attaining their goals. Perfectionists are somewhat predisposed to experience the outcomes associated with discrepancy, given their tendency to set difficult standards (Bieling et al., 2003; Brown et al., 1999; Enns et al., 2001). It has been shown that perfectionists demonstrate lower tolerance to failure (Flett, Hewitt, & Blankstein, 1991; Frost et al., 1997), less satisfaction with their performances (Enns et al., 2001), and higher ruminative thoughts about past failures to attain their goals (Frost & Henderson, 1991; Stöber, 1998). Therefore, in conditions of failures, perfectionists are expected to experience more psychological distress than their non-perfectionist counterparts. Given that their sense of competence is

contingent on their ability to produce desired outcomes, perfectionists may nevertheless experience success when they successfully reach their highly demanding goals. By reducing the discrepancy between actual performance and pursued goal, goal attainment in a given situation can be perceived as progress toward the higher-order goal of being perfect. Based on this rationale, we take a stance in proposing that high levels of goal attainment should eliminate or reduce substantially the negative impacts of perfectionism on well-being. Such an hypothesis is consistent with a diathesis-stress model positing that the maladaptive effect of perfectionism are magnified in adverse and ego-threatening situations. Considering the self-oriented versus socially prescribed standards entailed respectively in PSP and ECP, the latter forms of perfectionism should require higher levels of goal attainment to render its negative impact on well-being to become non-significant. Such a stance is consistent with the assumed adaptive function of PSP (e.g., Cox et al., 2002; Rice & Lapsley, 2001), with tenets of a dual model of perfectionism (Slade & Owens, 1998), and with clinical evidence showing the more flexible and realistic criteria that adaptive perfectionists are using to evaluate their performance (Hamachek, 1978).

The present study

The existent literature on perfectionism has focused predominantly on maladjustment. Likewise, researchers have outlined the need of accounting for the role of coping in well-being and positive affective states (Folkman & Moskowitz, 2000). Research in the sport domain have consistently shown that task-oriented coping correlates positively with goal attainment and positive affective states whereas disengagement-oriented coping correlates positively with negative affective states and negatively with goal attainment (e.g., Amiot et al., in press; Gaudreau & Blondin, 2002; Gaudreau, Blondin et al., 2002). Considering previous failures to assess the mediating role of task-oriented coping (e.g.,

Dunkley et al., 2003) and self-determined motivation (Miquelon et al., 2002) in the relationship between PSP and emotional distress, this study used a positively laden measure of subjective well-being.

The goal of this research was threefold. A first goal was to assess the bivariate relationships between perfectionism, motivation, coping, goal attainment, and well-being in the context of sport competition. In line with the tenets of multidimensional perfectionism, ECP was expected to correlate negatively with well-being and positively with nonself-determination, disengagement-oriented coping, and distraction-oriented coping. PSP was expected to correlate positively with self-determination, task-oriented coping, goal attainment, and well-being. Based on prior literature on coping in the sport domain (e.g., Amiot et al., in press), task-oriented coping should correlate positively with self-determination, goal attainment, and well-being whereas disengagement-oriented coping should correlate positively with nonself-determination and negatively with goal attainment and well-being. Finally, goal attainment should correlate positively with well-being.

Limited attention has been accorded to the possibility that the prospective relationship of perfectionism with well-being could be in fact contaminated by initial level of well-being. Nonetheless, studies using a prospective design have demonstrated that perfectionism (Enns et al., 2001; Hewitt, Flett, & Ediger, 1996; O'Connor & O'Connor, 2003) and motivational styles (Miquelon et al., 2002) were able to predict emotional distress over and above initial levels of adjustment. Although coping has been found to predict changes in athletes' emotions across the stages of competition (Amiot et al., in press), more research is needed to determine whether coping can relate prospectively to change in a more general measure of well-being. Using a two-wave design with data collected days prior to a competition (Time 1) and days after that competition (Time 2), a

second goal was to assess the adequacy of a model entailing a series of mediation hypotheses (see Figure 1). First, self-determination and nonself-determination were expected to mediate, at least partially, the relationship between ECP and disengagement-oriented coping as well as the relationship between PSP and task-oriented coping, respectively. Secondly, it was assumed that the relationships of task- and disengagement-oriented coping with changes in well-being would be mediated by goal attainment (Amiot et al., in press; Gaudreau & Blondin, 2003a; Gaudreau, Blondin et al., 2002). Finally, it was hypothesized that the relationships of perfectionism and motivational styles with changes in well-being would be mediated by the use of coping, through its effects on goal attainment.

A final goal of this study was to assess the moderating role of goal attainment in the relationships between perfectionistic styles and post-competition well-being. Given that a perfectionist's sense of competence is contingent on his ability to attain highly demanding standards of performance, perfectionistic styles were expected to yield decreasing well-being at low levels of goal attainment. Besides this hypothesis, higher levels of goal attainment were expected to eliminate, or at least to reduce substantially, the negative effect of perfectionism on post-competition well-being.

Method

Participants

A sample of 209 French-Canadian athletes was recruited to participate in this study. Of the initial sample, 23 athletes were excluded because of failure to complete the Time 2 questionnaire. The final sample included 186 participants (57% male) ranging from 14 to 28 years of age ($M = 18.30$, $SD = 3.25$). On average, they have been competing in their sport for 7.76 years ($SD = 4.12$) and were participating at regional (38%), provincial (55%),

and national (6%) levels of competition. They were competing in ice-hockey (16%), soccer (31%), volleyball (29%), broom-ball (7%), tennis (6%), badminton (6%), and alpine skiing (5%).

Procedure

Participants were recruited through athletic directors and coaches and were told that the purpose of the study was to assess their psychological reactions in sport competition. Coaches were asked to choose an important competition as a target for the research. A majority of participants (73%) perceived the competition in which the research took place to be the most or one of the most important competition of the season whereas the remainder of the athletes perceived it as being at least as important as their usual competitions. At Time 1, participants completed selected items from the PANAS (Watson, Clark, & Tellegen, 1988) and were asked to indicate how they were feeling about the upcoming competition. A very large majority of the participants (more than 95%) were at least moderately (i.e., mid-point on a 5-point Likert-type scale) interested ($M = 4.44$, $SD = 0.75$), enthusiastic ($M = 4.30$, $SD = 0.87$), and determined ($M = 4.31$, $SD = 0.85$), thus confirming the importance of the chosen competition for the athletes.

Athletes were recruited during their last training session before the targeted competition. They were free to participate or not in the study and could put an end to their participation at any time. A particular attention was accorded to confidentiality and participants were asked not to indicate their names on the questionnaires. Furthermore, questionnaires were distributed in an envelope on which participants were asked to indicate their father's and mother's initials for matching purposes. These codes were destroyed as soon as responses were entered into the data base.

Participants completed the first questionnaire during the last training session before the competition. The Time 1 questionnaire package included selected items from the PANAS (Watson et al., 1988) as well as measures of general well-being, perfectionism, and contextual motivation. On average, this questionnaire was completed 66h before the competition ($SD = 24h$; range 22 to 120h). Variations in pre-competition time delay did not contaminate the results as it had a very limited influence on the variables measured at Time 1 (correlations ranged from -0.05 to 0.10 , $ps > 0.10$). The second questionnaire, which was completed during the first training session after the competition, entailed the retrospective recall of goal attainment and coping used during the competition as well as the concurrent report of general well-being. On average, this questionnaire was completed 70h after the competition ($SD = 29h$, range 24h to 144h). Variations in post-competition time delay did not hinder the validity of the results as it demonstrated very weak associations with the variables measured at Time 2 (correlations ranged from -0.11 to 0.04 , $ps > 0.10$). Descriptive statistics and reliability estimates of Time 1 and Time 2 measures are provided in Table 1.

Measures

Perfectionism (Time 1). Perfectionism was measured with the French version (Labrecque, Stephenson, Boivin, & Marchand, 1999) of the F-MPS (Frost et al., 1990) as well as with selected subscales from HF-MPS (Hewitt & Flett, 1991). Given the limited time available to complete the questionnaire package, brief version of these measures were used (see Cox et al., 2002). Results of confirmatory factor analyses (CFA) revealed that the brief versions provided superior fit to the data than their original counterparts in college and clinical samples (Cox et al., 2002). Moreover, the correlations of the subscales of the brief

versions with those of their original counterparts were all above 0.85, thus lending credence to their content validity.

The brief F-MPS (see Cox et al., 2002) was used to measure concerns over mistakes (i.e., 5 items), doubts about actions (i.e., 4 items), parental pressure (i.e., 5 items), personal standards (i.e., 5 items), and organization (i.e., 4 items). Items were rated using a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Results of a CFA provided a marginal fit to the data ($\chi^2_{(199)} = 366.95, p < .001$; $SB\chi^2_{(199)} = 339.46, p < .05$; CFI = .896; Robust CFI = .905; NNFI = .879, RMSEA = .068, RMSEA 90% CI = .056, .078). Examination of modification indices suggested that an item from parental pressure ($LM\chi^2 = 17.31, p < .01$) cross-loaded very strongly with another factor ($\lambda_{\text{standardized}} = 0.50$). This item was deleted from subsequent analyses and the model was reestimated. Results provided support for the acceptability of a five-factor model ($\chi^2_{(179)} = 303.81, p < .01$; $SB\chi^2_{(179)} = 281.54, p < .001$; CFI = .916; Robust CFI = .925; NNFI = .902, RMSEA = .062, RMSEA 90% CI = .049, .073). All standardized factor loadings were above 0.45 ($M = 0.68, SD = 0.13$). Items of each subscale were summed unweighted. Personal standards and organization were used as indicators of the PSP latent variable whereas concerns over mistakes, doubts about actions, and parental pressure were used as indicators of the ECP latent variable.

The brief HF-MPS (see Cox et al., 2002) was translated into French to measure self-oriented (i.e., 5 items) and socially prescribed perfectionism (i.e., 5 items). Items were rated using a 7-point Likert-type scale ranging from 1 (*disagree*) to 7 (*agree*). Results of a CFA provided support for the acceptability of a two-factor model ($\chi^2_{(34)} = 57.95, p < .01$; $SB\chi^2_{(34)} = 50.52, p < .05$; CFI = .946; Robust CFI = .956; NNFI = .929, RMSEA = .062, RMSEA 90% CI = .033, .088). Standardized factor loadings ranged from 0.38 to 0.72 ($M =$

0.61, $SD = 0.15$). These results were very similar to prior findings (Cox et al., 2002), thus providing support for the validity of the newly translated instrument. Items of each subscale were summed unweighted. Self-oriented perfectionism was used as an indicator of the PSP latent variable whereas socially prescribed perfectionism was used as an indicator of the ECP latent variable.

Motivation towards sport (Time 1). Selected subscales (i.e., intrinsic, identified, external, and amotivation) from the French version of the Sport Motivation Scale (Brière, Vallerand, Blais, & Pelletier, 1995) were used to assess contextual motivation. Each subscale contained only three items rated on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). These items were selected based on a prior study using the SMS with a comparable sample of athletes (Amiot et al., in press). Participants were asked to indicate the extent to which each item represented a reason why they generally practice their sport. Results of a CFA provided support for the acceptability of a four-factor model ($\chi^2_{(48)} = 75.92, p < .01$; $SB\chi^2_{(48)} = 64.36, p > .05$; CFI = .968; Robust CFI = .968; NNFI = .956, RMSEA = .056, 90% CI RMSEA = .030, .079). All standardized factor loadings were above 0.60 ($M = 0.77, SD = 0.07$). Given that sport-related coping dimensions relate differently to self- and nonself-determined forms of motivation (Amiot et al., in press), two latent variables were created². Pairs of items representing intrinsic and identified motivation were summed unweighted, thus forming three separate parcels of the self-determined motivation latent variable. Pairs of items representing external motivation and amotivation were summed unweighted, thus forming three separate parcels of the nonself-determined motivation latent variable.

Coping during the competition (Time 2). The use of coping during the competition was assessed using the French version of the Coping Inventory for Competitive Sport

(CICS, Gaudreau & Blondin, 2002). Using a 5-point Likert-type scale ranging from 1 (*does not correspond at all*) to 5 (*corresponds very strongly*), athletes were asked to rate the extent to which each item represented what they had done or thought during the competition. Based on a hierarchical framework of coping, the CICS contains nine four-item and one three-item subscales that can be organized in second-order dimensions representing task-oriented (mental imagery, thought control, effort expenditure, seeking support, logical analysis, and relaxation), distraction-oriented (mental distraction and distancing), and disengagement-oriented coping (venting of unpleasant emotions and disengagement/resignation). Prior confirmatory factor analytical studies provided support for the first-order (Gaudreau & Blondin, 2002) and hierarchical structures of the CICS (Gaudreau & Blondin, 2003b). It has been found that the factorial structure and parameter estimates of the hierarchical model of the CICS were invariant across samples of athletes of individual and team sports (Gaudreau & Blondin, 2003b). In this study, items of each coping subscale were added unweighted and the 10 composite scores were used as indicators of the coping dimensions. Specifically, the latent variables of task-, distraction-, and disengagement-oriented coping were created based on the hierarchical framework of the CICS. In line with the results of hierarchical CFAs (Gaudreau & Blondin, 2003b), effort expenditure was set to cross-load negatively on disengagement-oriented coping whereas seeking support loaded on distraction-oriented coping rather than on task-oriented coping. From a conceptual standpoint, these specifications were tenable given that the use of effort expenditure might prevent athletes from disengaging themselves from the task at hand and because seeking support during a competition can offer momentary episode of distraction during which attention is directed on things that are not related to the requirements of the competition.

Perceived goal attainment (Time 2). The Attainment of Sport Achievement Goal Scale (A-SAGS, Gaudreau, Amiot, Blondin, & Blanchard, 2002) was used to assess achievement-related goals attainment. Using a 7-point Likert-type scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds completely*), athletes were asked to indicate the extent to which each items corresponded to their performance during the competition. The A-SAGS contains three four-item subscales that represent different, yet interrelated, criteria of goal attainment : Mastery (i.e., “I mastered the difficulties of the situation”), self-referenced (i.e., “I did better than my usual performances”), and normative (i.e., “I outperformed other athletes”). Each subscale can be used independently (see Gaudreau, Amiot et al., 2002) or additively (see Amiot et al., in press; Gaudreau & Blondin, 2003a) to create a composite index of goal attainment. As such, results of a hierarchical CFA lent credence to the factorial validity of a hierarchical model in which the three first-order factors loaded significantly on a super-factor of goal attainment (Gaudreau, Amiot et al., 2002). Furthermore, a composite score of goal attainment was found to converge substantially with indices of performance-goal discrepancy ($r = -0.65$) and performance-norm discrepancy ($r = -0.59$) with a sample of golfers participating in a provincial-level golf championship (Gaudreau & Blondin, 2003a). Consistent with the hierarchical tenets of the A-SAGS, the inter-scale correlations in this sample were moderately high (mastery – self-referenced, $r = 0.65$; mastery – normative, $r = 0.56$; normative – self-referenced, $r = 0.52$). Hence, items of each subscale were summed unweighted and the three composite scores were used as indicators of a latent variable representing a global index of goal attainment.

General subjective well-being (Time 1 and 2). General subjective well-being was assessed using the French version (Blais, Vallerand, Pelletier, & Brière, 1989) of the

Satisfaction with Life Scale (SWLS, for a review see Pavot & Diener, 1993). Using a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), participants were asked to indicate how they were currently feeling in their life in general. Prior research in the sport domain has failed to control for general well-being in the relationship of self-determination and coping with goal attainment and affective states. To some extent, these studies have examined athletes as if they were in a nutshell and have overlooked the possibility that observed associations might have been contaminated by baseline level of general well-being. Hence, participants completed the SWLS at Time 1 and again at Time 2 in order to control for initial level of well-being in the relationships under study. Furthermore, prior studies have found that goal attainment could lead to situationally specific affective states. Whether attaining one's goal in a specific situation can have a more profound and generalized impact on general well-being, over and above initial well-being, is an issue awaiting clarification. When completing the SWLS, participants were explicitly asked to rate each item according to their life in general rather than specifically to their experience in the sport domain. Given that the SWLS was administered at two points in time, the five items were used as indicators of the latent variables (i.e., Time 1 and Time 2) representing general well-being.

Statistical analyses

Structural equation modeling was performed using the Maximum Likelihood estimation procedure derived from the covariance matrix provided in the EQS 5.7 software. First, a CFA was performed to assess the suitability of the proposed measurement model and to examine the zero-order correlations between the latent variables. Second, a series of latent path analyses were performed to assess the suitability of the proposed structural model and to examine the hypotheses of mediation under study. Several indices were used

to assess the fit between the model and the observed data. The exact fit of the model was tested using the chi-square statistic. A non-significant chi-square statistic implies that a model cannot be rejected as the sample covariance matrix does not depart significantly from the model's covariance matrix. As the chi-square can lead to biased model evaluation, other indices were used to assess the relative (i.e., CFI and NNFI) and the absolute fit of the model (i.e., RMSEA and RMSEA 90% CI). Values of .90 and higher for the CFI and NNFI indicate acceptable fit of the model whereas value of .95 and higher indicate a relatively good fit (Hu & Bentler, 1999). Values smaller than .08 for the RMSEA indicate acceptable fit of the model whereas value smaller than .06 indicate a relatively good fit. Furthermore, when the upper bound of the RMSEA 90% confidence interval was below .06, the model was assumed to provide a close fit to the data.

Given that multivariate normality could not be assumed with the variables under study (multivariate kurtosis = 84.00, normalized estimate = 10.95), the Satorra-Bentler rescaled chi-square (i.e., $SB\chi^2$), the robust CFI, and the robust standard error of parameter estimates (*S.E. adj.*) were preferred to their uncorrected counterparts. Nested models were compared using the difference in $SB\chi^2$ (Satorra & Bentler, 2001) rather than the differences in uncorrected chi-square.

Results

Measurement model

A measurement model with 10 interrelated latent variables was initially tested. Based on the prior literature on the CICS (e.g., Gaudreau & Blondin, 2003b), effort expenditure was set to load simultaneously on task- and disengagement-oriented coping. Considering that the indicators of the life-satisfaction latent variable were assessed at two points in time, their auto-correlated uniquenesses were estimated freely. All other cross-

loadings and correlated uniquenesses were set to zero. The proposed measurement model provided a marginal fit (see model 1 in Table 2). The CFI, the RCFI, and the RMSEA have attained their minimal cutoff criteria (CFIs > 0.90 & RMSEA < 0.06) whereas the NNFI was lower than 0.90 and the upper bound of the RMSEA 90% CI was not lower than 0.06. Of particular interest, the standardized factor loading leading from PSP to organization was lower than 0.30 and modification indices suggested that organization could cross-load on ECP ($LM\chi^2 = 7.41, p < .01$). This result is consistent with prior literature showing the equivocal role of organization in the conceptualization of perfectionism (e.g., Dunn et al., 2002; Enns, Cox, & Clara, 2002). Hence, organization was deleted from subsequent analyses. A respecified measurement model yielded an acceptable fit to the data (see model 2 in Table 2) and the difference in CFI was substantial ($\Delta CFI = 0.012$), thus suggesting its superiority over the initial measurement model. All factor loadings were significant and their standardized estimates ranged from -0.61 to 0.87 ($M = |0.71|, SD = 0.12$). A final measurement model was tested in which the factor loadings and uniquenesses of the life-satisfaction latent variables were constrained to equality across measurement points. The addition of these equality constraints did not yield a significant increment in rescaled chi-square nor did it produce a substantial decrease in CFI values (see model 3 in Table 2). This model was retained as the best fitting measurement model. Table 3 displays the standardized factor loadings of each latent variable whereas their standardized interrelations are presented in Table 4.

Structural model

Model specification. As shown in Table 4, the correlation of PSP with pre-competition life-satisfaction was non-significant. Nonetheless, this correlation was estimated to control for the influence of life-satisfaction in the relationships under study.

Considering the correlations between the three coping dimensions (e.g., Gaudreau & Blondin, 2003b), their disturbances were allowed to correlate freely. This procedure, which has been used extensively for modeling correlated, yet conceptually distinct variables (e.g., Elliot & Trash, 2002), was used to assess the unique contribution of each coping dimension on the dependent variables under study.

Fully mediated model. A first structural model assumed that : 1) the relationships of perfectionism with coping were fully mediated by motivational styles, 2) the relationships between coping and post-competition life-satisfaction were fully mediated by goal attainment, and that 3) the relationship of ECP with post-competition life-satisfaction was fully mediated by coping (i.e., through its effect on goal attainment)³. Results indicated that the specified paths were all significant ($p < .05$). However, the proposed model fitted the data marginally (see model 4 in Table 2). The CFI, the RCFI, and the RMSEA have attained their minimal cutoff criteria (CFIs > 0.90 & RMSEA < 0.06) and the upper bound of the RMSEA 90% CI was lower than 0.06. Nonetheless, the NNFI was lower than 0.90, thus suggesting that the model could be improved upon.

Partial mediation of motivation. As seen in Table 4, perfectionistic dispositions correlated significantly with coping. Hence, a partially mediated model was tested to estimate the direct links between PSP and task-oriented coping and between ECP and both disengagement- coping and distraction-oriented coping (see model 5 in Table 2). These newly added paths were decomposed into direct and indirect effects (Mackinnon, Lockwood, Hoffman, West, & Sheets, 2002). Whether the direct effect represents the direct association of an independent variable with a dependent variable, the indirect effect corresponds to the effect of one or more mediating variables in that relationship. Evidence for a fully mediated relationship necessitates its indirect effect to be significant and its

direct effect to be non-significant. In contrast, evidence for a partially mediated relationship only requires its indirect effect to be significant. Results of the tests of direct and indirect effects are presented in Table 5.

The fit of this partially mediated model was acceptable and the newly added paths yielded a significant decrement in rescaled chi-square. The direct effect of PSP on task-oriented coping and that of ECP on distraction-oriented coping were significant whereas the direct effect of ECP on disengagement-oriented coping was marginally significant ($Z = 1.85, p < .07$). Of particular interest, the three indirect effects of perfectionism on coping were highly significant. Hence, these results suggested that motivational styles partially mediated the relationships of perfectionism with coping. The significant and the marginally significant direct paths were retained in subsequent models.

Partial mediation of goal attainment. As seen in Table 4, task- and disengagement-oriented coping have correlated significantly with post-competition life-satisfaction. Hence, a partially mediated models was tested to estimate the direct links of task-oriented coping and disengagement-oriented coping with post-competition life-satisfaction (see model 6 in Table 2). The fit of this partially mediated model was acceptable. Yet, the newly added path did not yield a significant decrement in rescaled chi-square. The direct effect of task- and disengagement-oriented coping on post-competitive life-satisfaction were non-significant. Taken together, the two indirect effects of coping were also non-significant. An important problem with this result stems from the possibility that the indirect effects of coping may have been underestimated due to the correlations between the coping dimensions⁴. Hence, the direct and indirect effects of each coping dimension were reestimated in separate models. On one hand, the direct effect of task-oriented coping was non-significant ($B = -0.053, SE = .085, Z = -0.624$) whereas its indirect effect was

significant ($B = 0.121$, $SE = .046$, $Z = 2.612$). On the other hand, the direct effect of disengagement-oriented coping was non-significant ($B = -0.052$, $SE = .111$, $Z = -0.464$) whereas its indirect effect was marginally significant ($B = -0.105$, $SE = .055$, $Z = -1.895$). These results suggested that goal attainment completely mediated (i.e., at least marginally in the case of disengagement-oriented coping) the relationships of coping with post-competition life-satisfaction. The non-significant direct paths leading from coping to post-competition life-satisfaction were not retained in subsequent models.

Partial mediation of motivation and coping through goal attainment. As seen in Table 4, ECP correlated significantly with post-competition life-satisfaction. Hence, a partially mediated models was tested to estimate a direct association. The fit of this partially mediated model was acceptable and the newly added path yielded a significant decrement in rescaled chi-square (see model 7 in Table 2). Of particular interest, the direct and indirect effects were significant. These results suggested that non-self determination (i.e., through its effect on disengagement-oriented coping) and disengagement-oriented coping (i.e., through its effect on goal attainment) partially mediated the relationship of ECP with post-competition life-satisfaction. This model was retained as the best fitting structural model. Standardized parameter estimates are displayed in Figure 1.

Goal attainment as a moderator of perfectionism and motivation

Overview of analyses. A series of hierarchical regression analyses was performed to evaluate whether goal attainment could moderate the associations of perfectionism and motivation with changes in well-being (i.e., controlling for baseline well-being) and post-competition well-being. The centered score of all predictors were entered in the first step, followed by the multiplicative terms in the second step (Cohen, Cohen, West, & Aiken, 2003). Four two-way interactions were tested (goal attainment X ECP, goal attainment X

PSP, goal attainment X self-determination, goal attainment X nonself-determination). The significance of each interaction term was tested both individually and simultaneously, controlling for the effect of other interactions. Although the latter test is more stringent, the simultaneous inclusion of correlated second-order terms could increase the likelihood of Type-II errors, while masking potentially meaningful moderating effects. Therefore, the former approach was favoured given that all predictors were included in the analyses, thus providing a sufficiently stringent test of hypotheses under study. Significant interactions were plotted at high (i.e., one *SD* above mean), mean, and low (i.e., one *SD* below mean) levels of goal attainment using the simple slope procedure (Cohen et al., 2003). These results, along with those based on the simultaneous inclusion of the four interaction terms, are presented in Table 6 and illustrated in Figure 2.

Changes in well-being. Examining each interaction term separately revealed that goal attainment moderated significantly and marginally the respective association of ECP and PSP with post-competition well-being, over and above the baseline level of well-being and the main effect of all other predictors. Albeit that the amount of variance explained by these interactions was quite small, the capacity of adding a significant portion of variance after controlling for baseline level of the dependent variable lent credence to their substantial contribution. As shown in Figure 2, the strength of the relationship of ECP with changes in well-being decreased progressively with increasing levels of goal attainment (Low $\beta = -.24$, $t_{(185)} = -3.86$, $p < .01$; Medium $\beta = -.15$, $t_{(185)} = -3.29$, $p < .01$) and became non-significant at high level of goal attainment ($\beta = -.06$, $t_{(185)} = -0.87$, $p > .05$). Similarly, the slope of PSP decreased progressively (Low $\beta = -.20$, $t_{(185)} = -3.37$, $p < .01$; Medium $\beta = -.12$, $t_{(185)} = -2.80$, $p < .01$) and became non-significant at high level of goal attainment

($\beta = -.04$, $t_{(185)} = -0.61$, $p > .05$). The latter finding should be interpreted cautiously given the marginal significance of the interaction term.

Post-competition well-being. Examining each interaction term separately revealed that goal attainment moderated significantly the respective association of ECP and PSP with post-competition well-being, over and above the main effect of all other predictors. The latter interaction remained significant when controlling for the effect of other interaction terms. Considering that baseline level of the dependent variable was not included as a predictor, each significant interaction explained more variance in post-competition well-being than in the prior analyses. As shown in Figure 2, the strength of the relationships of ECP with post-competition well-being decreased progressively with increasing levels of goal attainment (Low $\beta = -.59$, $t_{(185)} = -6.70$, $p < .01$; Medium $\beta = -.36$, $t_{(185)} = -5.51$, $p < .01$) and became non-significant at high level of goal attainment ($\beta = -.13$, $t_{(185)} = -1.31$, $p > .05$). Of particular interest the slope of PSP was significant at a lower level of goal attainment (Low $\beta = -.22$, $t_{(185)} = -2.17$, $p < .05$) and became non-significant at medium ($\beta = -.06$, $t_{(185)} = -0.82$, $p > .05$) and high levels of goal attainment ($\beta = .10$, $t_{(185)} = 0.96$, $p > .05$).

Ancillary analyses

As described in the Method section, the concurrent assessment of Time 2 well-being took place between 22 and 144h after the competition ($M = 70.35$, $SD = 28.65$). Whether variations in time delay can moderate the relationship between goal attainment and changes in well-being needed to be examined. Based on an equilibrium theory of well-being (Headey & Wearing, 1989), it was expected that the payoffs of goal attainment on well-being would decrease with the passage of time. Although the passage of time had no main effect on changes in well-being ($\beta = -.21$, $t_{(185)} = -0.49$, $p > .05$), its interaction with goal

attainment was significant ($\beta = -.09, t_{(185)} = 1.97, p < .05$) and explained approximately 1% of variance. The strength of the relationship of goal attainment with post-competition well-being (i.e., controlling for baseline level) decreased progressively with the passage of time (Low $\beta = .26, t_{(185)} = 4.14, p < .01$; Medium $\beta = .18, t_{(185)} = 4.09, p < .01$; High Low $\beta = .10, t_{(185)} = 1.86, p > .05$). Specifically, it seems that the payoffs of goal attainment became non-significant approximately four days (i.e., 97.65h) after the completion of the competition ($\beta = .11, t_{(185)} = 1.96, p = .05$). This result will be examined in greater details in the discussion.

Discussion

Pathways to coping, goal attainment, and well-being

This study investigated the pathways through which perfectionism influences coping and well-being in an involving achievement-related situation. An interesting asset of this research was the assessment of the associations of perfectionistic dispositions with motivation and adaptation processes conceived at contextual and situational levels of analysis, respectively. Specifically, dispositional styles of perfectionism were modelled as regulators of contextual self-determined and nonself-determined motivations. In return, these motivations were expected to respectively promote utilization of task- and disengagement-oriented forms of coping. The results of this study have corroborated these hypotheses.

As shown in prior confirmatory factor analyses (e.g., Cox et al., 2002), different components of perfectionism were regrouped into factors representing evaluative concern perfectionism (ECP) and personal standard perfectionism (PSP). ECP entails the tendency to evaluate oneself harshly, to doubt about one's capacity to bring about desired outcomes, to fear the consequences of failure, and to perceive that significant others require perfection

from oneself. As expected, athletes with an ECP disposition participated in their sport for nonself-determined reasons and relied on coping actions (i.e., disengagement- and distraction-oriented coping) associated with lower levels of goal attainment and well-being. In contrast, PSP entails a tendency to set highly demanding standards for oneself and to strive actively toward their attainment. Given their self-oriented standards, athletes with a PSP disposition participated in their sport for self-determined reasons and relied on coping actions (i.e., task-oriented coping) that favoured their goal attainment and their sustained well-being. Of particular importance, these results are consistent with a dual-process model of perfectionism (Slade & Owens, 1998) and with the inherent motivational components attributed to different styles of perfectionism (Hewitt & Flett, 1991). It seems that a motive to avoid failure and a motive to approach success might respectively underlie ECP and PSP. Such a result holds promise as it might be linked to higher-order motivational and personality structures (Elliot, 1999). In recent research (Elliot & Trash, 2002), personality constructs from different approaches have been modelled as higher-order entities sharing a communality of approach (i.e., behavioral activation system, extroversion, and positive emotionality) and avoidance orientation (i.e., behavioral inhibition system, neuroticism, and negative emotionality). Given that ECP and PSP may relate substantially to personality constructs of these higher-order dimensions, an interesting research avenue would be to examine their associations with approach and avoidance personality structures.

From a theoretical standpoint, coping has been conceived as a potential mediating mechanism through which perfectionistic dispositions influence psychological adjustment (e.g., Dunkley & Blankstein, 2000). Results of this study are contributing to a growing body of literature demonstrating the intervening role of disengagement-oriented coping in the relationship between ECP and maladjustment. Evaluative concern perfectionists have

experienced well-being to a lesser extent after sport competition because their reliance on disengagement-oriented coping prevented them from attaining their achievement goals. As with prior studies (Dunkley et al., 2000; Dunkley et al., 2003), however, the relationship between ECP and post-competition well-being remained significant over and above the mediators included in the model. Besides yielding support for a partially mediated effect through disengagement-oriented coping, these results illustrate the pervasive effect of ECP and bring support for its maladaptive function.

This study has proposed an innovative assumption for the mediating role of contextual motivation in the relationship between perfectionistic dispositions and the use of coping in a specific situation. From a theoretical standpoint, it has been assumed (Flett, Hewitt, Blankstein et al., 1991; Hewitt & Flett, 1991) and sometimes shown empirically (Miquelon et al., 2002) that ECP and PSP are respectively enacting amotivation and intrinsic motivation. This study corroborated this postulate as PSP related to more self-determined motivation toward sport whereas ECP correlated with nonself-determination. Consistent with sparse evidence in the sport (Amiot et al., in press), academic (Knee & Zuckerman, 1998; Zuckerman & Gagné, 2003), and interpersonal life domains (Knee et al., 2002), it was also found that nonself-determination rendered more use of disengagement-oriented coping whereas self-determination led to more use of task-oriented coping during a sport competition. Although PSP directly promoted the use of task-oriented coping, self-determination mediated this association partially. Specifically, the indirect effect accounted for approximately 40% of the total effect variance. Likewise, nonself-determination explained approximately 33% of the relationship between ECP and distraction-oriented coping. In contrast, the direct effect of ECP on disengagement-oriented coping was marginally significant. This result suggests that nonself-determination was a very strong

mediator explaining approximately 50% of the relationship between ECP and disengagement-oriented coping. In the most part, these results have lent credence to the innovative assumption proposed in this study.

Over and above their idiosyncrasies, results of the structural equation analyses demonstrated the possibility that more thorough explanations can be provided to account for the influence of broader dispositions on the selection of coping strategies in involving naturalistic situations. It has been proposed that dispositional and more proximal (i.e., contextual and situational) individual differences can enact additive and mediated effects on coping strategies (Bolger & Zuckerman, 1995). In this study, the significant direct and indirect effects have shed light on the various ways through which personality dispositions can influence coping actions during a sport competition. Moreover, the mediating effects of contextual motivation have supported the view that coping cannot be understood without a more integrated examination of the reasons and goals mobilizing an individual toward demanding and ego-involving activities (Lazarus, 1999; Skinner & Edge, 2002). Within the confines of SDT, self-determination and nonself-determination have been shown to predict an array of emotional and behavioral outcomes (Vallerand, 1997). Despite the absence of a significant direct association between contextual motivation and post-competition well-being in the present study, results showed nonetheless a differentiated influence of motivation styles on adaptation processes leading to goal attainment and sustained well-being. The hierarchical model of motivation (Vallerand, 1997) can provide an explanation for the non-significant relationships between motivation and well-being. According to the model, contextual motivation should predict contextual level outcomes (e.g., satisfaction with sport) which, in return, should have bottom-up effects on general satisfaction with life. Future research should include domain-specific measures of

satisfaction to test these bottom-up effects in the sport domain. Also, contextual motivation was unrelated to athletes' goal attainment in the present study, contrary to prior research in the sport domain (Amiot et al., in press). Yet, contextual motivation styles have exhibited a differentiated pattern of associations with coping processes that facilitate or prevent goal attainment. In line with the hierarchical model of motivation (Vallerand, 1997), future research should examine whether situational motivation toward a specific competition is a stronger predictor of goal attainment than motivation conceived at a contextual level of analysis.

The payoffs of goal attainment

Prior studies have found that people generally feel good when they successfully attain their goals (for a review, see Koestner et al., 2002). It has also been shown that goal attainment could lead to positive changes in affective states across the stages of a sport competition (Amiot et al., in press) as well as to increases in general well-being across semesters during an academic year (Sheldon & Houser-Marko, 2001). In the sport domain, goal attainment has been proposed as a potential mediator of the relationship between coping and psychological adjustment (Gaudreau, Blondin et al., 2002). In this study, goal attainment completely mediated the relationships of task- and disengagement-oriented coping with post-competition well-being. Prior studies have demonstrated that the effect of coping on emotional outcomes was either partially (Gaudreau & Blondin, 2003a; Gaudreau, Blondin et al., 2002) or fully (Amiot et al., in press) mediated by goal attainment. In the former studies, affective states were assessed within hours after a sport competition whereas they were assessed two to five days after the event in the latter one. Regardless of goal attainment, it seems that the mere effort to strive toward or to disengage from goal-oriented coping actions can influence one's affective state in the short term (Gaudreau &

Blondin, 2003a). However, as time passes, the significant influence of coping vanishes and goal attainment remains the sole significant predictor of affective states or general well-being, as measured in this study.

Prior studies have examined athletes as if they were in a nutshell without considering their general level of life-satisfaction or subjective well-being. While participating in a sport competition, the well-being of athletes should be influenced by both their satisfaction with sport and their satisfaction in other life domains. Whether goal attainment in a specific competition can produce a substantial change in general well-being was an issue awaiting clarification. Although well-being was very stable across measurement points, there was nonetheless a significant payoff for attaining one's goal. Particularly, goal attainment has produced significant increases from a baseline evaluation of generalized life-satisfaction. This finding is consistent with the view that individuals are becoming happier, at least momentarily, while successfully pursuing activities and goals that are important to themselves (Sheldon & Houser-Marko, 2001). Whether this short-term effect can produce carry-over effects on athletes' motivation, coping, and goal attainment across life domains and subsequent cycles within the same situation (i.e., sport competition) is an issue in need of further exploration.

Besides lending credence to the direct association of goal attainment with well-being, this study hypothesized that the negative emotional effect of perfectionism could be buffered by high levels of goal attainment. It has been shown that perfectionists demonstrate lower tolerance to failure (Flett, Hewitt, & Blankstein, 1991; Frost et al., 1997), less satisfaction with their performances (Enns et al., 2001), and higher ruminative thoughts about past failures to attain their goals (Frost & Henderson, 1991; Stöber, 1998). Therefore, in conditions of failure, perfectionists were expected to experience lower levels

of well-being than their non-perfectionists counterparts. Given that their sense of competence is contingent on their ability to produce desired outcomes, perfectionists should nevertheless experience success when they successfully reach their highly demanding goals. By reducing the discrepancy between actual performance and pursued goal, goal attainment in a given situation can be perceived as progress toward the higher-order goal of being perfect. Therefore, high levels of goal attainment were expected to eliminate or reduce substantially the negative impacts of perfectionism on well-being.

Despite the non-significance of the interactions when all the multiplicative terms were entered simultaneously in the regression, the results of analyses in which each term was treated separately brought support for this position⁵. In conditions of low and medium goal attainment, ECP produced a decrease in well-being (i.e., when controlling for baseline well-being) as well as lower levels of post-competition well-being. As expected, however, higher levels of goal attainment have rendered the negative effects of ECP non-significant. There was also a significant interaction involving PSP, thus suggesting that its non-significant correlation with post-competition well-being has masked a theoretically relevant association (see Table 4). In condition of low goal attainment, PSP was significantly associated with lower levels of post-competition well-being⁶. As expected, medium and high levels of goal attainment have rendered the negative effect of PSP non-significant. Besides contributing to the literature on the processes underlying well-being (for a review, see Diener, Suh, Lucas, & Smith, 1999), these results can be interpreted in light of a stress-diathesis model showing the greater negative impact of perfectionism in adverse life situations (e.g., Chang & Rand, 2000; Dunkley et al., 2003; Lynd-Stevenson & Hearne, 1999). Noteworthy, medium levels of goal attainment were sufficient to buffer the negative effect of PSP on post-competition well-being whereas high levels of goal attainment were

needed to eliminate the negative effect of ECP. On one hand, this finding suggests that personal standard perfectionists are capable of enduring greater discrepancy than athletes high on ECP, which is congruent with tenets of the dual-process model of perfectionism (Slade & Owens, 1998). On the other hand, it also supports the idea that evaluative concern perfectionists are relying on harsh, unduly inflexible, and dichotomous (i.e., all or nothing) criteria to evaluate their performance (Hamachek, 1978). In the meantime, as displayed in Figure 2, the well-being of athletes who were low on ECP and PSP was unaffected significantly by goal attainment. This result suggests that non-perfectionists are less prone to evaluate their competence based on their performance in a given situation, which is consistent with their tendency to rely on overgeneralization to a lesser extent (Hewitt & Flett, 1991; Hewitt, Flett, Turnbull-Donovan, & Mikail, 1991).

A final finding of importance suggested that the passage of time progressively eliminates the beneficial effects of goal attainment. Although this finding emerged in a post hoc between-subject analysis, it was nonetheless consistent with a dynamic equilibrium theory, which posits that people return to their baseline level of well-being after positive and negative life events (Headey & Wearing, 1989). Precisely, it seems that the payoff of goal attainment vanishes progressively and becomes non-significant approximately four days after the completion of the competition. Clearly, a well-planned research using time series or daily assessment designs is needed to examine how long the beneficial effect of goal attainment can last and to investigate the role of situational and between-subject factors sustaining it.

Limitations, future directions, and conclusions

Results of this research contributed to the literature on the relationships of coping with perfectionistic dispositions and motivational styles. In this study, motivational styles

were modelled as mediators of the relationship between perfectionism and coping. Despite evidence supporting this model, the mechanisms whereby motivation influences different forms of coping remain largely unexplored. Given that self-determination correlates with task-oriented coping, it seems reasonable to assume the mediating role of perceived control, perceived challenge, and self-efficacy in this relationship. Likewise, perceived stress and perceived threat could transmit the effect of nonself-determination on disengagement- and distraction-oriented coping. Clearly, future research should examine these hypotheses.

Despite sophisticated data analyses, the measures of perfectionism and motivation were collected at the same point in time, as were measures of coping, goal attainment, and post-competition well-being. Specifically, coping actions that were used during the competition were assessed retrospectively whereas post-competition well-being was assessed concurrently. Even though prospective inferences can be derived from this design to some extent, a true prospective design is needed to reduce the ambiguity concerning the direction of the relationships. Such a model would require that coping and goal attainment be assessed immediately after a competition and that general well-being be measured later on in time. Furthermore, the direct and indirect effects of perfectionistic styles on coping were both significant. The significant direct effect, over and above the effect of the mediator (i.e., motivation), was not surprising given that both perfectionism and motivation were assessed concurrently. Hence, future research should measure perfectionism and motivation at different points in time to clarify whether motivational styles mediate completely or partially the relationships between perfectionistic styles and coping actions.

This study presented an ambitious model measuring a series of dispositional, motivational, and coping processes conceived at different levels of analysis. For the most part, results were consistent with theoretical tenets of self-determination (Deci & Ryan,

2002), stress and coping (Lazarus, 1999), and perfectionism literatures (Flett & Hewitt, 2002a). The main, mediated, and moderated effects presented in this study brought support for the adaptive and maladaptive function generally associated with PSP and ECP, respectively. Given the sparse empirical research on perfectionism in the sport domain and the fact that sport scientists have neglected the role of mediating mechanisms, applied sport psychology could benefit from the results of this study. The trait-like nature of perfectionism (Cox & Enns, 2003) implies that athletes' level of perfectionism cannot be tuned down easily. Therefore, intervention should focus on empirically-documented mediating variables (i.e., coping and motivation) that can either disentangle the negative effects of perfectionism or add to the beneficial impact of holding more adaptive forms of perfectionism. Given that PSP is generally associated with motivational and behavioral pathways leading to goal attainment and sustained well-being, applied researchers should develop and evaluate behavioral and cognitive interventions that could transform ECP into more adaptive forms of perfectionism. In the meantime, fundamental research is needed to examine whether the harsh impacts of perfectionism in the sport domain have carry-over effects in other life domains (i.e., school, work, and interpersonal relationships). Such line of research should provide applied sport psychologists and school counselors with a more comprehensive understanding of the processes through which perfectionistic standards are sustained across time and situations.

Notes

¹ These athletes were included in a larger data bank ($N = 320$) used for the ongoing validation of a coping measure (Gaudreau & Blondin, 2003b, see Study 2). None of the specific results presented in this research have been reported in any prior work.

² In prior studies, a single self-determination index was created using the procedure outlined by Vallerand (1997). In this study, the use of a self-determination index yielded inconsistent results as PSP failed to correlate significantly with motivation in the measurement model. Furthermore, the structural model yielded a suppression effect in the relationship of perfectionism and self-determination. Specifically, the relationship of PSP became significant after controlling for evaluative concern perfectionism. These results signified that a single self-determination index failed to account for the more differentiated relationship of each perfectionism style with self-determined and nonself-determined forms of motivation.

³ The zero-order correlation of pre-competition life-satisfaction with task-oriented coping was significant. However, the path leading from pre-competition life-satisfaction to task-oriented coping was non-significant ($B = 0.103$, $SE = .069$, $Z = 1.486$) when partialing out the effect of PSP and self-determined motivation. Hence, this link was not included in subsequent analyses.

⁴ Although the zero-order correlation of task- and disengagement-oriented coping was non-significant, they nonetheless shared some variance through their respective correlation with distraction-oriented coping.

⁵ Although this result can be interpreted as failure to support the moderation hypothesis, the hierarchical regression analyses provided a stringent test that controlled for the main effect of all predictors previously included in the structural model. Furthermore, inclusion of several interaction terms, created with a given moderator (i.e., goal attainment), can reduce their power, enhance the likelihood of Type-II error, and create multicollinearity. Based on these arguments, the interaction term of each of the perfectionistic dispositions entered individually were taken to suggest the presence of significant interactions because they were readily interpretable and predicted a substantial amount of variance (i.e., from 2 to 4% in predicting post-competition well-being and less than 1% in predicting changes in well-being).

⁶ The interaction term involving PSP and goal attainment in the prediction of change in well-being was marginally significant. Although presented in Figure 2, the simple slopes of this interaction should be interpreted cautiously. Hence, the discussion focuses on the moderating effect of goal attainment in the relationship between PSP and post-competition well-being.

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Table 1

Descriptive statistics and reliability estimates

	Range	<i>M</i>	<i>SD</i>	α
Life-satisfaction Time 1	1-7	5.46	1.03	0.83
Life-satisfaction Time 2	1-7	5.39	1.13	0.88
Self-determined motivation	1-7	5.00	1.11	0.85
Non self-determined motivation	1-7	2.12	0.98	0.85
Evaluative concern perfectionism				
Socially prescribe perfectionism (H-MPS)	1-7	3.04	1.15	0.79
Concern over mistakes (F-MPS)	1-5	2.24	0.81	0.74
Parental criticism (F-MPS)	1-5	2.10	0.92	0.84
Doubts about actions (F-MPS)	1-5	2.50	0.75	0.63
Personal standard perfectionism				
Self-oriented perfectionism (H-MPS)	1-7	5.23	1.03	0.78
Personal standards (F-MPS)	1-5	3.37	0.83	0.80
Organization (F-MPS)	1-5	3.53	0.95	0.89
Task-oriented coping				
Mental imagery	1-5	2.91	0.93	0.73
Logical analysis	1-5	3.05	0.80	0.61
Relaxation	1-5	2.53	0.96	0.82
Thought control	1-5	3.20	0.86	0.72
Effort expenditure	1-5	3.99	0.77	0.83
Distraction-oriented coping				
Seeking support	1-5	2.05	0.99	0.84
Mental distraction	1-5	1.82	0.83	0.78
Distancing	1-5	2.08	0.87	0.76
Disengagement-oriented coping				
Disengagement/resignation	1-5	1.74	0.87	0.83
Venting of unpleasant emotions	1-5	2.57	1.17	0.89
Goal attainment				
Mastery-oriented	1-7	4.95	1.07	0.93
Self-referenced	1-7	3.68	1.71	0.86
Normative-oriented	1-7	3.65	1.50	0.86

Table 2

Fit indices of the measurement and structural models

	χ^2	SB χ^2	df	CFI	RCFI	NNFI	RMSEA ± 90% CI	Δ SB χ^2	Δ df	Δ CFI
Measurement models										
1. Hypothetical	830.15	775.20	543	.905	.909	.890	.054 ± .046 - .060			
2. Respecified I ^a	754.88	701.52	509	.917	.923	.903	.051 ± .043 - .058			
Model 2 vs. 1								----	---	.012
3. Invariance ^b	764.21	705.17	518	.917	.925	.905	.051 ± .043 - .058			
Model 3 vs. 2								6.15	9	< .000
Structural models										
4. Full mediation	826.68	763.47	548	.906	.914	.898	.053 ± .045 - .059			
5. Partial mediation I ^c	814.09	751.16	545	.910	.917	.901	.052 ± .044 - .059			
Model 5 vs. 4								13.93**	3	.004
6. Partial mediation II ^d	813.70	751.15	543	.909	.916	.900	.052 ± .044 - .059			
Model 6 vs. 5								0.29	1	-.001
7. Partial mediation III ^e	809.05	746.75	544	.911	.919	.903	.052 ± .044 - .058			
Model 7 vs. 5								3.96*	1	.001

Note. All chi-square statistics were significant at $p < .001$. ^a Deletion of organization from the PSP latent variable.

^b Loadings and uniquenesses of well-being were invariant across measurement points. ^c Direct paths from perfectionism to coping. ^d Direct paths from coping to post-competition well-being. ^e Direct paths from ECP to post-competition well-being. ** $p < .01$ * $p < .05$.

Table 3

Standardized factor loadings, uniquenesses, and construct validity of the latent variables

Latent variables and indicators	Loadings	Uniquenesses ^a	<i>H</i>
1. Life-satisfaction Time 1			0.85
Item 1	0.66	0.76	
Item 2	0.70	0.72	
Item 3	0.83	0.56	
Item 4	0.77	0.64	
Item 5	0.67	0.74	
2. Life-satisfaction Time 2 ^b	0.70	0.72	0.89
Item 1	0.70	0.72	
Item 2	0.74	0.68	
Item 3	0.86	0.52	
Item 4	0.80	0.60	
Item 5	0.71	0.70	
3. Personal standard perfectionism			0.75
Self-oriented perfectionism (H-MPS)	0.76	0.65	
Personal standards (F-MPS)	0.77	0.64	
4. Evaluative concern perfectionism			0.82
Socially prescribe perfectionism (H-MPS)	0.65	0.76	
Concern over mistakes (F-MPS)	0.83	0.55	
Parental criticism (F-MPS)	0.66	0.75	
Doubts about actions (F-MPS)	0.61	0.79	
5. Self-determined motivation			
Parcel 1	0.81	0.59	
Parcel 2	0.78	0.62	
Parcel 3	0.83	0.56	
6. Nonself-determined motivation			
Parcel 1	0.81	0.58	
Parcel 2	0.77	0.64	
Parcel 3	0.85	0.53	

Table 3 continues on next page

Table 3 (Continued)

Latent variables and indicators	Loadings	Uniquenesses ^a	<i>H</i>
7. Task-oriented coping			0.80
Mental imagery	0.76	0.65	
Logical analysis	0.65	0.76	
Relaxation	0.58	0.82	
Thought control	0.72	0.69	
Effort expenditure ^c	0.43	0.66	
8. Distraction-oriented coping			0.65
Seeking support	0.48	0.88	
Mental distraction	0.63	0.78	
Distancing	0.71	0.71	
9. Disengagement-oriented coping			0.67
Disengagement/resignation	0.70	0.72	
Venting of unpleasant emotions	0.39	0.90	
Effort expenditure ^c	-0.61	0.66	
10. Goal attainment			0.96
Mastery-oriented	0.95	0.33	
Self-referenced	0.70	0.72	
Normative-oriented	0.60	0.80	

Note. *H* = Hancock coefficient of construct validity. ^a Based on EQS convention, the uniquenesses were standardized and their value should be squared to obtain the variance unaccounted for by the latent variable. ^b The factor loadings and uniquenesses were set to equality across times. ^c Effort expenditure cross-loaded on the task- and disengagement-oriented coping latent variables.

Table 4

Standardized covariances between the latent variables in the measurement model

	1	2	3	4	5	6	7	8	9
1. Life-satisfaction Time 1	-----								
2. Life-satisfaction Time 2	0.86*	-----							
3. Personal standards perfectionism	0.08	-0.05	-----						
4. Evaluative concerns perfectionism	-0.37*	-0.42*	0.58*	-----					
5. Self-determined motivation	0.16	0.14	0.43*	0.12	-----				
6. Nonself-determined motivation	-0.17*	-0.16	0.37*	0.49*	0.14	-----			
7. Task-oriented coping	0.22*	0.24*	0.30*	0.17	0.49*	0.14	-----		
8. Distraction-oriented coping	-0.11	-0.16	0.16	0.48*	0.14	0.48*	0.59*	-----	
9. Disengagement-oriented coping	-0.26*	-0.30*	0.13	0.43*	-0.01	0.53*	0.01	0.67*	-----
10. Goal attainment	0.20*	0.32*	0.10	-0.02	0.13	-0.10	0.52*	0.02	-0.69*

Note. * $p < .05$.

Table 5

Significance test of the unstandardized direct and indirect effects included in partially mediated models

	Total			Direct effect			Indirect effect		
	B	SE	Z	B	SE	Z	B	SE	Z
Partial mediation I : The role of motivational styles									
Personal standard perfectionism → task-oriented coping	0.341	0.203	0.077	2.65**	0.138	0.044	3.128**		
Evaluative concern perfectionism → distraction-oriented coping	0.293	0.195	0.070	2.81**	0.097	0.038	2.580**		
Evaluative concern perfectionism → disengagement-oriented coping	0.325	0.163	0.088	1.85 [†]	0.161	0.054	2.985**		
Partial mediation II : The role of goal attainment									
Tested simultaneously									
Task-oriented → Post-competition general well-being	0.069	-0.043	0.104	-0.413	0.112	0.074	1.516		
Disengagement-oriented → Post-competition general well-being	-0.150	-0.018	0.140	-0.128	-0.132	0.087	-1.523		
Tested individually									
Task-oriented → Post-competition general well-being	0.068	-0.053	0.085	-0.624	0.121	0.046	2.612**		
Disengagement-oriented → Post-competition general well-being	-0.157	-0.052	0.111	-0.464	-0.105	0.055	-1.895 [†]		
Partial mediation III : The role of coping through goal attainment									
Evaluative concern perfectionism → Post-competition general well-being	-0.193	-0.152	0.071	-2.149*	-0.041	0.017	-2.379*		

Note. ** $p < .01$. * $p < .05$. [†] $p < .07$.

Table 6

Hierarchical regressions of the moderating role of goal attainment in the relationship of perfectionism and motivation with changes and post-competition well-being

	Change in well-being				Post-competition well-being			
	R^2	B	SE	β	R^2	B	SE	β
Step 1	0.677				0.234			
Pre-competition life-satisfaction		0.79**	0.053	0.72	-----	-----	-----	-----
Personal standards (PSP)		-0.13	0.072	-0.09	0.09	0.107	0.07	
Evaluative concerns (ECP)		-0.20*	0.089	-0.12	-0.63**	0.127	-0.40	
Self-determined motivation (SD)		0.03	0.051	0.03	0.05	0.078	0.05	
Nonselself-determined motivation (NSD)		0.06	0.059	0.05	0.04	0.090	0.03	
Task-oriented coping		0.01	0.021	0.01	0.04	0.032	0.10	
Distraction-oriented coping		-0.04	0.041	-0.05	-0.03	0.063	-0.04	
Disengagement-oriented coping		0.02	0.030	0.04	-0.01	0.045	-0.01	
Goal attainment (GA)		0.19**	0.048	0.20	0.20**	0.073	0.21	
Step 2 : Entered individually								
GA X PSP	0.006	0.09 ^t	0.048	0.08	0.019	0.16*	0.076	0.14
GA X ECP	0.007	0.12*	0.059	0.09	0.042	0.28**	0.088	0.21
GA X SD	0.002	0.04	0.053	0.05	0.002	0.04	0.053	0.05
GA X NSD	0.005	0.06	0.056	0.07	0.005	0.06	0.056	0.07
Step 2 : Entered simultaneously	0.011				0.048			
GA X PSP		0.06	0.054	0.06		0.10	0.082	0.08
GA X ECP		0.09	0.067	0.07		0.26*	0.100	0.19
GA X SD		0.01	0.035	0.02		0.03	0.054	0.04
GA X NSD		0.01	0.040	0.01		-0.02	0.060	-0.02

Note. ** $p < .01$. * $p < .05$. ^t $p < .07$.

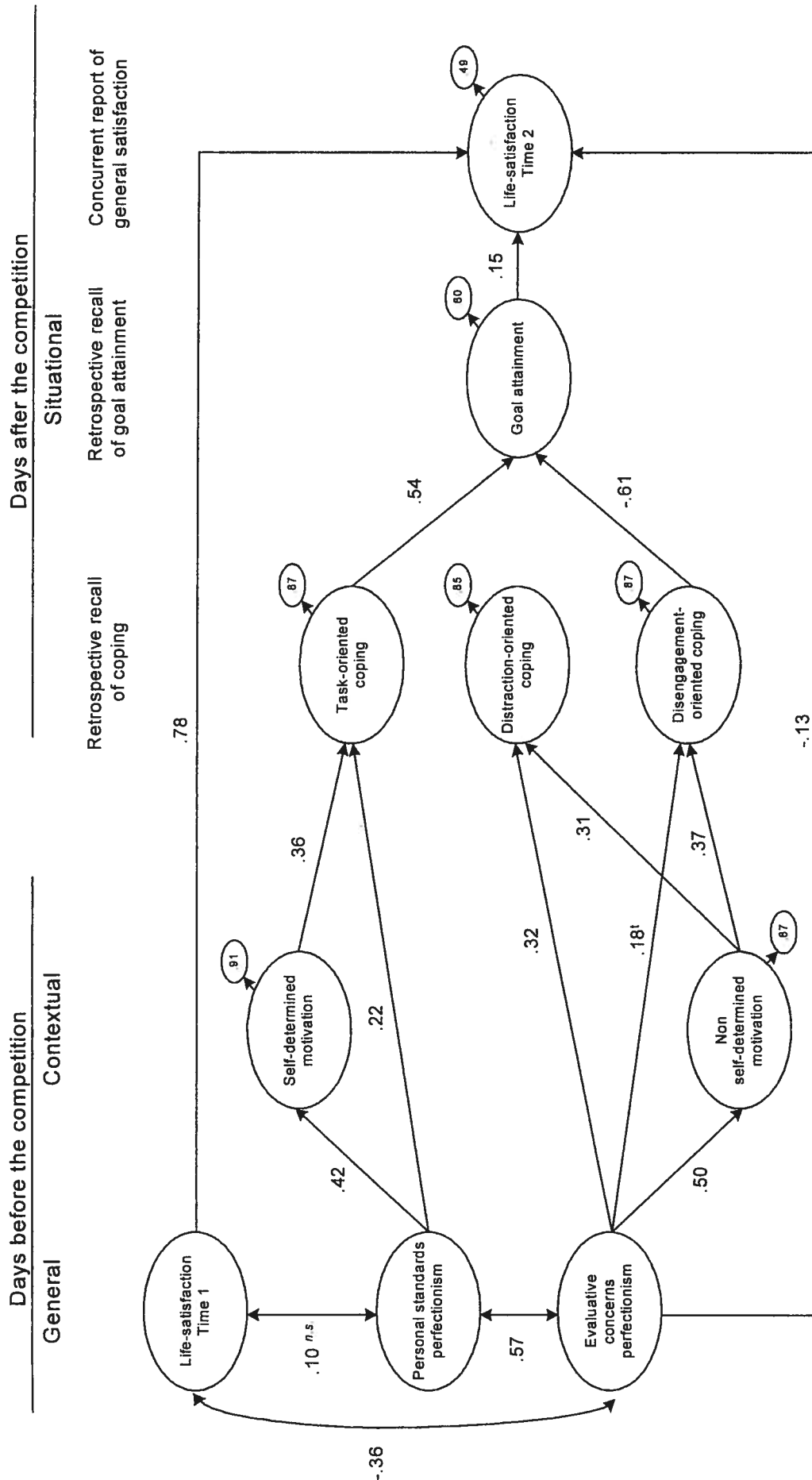


Figure 1. Partially mediated model of the associations between perfectionism, motivation, coping, goal attainment, and life-satisfaction. The factor loadings and uniquenesses of life-satisfaction were invariant across times. Although not illustrated, the disturbances of the three coping dimensions correlated freely. The disturbances were standardized and the variance unaccounted for by the model is obtained by squaring this value. *n.s.* $p > .10$. † $p < .07$. Otherwise, all parameters were significant at $p < .05$.

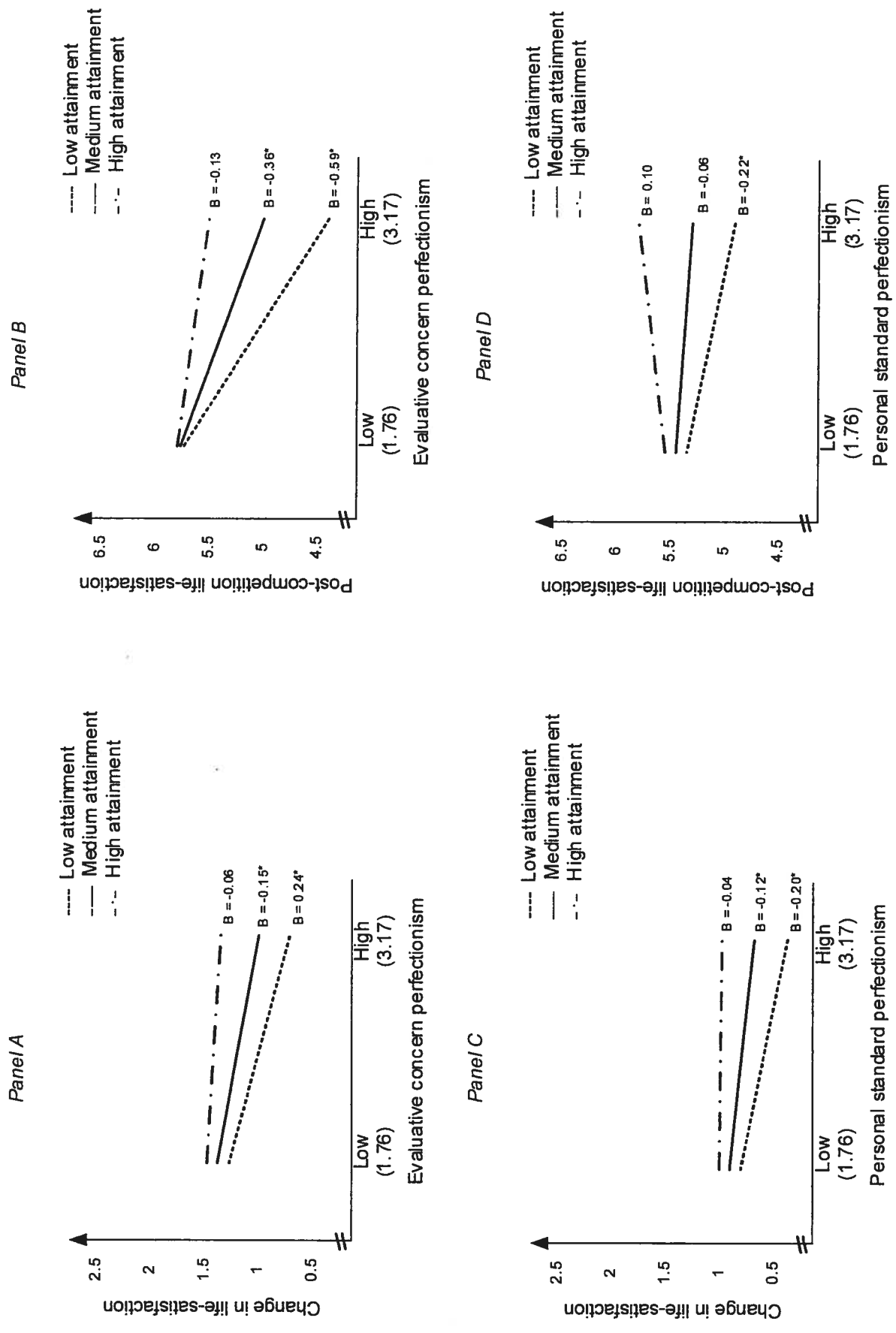


Figure 2. Moderating role of goal attainment in the relationships of personal standard and evaluative concern perfectionism with change in life-satisfaction and post-competition life-satisfaction. All parameters were standardized. * $p < .05$.

CHAPITRE 6

ARTICLE 4

Different athletes cope differently during a sport competition :
A cluster analysis of coping

ARTICLE 4

1. Identification de l'étudiant et du programme

Patrick Gaudreau
Ph.D. en psychologie, option recherche

2. Description de l'article

Titre : Different athletes cope differently during a sport competition :
A cluster analysis of coping

Auteur : Patrick Gaudreau et Jean-Pierre Blondin

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3. Contribution des auteurs

- P. Gaudreau
- Élaboration du plan de la recherche
 - Recherche documentaire
 - Cueillette des données et préparation de la base des données
 - Analyses des données
 - Rédaction et correction de l'article
- J.-P. Blondin
- Relecture et correction de l'article

4. Déclaration de tous les coauteurs autres que l'étudiant

À titre de coauteur de l'article identifié ci-dessus, je suis d'accord pour que Patrick Gaudreau inclut cet article dans sa thèse doctorale qui a pour titre « Les stratégies de coping utilisées par les athlètes en situation de compétition sportive : Développement d'un modèle multidimensionnel du coping, de ses antécédents et de ses conséquences ».

Jean-Pierre Blondin

Coauteur

12 février 2004

Date

Running head : CLUSTER ANALYSIS OF COPING

Different athletes cope differently during a sport competition :
A cluster analysis of coping

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Abstract

This study aimed at examining the ways in which different athletes may combine the use of several coping strategies and at testing whether perceived goal attainment, affective states, and experience of control would differ across distinctive profiles of coping. A sample of 151 French-Canadian athletes out of 200 who were approached by a research assistant completed l'Inventaire des Stratégies de Coping en Compétition Sportive (Gaudreau & Blondin, 2002a), the PANAS (Watson, Clark, & Tellegen, 1988), and a series of items measuring experience of control and perceived goal attainment. Results of a cluster analysis indicated that athletes could be classified in four groups according to their in-competition use of coping strategies. After controlling for athletes' self-referenced goal attainment, their experience of control, positive affective state, and anger-dejection state differed significantly ($p < .008$) across the four profiles of coping. Athletes who have used high level of task-oriented coping in combination with low level of disengagement-oriented coping reported better goal and psychological adjustment than athletes who have used high level of disengagement-oriented coping in combination with low level of task-oriented coping. Overall, these findings suggested that research should move from coping strategies to coping profiles in order to provide a deeper understanding of how different individuals cope with stress.

Key words : coping, sport, emotion, goal attainment, cluster analysis

Introduction

A conceptual model of coping in sport

Athletes are confronted with a series of physical, technical, tactical, and psychological demands before, during, and after sport competitions. To some extent, the achievement of performance goals and the psychological well-being of athletes may depend on their capacity to cope effectively with these various demands. Although athletes' coping strategies have received increasing empirical attention during the last decade, potentially important individual differences in preferred coping mechanisms have yet to be investigated more thoroughly.

According to Lazarus and Folkman (1984), coping represents the cognitive and behavioral efforts of an individual to manage the internal and external demands encountered during a specific stressful situation. This definition, which outlines the multivariate nature of coping, also implies that coping actions should be aggregated into meaningful categories. As such, several sport-specific coping questionnaires have been recently developed and validated (Gaudreau & Blondin, 2002a; Kim, Duda, & Ntoumanis, in press; Kowalski & Crocker, 2001; Yoo, 2000). Among these instruments, only the *Inventaire des Stratégies de Coping en Compétition Sportive* (ISCCS, Gaudreau & Blondin, 2002a) was developed specifically for the assessment of athletes' coping strategies before, during, and after sport competition. As with various conceptual models of coping developed in mainstream psychology (e.g., Ayers, Sandler, West, & Roosa, 1996; Carver, Scheier, & Weintraub, 1989; Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000), it proposes a hierarchical model in which coping strategies are categorized into dimensions of coping. More specifically, it assesses 10 coping strategies that are categorized in three second-order dimensions : (1) task-oriented coping (mental imagery,

thought control, relaxation, logical analysis, seeking support, and effort expenditure), (2) distraction-oriented coping (distancing and mental distraction), and (3) disengagement-oriented coping (disengagement/resignation and venting of unpleasant emotions). Results of confirmatory factor analytical studies have provided evidence for the first- and the second-order factorial structure of this questionnaire (Gaudreau & Blondin, 2002a, 2002b).

Correlates of coping in sport

Subjective control. Subjective control has been conceived differently across theoretical frameworks (Rodin, 1990; Thompson & Spacapan, 1991). In a thorough review of subjective control, Skinner (1996) provided a useful distinction between perceived control and the experience of control. Perceived control represents the extent over which individuals evaluate that they have the resources to deal effectively with a situation. In line with the hypothesis of Lazarus and Folkman (1984), this definition outlines the prospective role of subjective control in action regulation. As such, it suggests that perceiving oneself as having the capacity to change a situation may favor the use of task-oriented coping strategies and prevent the use of disengagement-oriented ones. Studies conducted in laboratory (Endler, Speer, Johnson, & Flett, 2000), health (Macrodimitris & Endler, 2001; Park, Folkman, & Bostrom, 2001), and sport settings (Haney & Long, 1995) have supported this contention by showing that perceived control was associated positively with task-oriented coping and negatively with disengagement-oriented coping.

Experience of control represents a person's feeling of efficacy or mastery during the course of an interaction with the environment (Skinner, 1996). As such, this construct refers to the extent over which an individual perceives himself as being in control of a particular situation, thus stressing the concurrent role of subjective control in action regulation.

Whether experiencing control during a situation may favor the use of task-oriented coping while abating disengagement-oriented coping, the use of task-oriented coping might also lead to a feeling of personal efficacy or competency. As such, perceived control is generally conceived as a determinant of action regulation (e.g., Ajzen, 1991; Bandura, 1997; Lazarus & Folkman, 1984) whereas experience of control represents either a determinant or a consequence of it (Skinner, 1996). Retrospective studies conducted in sport have shown that experience of control correlated positively with task-oriented coping strategies and negatively with disengagement-oriented coping ones (Gaudreau & Blondin, 2002a; Ntoumanis, Biddle, & Haddock, 1999). Because of the retrospective design of the present study, it was decided to assess the concurrent relationship between experience of control and coping strategies during a sport competition.

Goal attainment. Although performance is a central theme in sport science, only limited empirical attention has been devoted to the coping-performance relationship. Using absolute criteria of sport performance (e.g., number of points in a game, batting average for an entire season of softball), studies have revealed some weak but significant associations between coping strategies and performance variables (Finch, 1994; Haney & Long, 1995). The use of absolute criteria of performance as correlates of coping may provide an explanation for these weak associations. Clearly, athletes cannot overcome their biological, biomechanical, and technical limitations by using a specific set of coping strategies and thus, only a small percent of variance in absolute performance can be explained by athletes' coping repertoire. Nevertheless, coping may explain that some athletes perform to their own personal standard whereas others fail to perform to the best of their capacities during a sport competition (Cerin, Szabo, Hunt, & Williams, 2000).

In order to test this proposition, Gaudreau, Blondin, and Lapierre (2002) asked 66 golfers to set a realistic scoring goal before a competitive golf round. Then, a goal attainment index was created by subtracting each golfer's scoring goal from the score that they had obtained in a 18-hole golf tournament. As expected, goal attainment was associated positively with the use of task-oriented coping and negatively with the use of disengagement-oriented coping during a sport competition. Furthermore, these results were replicated using a self-reported measure of perceived goal attainment with a sample of athletes participating in various sports and levels of competition (Gaudreau & Blondin, 2002a).

Affective states. Lazarus and Folkman (1984) have assumed the reciprocal relationship between coping and emotion during stressful situations. Thus, a series of studies provided evidence for the positive associations between task-oriented coping strategies and positive affective states and between disengagement-oriented coping strategies and negative affective states (e.g., Crocker & Graham, 1995; Ntoumanis et al., 1999). The validity of these results may be questioned because they were based on a methodology in which the effect of the stressful situation and that of the delay in retrospective recall were not strictly controlled. Also, these studies have failed to provide a test of potentially mediating mechanisms that might have accounted for the coping-affect relationship. In an attempt to address these limitations, Gaudreau et al. (2002) tested the relationship between coping and affective states at three points in time during a competitive golf tournament. Results of a path analysis, performed with the in- and post-competition data, indicated that the relationship between coping and affective states was partially mediated by athletes' level of goal attainment. In line with theoretical models of motivation (Bandura, 1997; Carver & Scheier, 1998; Locke & Latham, 1990), these results

have outlined the necessity of accounting for goal attainment in order to understand affective states, coping strategies, and their reciprocal relationships in performance-related settings.

Multivariate profiles of coping

Despite their respective strengths and weaknesses, previous studies investigated the bivariate relationships between coping strategies and some external variables. Such an approach has neglected the multivariate nature of coping and the possibility that athletes may use more than one coping strategy during a stressful situation. Whereas some athletes may combine the use of task- and disengagement-oriented coping strategies, others may prefer using either task- or disengagement-oriented strategies. Clearly, researchers would gain a deeper understanding of coping mechanisms by identifying subgroups of individuals based on their multivariate profiles of coping responses.

Multivariate coping profiles have received little empirical attention. In a study with 171 rheumatoid arthritis patients, Smith and Wallston (1996) created multivariate profiles of coping with a cluster analytical procedure. Based on their multivariate coping responses, patients were categorized in four groups : (1) patients who have used high level of active coping strategies and low level of passive ones, (2) low level of active coping and high level of passive coping, (3) low level of all types of coping, (4) high level of all types of coping. Controlling for their perceived pain, the “high copers” (group 4) and the “passive copers” (group 2) reported lower level of life-satisfaction and higher level of depressive symptoms than patients from all other coping groups. These results complemented the coping literature by showing that different coping profiles were associated differently with psychological adjustment.

Goals and hypotheses

A primary goal of this paper was to examine and describe the distinctive ways in which athletes combine the use of several coping strategies during a sport competition. Aldenderfer and Blashfield (1984) have suggested that the validity of multivariate profiles should be assessed by comparing the scores of theoretically meaningful external variables across the subgroups created by a cluster analysis. Thus, a second goal of this paper was to compare the subgroups of athletes created by the cluster analysis on a series of known correlates of coping. Compared with a profile representing disengagement-oriented coping, it was expected that a profile of task-oriented coping would be associated with higher self-reported goal attainment, experience of control, and positive affective state as well as with a lower level of negative affective state.

Method

Participants

One hundred and fifty-one French-Canadian athletes (82 males), from 14 to 22 years of age ($M = 17.41$, $SD = 1.83$), participated in this study. They competed in various team and individual sports from international (18%), national (20%), provincial (27%), and regional (35%) sport events. Because three participants completed their questionnaire improperly (i.e., the same score on an entire page, systematic response pattern, substantial amount of missing data), further analyses were performed on a sample of 148 participants.

Measures

Coping. Coping was assessed using the ISCCS (Gaudreau & Blondin, 2002a) which contains nine four-item and one three-item coping subscales. All items were rated on a five-point Likert-type scale from 1 (*does not correspond at all*) to 5 (*corresponds very strongly*). Cronbach's index of internal consistency ranged from .67 to .87.

Affective states. A French-Canadian translation of the Positive and Negative Affective Schedule (PANAS, Watson, Clark, & Tellegen, 1988) was used to assess positive and negative affect. This adjective checklist contains ten positive and ten negative affects rated on a five-point Likert-type scale from 1 (*not at all or a little*) to 5 (*extremely*). Results of a recent research (Mehrabian, 1997) have suggested that the negative affect scale subsumes two independent factors : anger-dejection (irritable, ashamed, guilty, hostile, and upset) and anxiety (distressed, nervous, scared, jittery, and afraid). Results of a confirmatory factor analysis, with two samples of French-Canadian athletes, have revealed that a three-factor model fitted the data better than a two-factor model (Gaudreau & Blondin, 2003). A three-factor model representing positive affect, anger-dejection, and anxiety was used in this study. Cronbach's index of internal consistency ranged from .72 to .86. The moderate size inter-scales correlations provided evidence for the conceptual distinctiveness of the three affective subscales : $r_{\text{positive, anger}} = -.20$ ($p < .05$), $r_{\text{positive, anxiety}} = .20$ ($p < .05$), $r_{\text{anxiety, anger}} = .38$ ($p < .05$).

Goal attainment. Recent advances in achievement goal theory (Elliot & McGregor, 2001) posited that individuals may use self-referenced and normative criteria to assess the extent to which they have attained their goals. In order to capture these dimensions of goal attainment, two items were created for this study. The first item assessed the extent to which athletes have attained the goal they had set for themselves for the competition (self-referenced goal attainment). The second item evaluated whether athletes' performance was better or worse than that of other athletes (normative goal attainment). Both items were rated on a seven-point Likert-type scale from 1 (*not at all*) to 7 (*completely*).

Experience of control. Four items were created to assess the athletes' feeling of efficacy or mastery during a sport competition (Skinner, 1996). They were rated on a scale

from 1 (*not at all*) to 5 (*completely*). A confirmatory factor analysis was performed with a maximum likelihood estimation procedure. All fit indices provided evidence for the suitability of a one-factor model ($\chi^2_{(2)} = 4.66, p > .05, GFI = .984, CFI = .987, TLI = .960, RMSEA = .095$). The internal consistency of the scale was adequate ($\alpha = .82$).

Procedure

Potential participants ($n = 200$) received an envelope and a questionnaire distributed by a research assistant. After providing a written informed consent, they completed their questionnaire individually in a distraction-free environment within six hours after the completion of the competition. In order to ensure the confidentiality of the data, participants did not write their names on the questionnaire and they enclosed it in an unmarked envelope before handing it over to the research assistant the day after the competition. Seventy-six percent of the athletes returned their questionnaire to the research assistant. When completing the ISCCS, participants indicated the extent to which the items represented the things they have done or thought during the competition. For the PANAS and the experience of control scale, they indicated the extent to which the items represented how they have felt during the competition. For the goal attainment items, they rated the extent to which the items represented how they have performed in the competition.

Results

Cluster analysis

Using the critical value of Mahalanobis distance ($\chi^2_{(16)} > 39.35, p < .001$), no multivariate outliers were identified, neither on the coping or on the outcome variables. A hierarchical cluster analysis was conducted using Ward's method with a squared Euclidean distance measure. This analysis was performed based on the standardized scores of the 10 coping strategies of the ISCCS. The number of clusters (i.e., subgroups) to be merged from

the data was determined with the dendrogram, the agglomeration schedule coefficients, and the interpretability of the cluster solution (Aldenderfer & Blashfield, 1984).

Results suggested the tenability of either a four- or a two-cluster solution. As suggested by Aldenderfer and Blashfield (1984), the validity of these alternative cluster solutions was inspected using two separate series of ANOVAs with the cluster membership as an independent variable (i.e., two groups and four groups) and the 10 coping strategies as dependent variables. On one hand, the subgroups of a two-cluster solution were not significantly different on disengagement/resignation ($F_{(1, 146)} = 0.36, p > .05, \eta^2 = .003$) and venting of unpleasant emotions ($F_{(1, 146)} = 1.81, p > .05, \eta^2 = .012$). Thus, a two-cluster solution is of little theoretical interest because it fails to discriminate athletes on the basis of their use of disengagement-oriented coping. On the other hand, the subgroups of a four-cluster solution were significantly different ($p < .001$) on all coping strategies, thus providing a solid indication for its tenability.

Figure 1 presents the standardized scores of each coping strategy for the four profiles of coping. Strategies were displayed as to highlight differences between coping profiles. A descriptive label was found easily for each of the four clusters. The first cluster was labeled low coping (LOW COPE) and it represented 44 athletes who have used low levels of task-, disengagement-, and distraction-oriented coping. The second cluster was labeled task-oriented coping (HIGH TOC) and it represented 47 athletes who have used high level of task-oriented coping and low level of disengagement-oriented coping. The third cluster was labeled disengagement-oriented coping (HIGH DOC) and it represented 39 athletes who have used low level of task-oriented coping and high level of both disengagement- and distraction-oriented coping. The fourth cluster was labeled high coping

(HIGH COPE) because it represented 18 athletes who have used high levels of task-, disengagement-, and distraction-oriented coping.

Coping profiles and external variables

A second purpose of this study was to examine if affective states (i.e., positive affect, anxiety, anger-dejection, and experience of control) and goal attainment (i.e., self-referenced and normative) would differ across the four profiles of coping. Results of a MANOVA yielded a significant multivariate effect of coping profile on the dependent variables as a whole (Wilk's $\lambda = .68$, $F_{(18, 385)} = 3.17$, $p < .001$, $\eta^2 = .12$). After a Bonferroni correction, the results of univariate ANOVAs indicated that positive affect, anger-dejection, experience of control, and self-referenced goal attainment differed significantly ($p < .008$) across the four profiles of coping. Results of post hoc comparisons, using Tukey's HSD, are presented in Table 1.

Controlling for the effect of goal attainment

Considering that goal attainment may correlate significantly with coping and affective variables, the results of previous analyses might have been confounded by differences in goal attainment across the four coping profiles. Hence, a MANCOVA was performed in order to assess whether the differences across the four profiles of coping would remain significant after controlling for the effect of self-referenced goal attainment. As expected, the covariable related significantly to experience of control ($F_{(1, 143)} = 97.05$, $p < .008$, $\eta^2 = .40$, $\beta = .56$), positive affective state ($F_{(1, 143)} = 35.43$, $p < .008$, $\eta^2 = .20$, $\beta = .37$), and anger-dejection ($F_{(1, 143)} = 37.78$, $p < .008$, $\eta^2 = .21$, $\beta = -.39$). The Profile X Self-referenced goal attainment interaction was not significant (Wilk's $\lambda = .91$, $F_{(12, 354.82)} = 1.02$, $p > .05$), thus providing evidence for the homogeneity of the regression slope line (i.e., regression of the covariate on the dependent variables) across the four profiles of

coping. More importantly, results yielded a significant multivariate effect of coping profile on the dependent variables as a whole after controlling for the effect of self-referenced goal attainment (Wilk's $\lambda = .76$, $F_{(12, 362)} = 3.34$, $p < .001$, $\eta^2 = .09$). After a Bonferroni correction, the results of univariate ANCOVAs showed that positive affect, anger-dejection, and experience of control differed significantly across the profiles of coping ($p < .008$). Results of the Bryant-Paulson's post hoc comparisons are displayed in Table 2 (see Stevens, 1996, for a presentation of this technique in non-randomized studies).

Testing for potential confounds

To determine whether the four coping profiles were confounded by continuous variables such as age, years of competitive experience, and hours of training per week, a MANOVA was conducted with these potential confounds as dependent variables. Results yielded a non-significant multivariate effect of coping profile on the dependent variables as a whole (Wilk's $\lambda = .94$, $F_{(9, 340)} = 1.06$, $p > .05$, $\eta^2 = .02$). Results of a Profile (4) X Gender (2) chi-square test of association also indicated that the number of male and female athletes was not significantly different across the four coping profiles ($\chi^2_{(3)} = 2.43$, $p > .05$).

Discussion

This study shed light on different ways in which athletes combined the use of several coping strategies during a sport competition. Based on their multivariate coping responses on the ISCCS, athletes were categorized in four groups not confounded by gender, age, years of competitive experience, and hours of training per week. Providing additional evidence for this cluster solution, four of the six external variables differed significantly across the profiles of coping and these differences remained significant after

controlling for the effect of self-referenced goal attainment. The profiles of coping accounted for 10 to 15% of the variance in external variables whereas the joint effect of coping profiles and self-referenced goal attainment accounted for 25, 26, and 45% of the variance of positive affect, anger-dejection, and experience of control, respectively. As with the results of Gaudreau et al. (2002), this finding stressed the importance of accounting for self-referenced goal attainment in the relationship between coping and psychological adjustment in performance-related settings.

Studies conducted in competitive sport settings have indicated that task-oriented coping strategies correlated negatively with disengagement-oriented ones (e.g., Eklund, Grove, & Heard, 1998; Gaudreau & Blondin, 2002a; Kim et al., in press). Not surprisingly, two distinctive profiles of coping have emerged from the cluster analysis, representing athletes having a preference for task-oriented (HIGH TOC, $n = 47$) or disengagement-oriented coping strategies (HIGH DOC, $n = 39$). Compared to athletes from the disengagement-oriented group, those of the task-oriented cluster have experienced a lower level of anger-dejection as well as significantly higher levels of self-referenced goal attainment, positive affective state, and experience of control. Despite that they are based on a different methodology, these findings nonetheless replicated previous sport studies (e.g., Crocker & Graham, 1995; Eubank & Collins, 2000; Ntoumanis et al., 1999) by indicating that task-oriented coping was associated to better adjustment than disengagement-oriented coping.

Despite the moderate size negative correlation between task- and disengagement-oriented coping strategies (e.g., Eklund et al., 1998; Gaudreau & Blondin, 2002a), the use of a specific coping dimension does not necessarily preclude the use of other ones. As such, the results of several qualitative investigations indicated that athletes can employ

several coping actions to deal with a specific stressful situation (e.g., Eubank & Collins, 2000; Gould, Eklund, & Jackson, 1993). During a sport competition, athletes often need to use task-oriented coping as well as both distraction- and disengagement-oriented coping in order to manage the constantly changing demands of the situation. An athlete who uses a variety of task-oriented coping strategies may momentarily use disengagement/resignation, venting of unpleasant emotions, mental distraction, or distancing in order to cope with the emotional discomfort felt under a specific circumstance (e.g., after a mistake). As with the study of Smith and Wallston (1996), results of our cluster analysis provided some evidence for this contention as a small group of athletes had used high levels of task-, distraction-, and disengagement-oriented coping strategies (HIGH COPE, $n = 18$). Interestingly, our results showed that these athletes experienced significantly lower level of subjective control than athletes who have used high level of task-oriented coping (HIGH TOC). Compared with the task-oriented coping group, these athletes have also experienced higher anger-dejection and lower positive affect. Although these latter comparisons were only marginally significant ($p < .05$), the lack of statistical power associated with the small size of the high coping group ($n = 18$) may have rendered these substantial mean differences to be non-significant. Because previous studies have overlooked that some athletes use a mixture of task- and disengagement-oriented coping strategies, these findings expanded the coping literature by revealing that the combined utilization of task- and disengagement-oriented coping may be more detrimental than the use of task-oriented coping alone. As disengagement/resignation and venting of negative emotions may cancel the benefits of using strategies such as mental imagery, thought control, logical analysis, support seeking, relaxation, and effort expenditure, sport psychologists should develop interventions aiming specifically at abating the use of disengagement-oriented coping during sport competitions.

A final result bore on the group of athletes who have used low levels of task- and disengagement-oriented coping (LOW COPE, $n = 44$). According to the theory of stress and coping (Lazarus & Folkman, 1984), individuals start using coping actions when they perceive that something is at stake and when a particular situation creates a challenge. In the study of Smith and Wallston (1996), the group of "low copers" experienced lower level of pain than other patients, which may indicate that they have used coping strategies to a lesser extent because they perceived less pain to cope with. Hence, the perceived imbalance between a situation and one's resources may be a prerequisite of coping efforts during stressful events. Compared to athletes from the other coping profiles, those who have used coping strategies to a lesser extent (LOW COPE) might have perceived the competition as less challenging, unthreatening, or less relevant to one's ego-involvement. As such, they might have coped less intensively during the course of this competition because they had less stress to contend with. Smith and Wallston (1996) also indicated that the patients categorized as "low copers" did not experience more psychological distress than the task-oriented patients, while exhibiting higher levels of psychological adjustment than the disengagement-oriented ones. Similar results were obtained with our sample as the athletes from the low coping group experienced more subjective control and less anger-dejection than those of the disengagement-oriented group, whereas their subjective control, anger-dejection, and self-referenced goal attainment were not significantly worse than the task-oriented group. Perceiving a sport competition as less challenging and unthreatening may render the extensive use of coping strategies unnecessary. When their resources exceed the demands of a specific sport competition, athletes may be able to experience control, to protect themselves against anger-dejection, and to attain their goals even if they use very few coping strategies. Clearly, future research should examine the situational

characteristics and the primary cognitive appraisals associated with the low utilization of coping strategies as well as whether this coping profile would emerge and be associated positively to psychological adjustment in situations where high levels of stress can render the use of coping strategies necessary (e.g., World Championship, Olympic Games).

Conclusion

This study has presented an alternative methodology that may provide researchers with a useful way of examining distinctive combinations of coping strategies in specific stressful situations. Not only did different individuals use different combinations of coping strategies, but these different coping profiles were associated differently to self-referenced goal attainment, affective states, and experience of control. Acknowledging the exploratory nature of this paper, our results should be replicated in order to provide a better understanding of the different ways in which athletes may combine the use of several coping strategies. Overall, these findings suggested that future research should move from coping strategies to coping profiles in order to provide a deeper understanding of how different individuals cope with stress.

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Table 1
Comparison of external variables across the four profiles of coping

	<u>CLUS 1</u>		<u>CLUS 2</u>		<u>CLUS 3</u>		<u>CLUS 4</u>		<i>F</i>	η^2	<i>Tukey's HSD</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
			LOW	HIGH	HIGH	HIGH					
			COPE	TOC	DOC	COPE					
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>df</i>		
Self-referenced goal attainment	3.77	1.36	4.04	1.41	2.92	1.48	3.47	1.07	3, 141	4.93*	.095 2>3
Normative goal attainment	3.96	1.35	4.13	1.56	3.37	1.50	3.65	1.06	3, 141	2.20	.045 n.s.
State-Positive affect	3.69	0.61	4.05	0.54	3.37	0.64	3.63	0.76	3, 141	8.96*	.160 2>3
State-Anger	1.36	0.42	1.56	0.59	1.96	0.77	1.99	0.77	3, 141	8.05*	.148 1<3, 4; 2<3
State-Anxiety	2.20	0.83	2.27	0.80	2.30	0.68	2.46	0.73	3, 141	0.26	.005 n.s.
Experience of control	3.67	0.69	3.92	0.61	3.16	0.79	3.28	0.79	3, 141	10.26*	.093 1>3; 2>3; 2>4

Note. * $p < .008$ (Bonferroni correction). All post hoc results presented in this table are significant at $p < .008$

Table 2
 Comparison of external variables across the four coping profiles after controlling for self-referenced goal attainment

	CLUS 1	CLUS 2	CLUS 3	CLUS 4				
	LOW	HIGH	HIGH	HIGH				
	COPE	TOC	DOC	COPE				
	M*	M*	M*	M*	df	F	η^2	Bryant
								Paulson's test
State-Positive affect	3.64	3.98	3.47	3.78	3, 140	5.55*	.106	2>3
State-Anger	1.41	1.65	1.87	1.83	3, 140	5.07*	.098	1<3, 4; 2<3
State-Anxiety	2.20	2.27	2.28	2.39	3, 140	0.26	.006	n.s.
Experience of control	3.56	3.77	3.29	3.32	3, 140	5.25*	.101	1>3; 2>3; 2>4

Note. * $p < .008$ (Bonferroni correction). M* = adjusted mean when self-referenced goal attainment is constant across the four groups. All post hoc results presented in this table are significant at $p < .008$

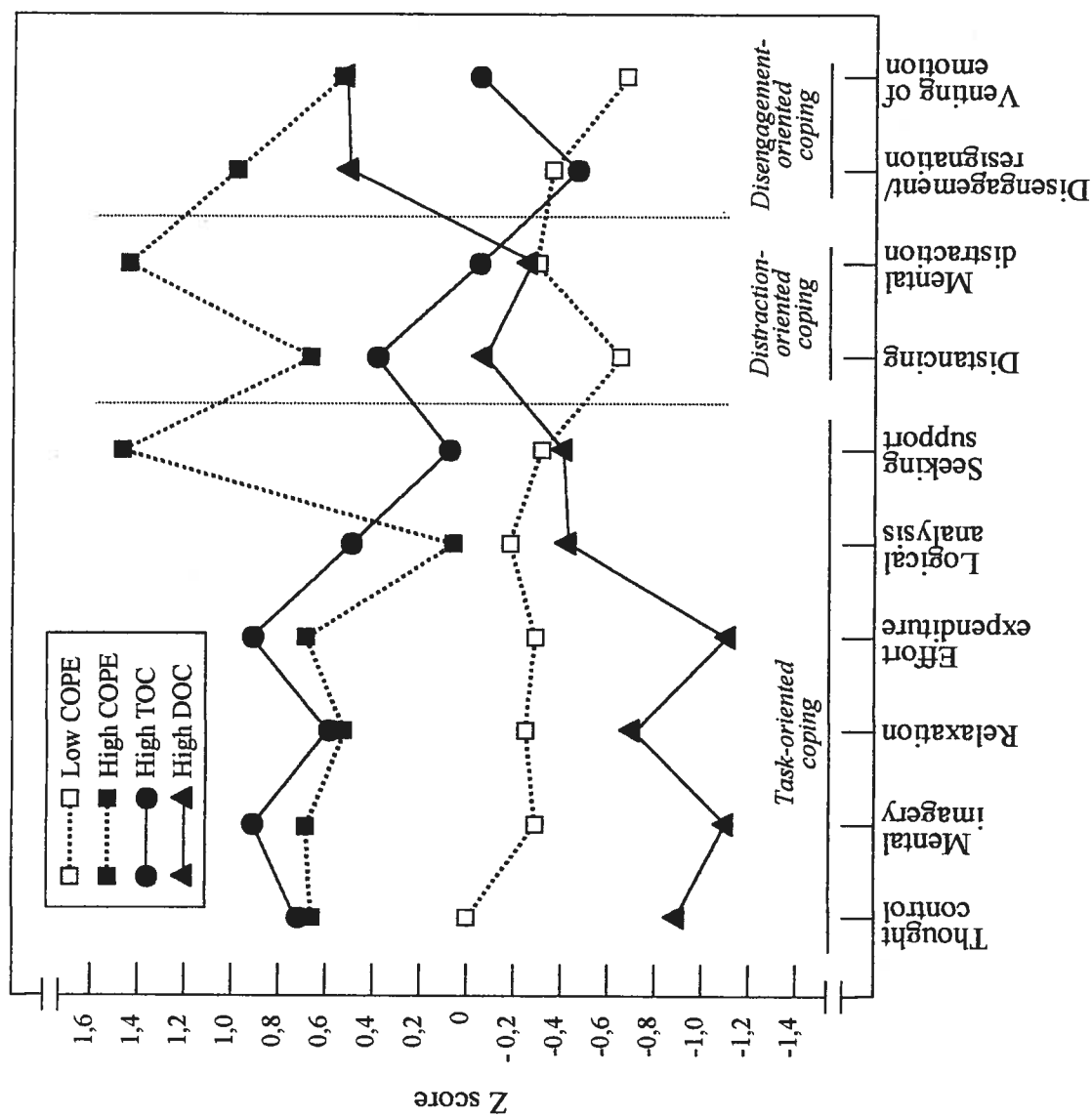


Figure 1. Standardized score of coping strategies across the four profiles of coping. Low COPE = Low utilization of all coping strategies. High COPE = High utilization of all coping strategies. High TOC = High utilization of task-oriented coping. High DOC = High utilization of disengagement-oriented coping.

CHAPITRE 7

CONCLUSION

Cette thèse de doctorat s'inscrit dans le cadre d'un programme de recherche visant à étudier les conduites de coping des athlètes ainsi que leurs antécédents et leurs conséquences en situation de compétition sportive (Amiot et al., sous-presse; Gaudreau et Blondin, 2002a; Gaudreau, Blondin et al., 2002; Gaudreau et al., 2001). Les résultats obtenus dans chacun des quatre articles empiriques seront discutés à la lumière de leurs contributions pour ce programme de recherche ainsi que pour les théories et la recherche sur le coping, la motivation et l'adaptation psychologique.

VERS UN MODÈLE HIÉRARCHIQUE DU COPING

Un premier objectif de cette thèse consistait à poursuivre la validation de *l'Inventaire des Stratégies de Coping en Compétition Sportive* (ISCCS, Gaudreau et Blondin, 2002a) et à tester son organisation hiérarchique en trois super-facteurs de coping (c-à-d., coping centré sur la tâche, sur la distraction et sur le désengagement). Les résultats d'analyses factorielles confirmatives, effectuées sur deux échantillons distincts (c-à-d., sports individuels et sports collectifs), ont permis de reproduire la structure factorielle de premier-ordre proposée par les tenants de l'ISCCS. De même, les résultats d'analyses factorielles confirmatives hiérarchiques ont démontré l'acceptabilité d'un modèle regroupant les 10 stratégies de coping en trois super-facteurs de coping. Fait important à noter, la majorité des paramètres du modèle de premier-ordre et l'ensemble des paramètres du modèle hiérarchique étaient invariants à travers les échantillons de sports individuels et collectifs. Ces résultats apportent un appui important à la validité factorielle de l'ISCCS et suggèrent que l'instrument procure un portrait fidèle et valide des conduites de coping utilisées par les athlètes de sports individuels et de sports collectifs.

Les résultats de l'article 1 de cette thèse contribuent à la documentation théorique (Compas et al., 2001; Krohne, 1996; Skinner et al., 2003) et empirique (Ayers et al., 1996; Connor-Smith et al., 2000; Walker et al., 1997) sur l'organisation hiérarchique des stratégies de coping. À un niveau méthodologique, la recherche présentée dans l'étude 1 était seulement la troisième à utiliser une véritable analyse factorielle confirmative hiérarchique (Hasking et Oei, 2002; Walker et al., 1997). Ces analyses, qui évaluent simultanément l'ajustement du modèle de premier-ordre (c-à-d., saturations des conduites de coping sur les stratégies de coping) et du modèle de second-ordre (c-à-d., saturations des stratégies de coping sur les super-facteurs de coping), procurent une évaluation rigoureuse de la structure factorielle d'un instrument. Bien que l'ajustement du modèle proposé initialement était marginal, un modèle légèrement modifié a procuré des indices d'ajustement satisfaisants. Spécifiquement, il appert que le déploiement des efforts et la recherche de soutien puissent représenter plus d'un super-facteur de coping. En lien avec les propositions théoriques de Lazarus et Folkman (1984), ce résultat suggère que certaines stratégies de coping puissent jouer plusieurs fonctions dans le cadre d'une même situation stressante. En contexte sportif, il semble que le déploiement des efforts puisse être utilisé pour tenter de maîtriser les exigences de la compétition ainsi que pour ne pas se désengager de la situation. De même, la recherche de soutien pourrait être utilisée pour se distraire momentanément durant la compétition ainsi que pour obtenir des informations servant à augmenter les capacités de maîtriser les exigences de la situation.

D'un point de vue psychométrique, la présence de saturations doubles dans le modèle hiérarchique de l'ISCCS outrepassa les postulats de structure simple proposés par les tenants des théories classiques de la mesure (Nunnally et Bernstein, 1994). Qui plus est, ces saturations doubles vont à l'encontre des propositions théoriques avancées par Skinner

et al. (2003). Spécifiquement, ces auteurs ont proposé que chacun des super-facteurs de coping d'un modèle hiérarchique devrait être mutuellement exclusif. Bien qu'étant désirable conceptuellement, une application rigide du postulat de structure simple ne saurait rendre compte de la nature multi-fonctionnelle de certaines stratégies de coping. En lien avec les postulats de Lazarus et Folkman (1984), plusieurs modèles conceptuels ont proposé que la recherche de soutien social puisse jouer un rôle simultané dans la résolution de la tâche et dans la gestion des émotions (v.g., Ayers et al., 1996; Carver et al., 1989). De même, des analyses factorielles exploratoires de Kallasmaa et Pulver (2000) ont démontré que le coping actif pouvait saturer négativement le super-facteur représentant le coping centré sur le désengagement, tout en saturant positivement le super-facteur représentant le coping centré sur la tâche. Récemment, une étude qualitative a démontré que certaines conduites de coping utilisées par les athlètes répondaient simultanément à différentes fonctions dans le processus d'adaptation au stress (Sharleen Hoar, communication personnelle, 15 janvier 2004).

Bien qu'il eût été préférable de respecter les postulats de structure simple, les résultats de l'article 1 contribuent néanmoins à la documentation empirique en démontrant qu'il est possible de regrouper les stratégies de coping de l'ISCCS en trois super-facteurs. En accord avec la documentation empirique émergente (Connor-Smith et al., 2000; Hasking et Oei, 2002; Walker et al., 1997), le modèle en trois super-facteurs de coping était supérieur à un modèle alternatif en deux super-facteurs représentant du coping centré sur l'engagement et du coping centré sur le désengagement. Qui plus est, les résultats des autres articles de cette thèse ont appuyé la différenciation fonctionnelle de ces trois super-facteurs de coping en montrant leurs associations différenciées avec des antécédents

dispositionnels et motivationnels ainsi qu'avec des conséquences fonctionnelles et émotionnelles.

LE COPING À TRAVERS LES PHASES D'UNE SITUATION STRESSANTE

Un deuxième objectif de cette thèse consistait à évaluer la constance factorielle, relative et absolue des stratégies de coping à travers deux phases d'une compétition sportive. L'ISCCS a été développé pour mesurer des conduites de coping utilisées par les athlètes avant et pendant les compétitions sportives. Or, il était impératif d'évaluer la constance de sa structure factorielle en phase pré- et intra-compétition. Compte tenu de la taille de l'échantillon disponible ($n = 320$) et des exigences techniques propres aux analyses factorielles confirmatives longitudinales (Meredith, 1993), il était impensable de modéliser 20 facteurs (c-à-d., 10 facteurs par temps de mesure) dans le cadre d'une même analyse. En utilisant une approche fréquemment utilisée dans les recherches longitudinales en psychologie (v.g., Conroy et al., 2003; Long et Schutz, 1995), une série d'analyses a été réalisée pour chacune des stratégies de coping prise isolément. Cette approche était adéquate puisque les recherches antérieures ont démontré l'acceptabilité et l'invariance de la structure factorielle de premier-ordre de l'ISCCS auprès de trois échantillons indépendants (voir article 1 ainsi que Gaudreau et Blondin, 2002a).

Les résultats des analyses factorielles confirmatives longitudinales ont montré l'invariance partielle de la structure factorielle de premier-ordre de l'ISCCS à travers les phases d'une compétition. Spécifiquement, les 39 énoncés de l'ISCCS ont saturé significativement leur facteur respectif à chacun des temps de mesure (invariance structurale). De plus, 37 des 39 saturations (invariance métrique)¹ et 35 des 39 ordonnées à l'origine (invariance scalaire) étaient invariantes à travers les phases de la compétition.

Bien que certains paramètres étaient non-invariants, ces résultats démontrent que la plupart des énoncés de l'ISCCS permettent d'évaluer de façon hautement équivalente les stratégies de coping utilisées par les athlètes avant et après une compétition sportive. En référence aux recommandations méthodologiques de Byrne et al. (1989), il est possible de conclure que l'invariance partielle des paramètres de l'ISCCS rencontre les conditions nécessaires et suffisantes pour produire des estimés non-biaisés de la constance relative et absolue du coping à travers les stades d'une compétition sportive.

La quasi-totalité des études sur la constance intra-situationnelle du coping ont estimé sa constance relative et sa constance absolue sans évaluer préalablement l'invariance factorielle des instruments utilisés pour le mesurer (pour une exception, voir Sorlie et Sexton, 2001). De plus, la majorité des chercheurs ont estimé la constance absolue du coping en utilisant des tests *t* non-indépendants ou des ANOVAs. Puisque ces analyses ne permettent pas d'évaluer systématiquement l'invariance scalaire du coping, il est possible que le changement dans l'utilisation du coping ait été causé par des biais de réponse non détectés plutôt que par des variations réelles (Cheung et Rensvold, 2000; Vandenberg et Lance, 2000). De même, la majorité des recherches ont estimé la constance relative du coping en effectuant des corrélations de Pearson (pour une exception, voir Yali et Lobel, 2002). Puisque leur taille est influencée négativement par le manque de fidélité d'une variable (Cohen et al., 2003), il est possible que ces corrélations test-retest aient entraîné une sous-estimation de la constance relative réelle du coping. En somme, bien que la documentation existante ait soutenu le postulat de l'approche transactionnelle du coping (Lazarus et Folkman, 1984), il est impossible de statuer, hors de tout doute raisonnable, que la variation significative du coping à travers les phases d'une situation était attribuable à un changement réel plutôt qu'à de l'erreur de mesure.

Dans cette thèse doctorale, la modélisation par analyse factorielle confirmative longitudinale a permis de contrer ces différents pièges méthodologiques en procurant un estimé non-biaisé de la constance relative et de la constance absolue (c-à-d., moyennes latentes) des stratégies de coping de l'ISCCS. De même, le fait de considérer simultanément la constance relative, la constance absolue et la constance individuelle a offert un portrait plus détaillé et nuancé de la constance du coping à travers les phases d'une compétition sportive.

Les résultats d'analyses des moyennes latentes ont montré que l'utilisation moyenne des stratégies de coping était significativement différente à travers les phases de la compétition. La taille de l'effet de ces différences significatives, estimée avec le coefficient d de Cohen, variait entre $|0.18|$ et $|0.53|$, avec une moyenne absolue de $|0.33|$. Tel qu'attendu, l'utilisation moyenne des stratégies de coping centrées sur la tâche a diminué à travers les phases de la compétition alors que l'utilisation moyenne des stratégies de coping centré sur le désengagement a augmenté. Les stratégies de coping centrées sur la distraction, pour lesquelles aucune hypothèse précise n'a été formulée, ont augmenté significativement. Ces résultats corroborent les résultats d'une recherche exploratoire effectuée auprès d'athlètes du Québec (Gaudreau et al., 2001), tout en démontrant que les athlètes ajustent leur utilisation du coping en fonction des demandes normatives associées aux phases de préparation et de confrontation d'une compétition sportive.

Malgré ces changements normatifs, les covariances standardisées ont révélé une certaine constance des stratégies de coping. En particulier, le coping pré-compétition et le coping intra-compétition partageaient, en moyenne, 39% de variance (entre 0.20 et 0.58 selon les stratégies de coping). À première vue, ces résultats appuient une approche dispositionnelle en montrant que les différences inter-individuelles dans le changement

intra-individuel du coping demeurent modérément constantes. Toutefois, ces résultats appuient également une approche situationnelle parce qu'une part importante de la variance du coping intra-compétition n'est pas expliquée par le coping utilisé avant la compétition. Ces résultats convergent avec des études récentes dans lesquelles une composante dispositionnelle expliquait de 15 à 42% de variance dans l'utilisation du coping à travers le temps (Dunkley et al., 2003; Schwartz et al., 1999). Les athlètes semblent posséder une prédisposition à utiliser certaines formes de coping de façon relativement constante à travers les phases d'une compétition. Toutefois, la part inexpliquée de variance suggère également que les athlètes modulent leur utilisation du coping en fonction des demandes constamment changeantes de la compétition sportive. Certes, les recherches futures devraient considérer simultanément les aspects situationnels et les influences dispositionnelles afin d'étudier les différences inter-individuelles dans le changement intra-individuel du coping à travers le temps et les situations. Une telle approche permettrait de comprendre pourquoi certains individus changent leur utilisation du coping à travers le temps et les situations alors que les autres demeurent relativement constants.

Bien qu'ayant mesuré le coping à travers deux phases d'une même compétition, cette recherche n'a pas évalué la stabilité situationnelle du coping à travers différentes compétitions sportives. À cet effet, Crocker et Isaak (1997) ont démontré que l'utilisation moyenne de plusieurs stratégies de coping était instable à travers trois différents événements d'un cycle de compétition sportive. Dans des recherches futures, il serait intéressant de suivre une cohorte d'athlètes durant une saison afin d'évaluer si les variations motivationnelles et cognitives intra-individuelles peuvent prédire les variations intra-individuelles de l'utilisation du coping. De même, il serait intéressant de déterminer si ces dernières variations peuvent prédire les variations intra-individuelles de la performance et

des états émotionnels des athlètes. Une telle approche pourrait contribuer à la documentation fondamentale sur la stabilité du coping, tout en renseignant les intervenants et les entraîneurs sur les facteurs susceptibles d'aider ou de nuire à l'ajustement fonctionnel et émotionnel de leurs athlètes.

LES ANTÉCÉDENTS ET LES CONSÉQUENCES DU COPING : VERS UNE APPROCHE INTÉGRATRICE

Un troisième objectif de cette thèse consistait à identifier les antécédents et les conséquences du coping en situation de compétition sportive ainsi qu'à évaluer le rôle médiateur des trois super-facteurs de coping de l'ISCCS dans les relations qu'entretiennent des antécédents dispositionnels et motivationnels avec des conséquences fonctionnelles et émotionnelles. Spécifiquement, cette thèse doctorale contribue à la documentation portant sur les conséquences fonctionnelles et émotionnelles du coping (pour une recension, voir Compas et al., 2001; Zeidner et Endler, 1996). Elle contribue également à la documentation empirique portant sur les dispositions au perfectionnisme (Flett et Hewitt, 2002a) et à l'optimisme (Chang, 2001), tout en s'inscrivant dans la documentation liée à la théorie de l'autodétermination (Deci et Ryan, 2002b; Vallerand, 1997).

Le rôle du coping dans l'atteinte d'objectifs et le bien-être psychologique

Lorsque confrontés à une situation contrôlable, comme le sont les compétitions sportives, les individus qui utilisent un coping centré sur la tâche devraient ressentir davantage d'émotions positives et de bien-être subjectif alors que ceux qui utilisent un coping centré sur le désengagement devraient ressentir davantage d'émotions négatives et

de détresse psychologique. De façon générale, les résultats des recherches réalisées dans cette thèse doctorale ont corroboré ce postulat de Lazarus et Folkman (1984). D'une part, l'utilisation du coping centré sur la tâche durant une compétition était reliée positivement aux émotions positives ressenties durant les heures ou les jours après une compétition. D'autre part, l'utilisation du coping centré sur le désengagement durant une compétition était reliée positivement aux émotions négatives ressenties durant les heures ou les jours après une compétition. Qui plus est, l'article 3 de cette thèse a démontré que le coping était relié significativement au bien-être général des athlètes et ce, au-delà de leur niveau initial de bien-être mesuré durant les jours qui précédaient une compétition sportive. Non seulement le coping utilisé par les athlètes durant une compétition a-t-il contribué à prédire les affects ressentis après une compétition, il a également influencé leur bien-être subjectif général. Ce résultat contribue substantiellement à la documentation montrant l'influence du coping sur les états émotionnels (v.g., Amiot et al., sous-presse; Crocker et Graham, 1995b; Gaudreau, Blondin et al., 2002; Ntoumanis et al., 1999) et le bien-être subjectif des athlètes (Baltzell, 1999).

Cette thèse s'inscrit à l'intérieur d'un programme de recherche proposant que le coping utilisé en situation de compétition sportive influence le rendement obtenu par les athlètes (Gaudreau, Blondin et al., 2002). Les recherches antérieures ont démontré de très faibles corrélations entre l'utilisation du coping et des indices absolus de rendement athlétique (Finch, 1994; Haney et Long, 1995). Ces résultats ne sont guère surprenants puisque le rendement absolu dépend davantage de facteurs génétiques, physiologiques, techniques et stratégiques que de facteurs mentaux (Starkes et Ericsson, 2003). À défaut de prédire le rendement absolu, le coping pourrait permettre de comprendre pourquoi certains athlètes atteignent leur rendement maximal et leurs objectifs de performance alors que

d'autres athlètes réalisent des performances inférieures à leurs habiletés réelles et à leurs buts d'accomplissement (Gaudreau, Blondin et al., 2002). Les résultats de cette thèse ont corroboré ce postulat et contribué à une documentation émergente (Amiot et al., sous-*presse*; Gaudreau et Blondin, 2002a; Gaudreau, Blondin et al., 2002) montrant le rôle respectivement facilitant et nuisible du coping centré sur la tâche et du coping centré sur le désengagement dans l'atteinte d'objectifs personnels en situation de compétition sportive. Fait intéressant à noter, les relations entre les super-facteurs de coping et des indices subjectifs d'atteinte d'objectifs étaient invariantes à travers des échantillons de sports individuels et de sports collectifs (voir article 1, étude 1). Non seulement le coping utilisé par les athlètes durant une compétition a-t-il contribué à prédire des indices subjectifs d'atteinte de buts, il a également corrélé significativement avec des indices objectifs d'atteinte de buts (voir article 2). Qui plus est, ces relations sont demeurées significatives après avoir contrôlé statistiquement pour le niveau d'habileté des athlètes (voir article 2). En somme, ces résultats corroborent le postulat avancé par Gaudreau et ses collaborateurs (2002), tout en montrant l'importance de considérer le coping dans les recherches portant sur les processus reliés à l'atteinte d'objectifs personnels.

Des recherches effectuées dans les sports (Graham et al., 2002) et en psychologie de la motivation (pour une recension, voir Koestner et al., 2002) ont démontré qu'atteindre des objectifs personnels contribuait significativement au bien-être subjectif des individus. Qui plus est, Crocker et Graham (1995a) ainsi que Gaudreau et al. (2002) ont proposé que l'atteinte d'objectifs personnels pourrait médiatiser les relations entre le coping utilisé durant une situation d'accomplissement et les états émotionnels ressentis après cette situation. Alors que les résultats des articles 2 et 4 ont partiellement corroboré ce postulat, ceux de l'article 3 et d'une recherche récente lui ont apporté un appui plus certain (Amiot et

al., sous-presse). Lorsque les états émotionnels ou le bien-être subjectif ont été mesurés quelques heures après une compétition (étude 2 et 4), les relations entre le coping et les états émotionnels sont demeurées significatives après avoir contrôlé pour l'effet de l'atteinte d'objectif (c-à-d., médiation partielle). Lorsque ces conséquences émotionnelles ont été mesurées quelques jours après une compétition, ces mêmes relations sont devenues non-significatives après avoir contrôlé pour l'effet de l'atteinte d'objectif (c-à-d., médiation complète). En somme, il appert que l'atteinte d'objectifs personnels médiatise une part significative de la relation entre le coping et les états émotionnels et que cette portion de la relation augmente avec le passage du temps. En d'autres termes, les effets significatifs du coping utilisé pendant une situation d'accomplissement diminueraient progressivement avec le passage du temps. Certes, il serait intéressant d'effectuer de prendre des mesures quotidiennes (*daily diary*, voir Dunkley et al., 2003) afin d'évaluer la durée des effets respectifs de l'utilisation intra-situation du coping et de l'atteinte d'objectif personnel sur les états émotionnels post-compétition des individus. De même, il serait pertinent d'évaluer le rôle modérateur du coping post-compétition, des attributions causales, de l'autodétermination des objectifs (self-concordance of goal, Sheldon et Houser-Marko, 2001) et de la rétroaction de personnes significatives (v.g., entraîneurs, parents, coéquipiers) dans la relation entre l'atteinte d'objectifs personnels et l'ajustement émotionnel post-compétition des athlètes. Néanmoins, les résultats de la présente thèse démontrent l'importance de considérer les objectifs personnels et la capacité des individus à les atteindre dans les recherches s'intéressant au coping en situation de performance.

Optimisme, pessimisme et utilisation du coping en compétition sportive

Au cours de la dernière décennie, les dispositions à l'optimisme et au pessimisme ont reçu une attention empirique grandissante (pour une recension, voir Chang, 2001). La majorité des chercheurs ont modélisé l'optimisme et le pessimisme comme étant deux sphères opposées d'un même construit (v.g., Scheier et Carver, 1985; Scheier et al., 1994). Néanmoins, les résultats d'analyses factorielles confirmatives (v.g., Lai, Cheung, Lee et Yu, 1998; Marshall et al., 1992; Robinson-Whelen et al., 1997; Roysamb et Strype, 2002; Scheier et al., 1994), dont celle effectuée dans l'article 2 de cette thèse, ont montré qu'un modèle bidimensionnel (c-à-d., optimisme et pessimisme) était supérieur à une conceptualisation unidimensionnelle de l'optimisme. Qui plus est, de nombreuses recherches empiriques ont illustré le rôle facilitant de l'optimisme et le rôle nuisible du pessimisme dans l'ajustement psychologique et physique des individus (pour une recension, voir Peterson et Bossio, 2001; Scheier, Carver et Bridges, 2001). En accord avec cette documentation, les résultats de la présente thèse ont montré qu'il était utile et même souhaitable de considérer l'optimisme et le pessimisme en tant qu'entités conceptuelles distinctes, bien que modérément reliées.

En se basant sur leur modèle d'auto-régulation comportementale, Carver et Scheier (1981; 1998) ont proposé que des dispositions à l'optimisme et au pessimisme devraient prédire l'utilisation de différentes formes de coping. D'une part, il est attendu que les optimistes devraient faire des efforts concrets pour tenter de gérer les exigences d'une situation stressante. D'autre part, il est attendu que les pessimistes devraient utiliser du coping centré sur le désengagement comportemental et sur la distraction mentale. Les résultats de l'article 2 de cette thèse ont corroboré ces postulats. Qui plus est, les résultats

d'analyses acheminatoires confirmatives avec variables manifestes ont montré le rôle médiateur des super-facteurs de coping dans les relations qu'entretiennent respectivement l'optimisme et le pessimisme avec les états émotionnels positifs et négatifs. D'une part, la relation entre l'optimisme et l'état émotionnel positif post-compétition est demeurée significative après avoir contrôlé pour les effets du coping centré sur la tâche et des indices subjectifs et objectifs d'atteinte de buts personnels (c-à-d., effet direct de l'optimisme était significatif). Néanmoins, l'effet indirect était marginalement significatif, suggérant ainsi que le coping centré sur la tâche puisse médier partiellement cette relation. D'autre part, la relation entre le pessimisme et la colère ressentie durant les heures après une compétition est devenue non-significative après avoir contrôlé pour les effets du coping centré sur le désengagement et des indices d'atteinte de buts (c-à-d., effet direct du pessimisme était non-significatif). Qui plus est, l'effet indirect était significatif, suggérant ainsi que le coping centré sur le désengagement puisse médier complètement cette relation. Ces résultats contribuent à une documentation quasi inexistante sur l'optimisme en contexte sportif (v.g., Baltzell, 1999; Curry et al., 1997; Grove et Heard, 1997) ainsi qu'à une documentation équivoque sur les fonctions médiatrices du coping dans les relations qu'entretient l'optimisme avec diverses conséquences émotionnelles (pour une recension, voir Aspinwall, Richter et Hoffman III, 2001; Scheier et al., 2001).

À un niveau métathéorique, ces résultats peuvent être interprétés en se référant au modèle en cinq facteurs de la personnalité (McCrae et Costa, 1987) ainsi qu'à un modèle motivationnel de la personnalité (Elliot et Trash, 2002). Dans le modèle hiérarchique de la personnalité (McCrae et Costa, 1987), l'optimisme et le pessimisme sont des facteurs de premier-ordre qui représentent respectivement les super-facteurs d'extraversion et de névrotisme. Parce qu'ils sont associés à deux dimensions distinctes de la personnalité, il

n'est pas surprenant que l'optimisme et le pessimisme soient distinguables empiriquement et mènent à des conséquences comportementales et émotionnelles différentes. Récemment, trois super-modèles de la personnalité (Carver et Scheier, 1998; McCrae et Costa, 1987; Watson et Clark, 1997), ont été regroupés en un modèle intégrateur rendant compte des propriétés convergentes et divergentes de leurs dimensions sous-jacentes respectives. Il était attendu que le névrotisme, les traits affectifs négatifs et le système d'inhibition comportementale forment un super-facteur de personnalité orienté vers l'évitement alors que l'extraversion, les traits affectifs positifs et le système d'activation comportementale forment un super-facteur de personnalité orienté vers l'engagement (Elliot et Trash, 2002). Les résultats d'analyses factorielles confirmatives ont démontré la validité de cette structure factorielle en deux facteurs. De plus, les résultats d'analyses acheminatoires confirmatives ont montré que la personnalité centrée sur l'engagement menait à l'établissement d'objectifs centrés sur l'approche alors que la personnalité centrée sur l'évitement menait à l'établissement d'objectifs centrés sur l'évitement. Puisque le coping représente une « tendance à l'action » (Matthews et al., 2000; Skinner et Edge, 2002), il est possible que ces deux super-facteurs de la personnalité mènent à des conduites de coping différentes en situation de stress. Dans des recherches futures, il serait intéressant d'adopter cette approche motivationnelle de la personnalité afin d'investiguer les relations qu'entretiennent les super-facteurs de la personnalité et leurs sous-composantes avec le coping et l'ajustement émotionnel des athlètes.

Perfectionnisme, motivation et utilisation du coping en compétition sportive

Les psychologues du sport s'entendent pour dire que le perfectionnisme peut contribuer au développement de l'expertise des athlètes et à la réalisation de performances de haut niveau (v.g., Anshel et al., 2001; Gould et Diefenbach, 2002). Toutefois, un nombre très limité de recherches empiriques ont étudié les corrélats du perfectionnisme dans le domaine des sports. Non seulement l'article 3 de cette thèse doctorale contribue-t-il à la psychologie sportive, il contribue également à la psychologie fondamentale en abordant des aspects conceptuels et explicatifs du perfectionnisme.

De façon générale, deux approches conceptuelles ont dominé la recherche empirique sur le perfectionnisme. D'une part, Frost et ses collègues (1990) ont subdivisé le perfectionnisme en six dimensions (c-à-d., standards personnels élevés, organisation, doutes à propos des actions, préoccupations face aux erreurs, critiques parentales, pression parentale). D'autre part, Hewitt et Flett (1991) ont proposé l'existence de trois formes distinctes de perfectionnisme (c-à-d., orienté vers soi, prescrit socialement, orienté vers autrui). Récemment, des analyses factorielles exploratoires (v.g., Frost et al., 1993; Stumpf et Parker, 2000) et confirmatives (v.g., Bieling et al., sous-presse; Cox et al., 2002; Dunkley et al., 2003) ont montré qu'il était possible de regrouper ces différents facteurs en deux entités conceptuelles distinctes : le perfectionnisme de standard personnel (PSP) et le perfectionnisme auto-critique (PAC). Les résultats d'une analyse factorielle confirmative (voir modèle de mesure de l'article 3) ont corroboré cette documentation en montrant l'acceptabilité d'un modèle bidimensionnel du perfectionnisme.

En se basant sur les fonctions motivationnelles attribuées au perfectionnisme (v.g., Hewitt et Flett, 1991; Slade et Owens, 1998) ainsi que sur les postulats de la théorie de

l'autodétermination (Deci et Ryan, 2002b; Skinner et Edge, 2002), l'article 3 avait pour objectif d'évaluer l'ajustement d'un modèle intégrateur proposant la séquence suivante : Dispositions de perfectionnisme → motivations contextuelles → coping durant la compétition → atteinte d'objectifs personnels → bien-être subjectif. En lien avec les résultats d'une recherche de Miquelon et al. (2002), ce modèle intégrateur propose que les perfectionnistes centrés sur les standards personnels (PSP) pratiquent leur sport pour des raisons autodéterminées alors que les perfectionnistes centrés sur l'auto-critique (PAC) exercent leur sport pour des raisons non-autodéterminées. En référence aux recherches effectuées dans le domaine sportif (Amiot et al., sous-presse), académique (Knee et Zuckerman, 1998; Zuckerman et Gagné, 2003) et interpersonnel (Knee et al., 2002), ce modèle propose également que les motivations autodéterminées et non-autodéterminées favorisent l'utilisation du coping centré sur la tâche et du coping centré sur le désengagement, respectivement.

Les résultats de l'article 3 de cette thèse ont corroboré ces hypothèses. En premier lieu, les résultats d'une analyse acheminatoire confirmative avec variables latentes ont montré le rôle médiateur du coping centré sur le désengagement (via l'atteinte d'objectifs personnels) dans la relation négative qu'entretient le PAC avec le bien-être subjectif. Ce résultat contribue à une documentation grandissante illustrant le rôle médiateur du coping dans la relation entre le perfectionnisme et l'ajustement émotionnel des individus (v.g., Dunkley et Blankstein, 2000; Dunkley et al., 2000; Dunkley et al., 2003). En deuxième lieu, les résultats de cette analyse ont illustré le rôle médiateur des motivations autodéterminées et non-autodéterminées dans les relations qu'entretiennent respectivement le PSP et le PAC avec le coping centré sur la tâche et les deux autres super-facteurs de coping (c-à-d., désengagement et distraction). Premièrement, la relation entre le PSP et le

coping centré sur la tâche est demeurée significative après avoir contrôlé pour l'effet de la motivation autodéterminée (c-à-d., effet direct du PSP était significatif). Fait important à noter, l'effet indirect était significatif, suggérant ainsi que la motivation autodéterminée puisse néanmoins médiatiser partiellement cette relation. Deuxièmement, la relation entre le PAC et le coping centré sur la distraction est demeurée significative après avoir contrôlé pour l'effet de la motivation non-autodéterminée (c-à-d., effet direct du PAC était significatif). Toutefois, l'effet indirect était significatif, suggérant ainsi que la motivation non-autodéterminée puisse médiatiser partiellement cette relation. Finalement, la relation entre le PAC et le coping centré sur le désengagement est devenue non-significative après avoir contrôlé pour l'effet de la motivation non-autodéterminée (c-à-d., effet direct du PAC non-significatif). Considérant la présence d'un effet indirect significatif, ce résultat indique que la motivation non-autodéterminée peut médiatiser complètement cette relation.

De façon générale, ces résultats contribuent à la documentation sur les fonctions motivationnelles généralement attribuées au perfectionnisme (v.g., Dunn et al., 2002; Flett et al., 1994; Flett, Hewitt, Blankstein et al., 1991; Flett, Sawatzky et Hewitt, 1995; Mills et Blankstein, 2000). D'une part, il semble que les perfectionnistes centrés sur les standards personnels pratiquent leur sport pour des raisons autodéterminées, tout en se fixant des objectifs d'accomplissement centrés sur la tâche (Dunn et al., 2002). D'autre part, il semble que les perfectionnistes centrés sur l'auto-critique pratiquent leur sport pour des raisons non-autodéterminées, tout en se fixant des objectifs centrés sur la performance (Dunn et al., 2002). Dans des recherches futures, il serait pertinent d'évaluer le rôle médiateur des objectifs d'accomplissement dans les relations qu'entretiennent différents formes de perfectionnisme et différents super-facteurs de coping. Une telle recherche permettrait de compléter cette thèse doctorale en identifiant de nouveaux paramètres

motivacionnels médiatisant la relation entre le perfectionnisme et l'utilisation du coping durant une compétition sportive. Elle permettrait également d'intégrer l'étude du coping et du perfectionnisme aux théories de la motivation à l'accomplissement fréquemment utilisées par les chercheurs et les intervenants dans le domaine des sports (Duda, 2001; Harwood et al., 2000; Ntoumanis et Biddle, 1999).

Récemment, Slade et Owens (1998) ont proposé un modèle qui postule que le perfectionnisme positif (PSP) et le perfectionnisme négatif (PAC)² serait respectivement soutenu par une motivation centrée sur l'approche et par une motivation centrée sur l'évitement. De façon indirecte, les résultats de cette thèse corroborent ce postulat en montrant une association du PSP avec des motivations autodéterminées et du coping centré sur la tâche, ainsi qu'une association du PAC avec des motivations non-autodéterminées et du coping centré sur le désengagement et sur la distraction. Dans des recherches futures, il serait intéressant d'évaluer directement ce postulat en évaluant les relations que pourraient entretenir le PSP et le PAC avec des dimensions de personnalité centrée sur l'engagement (c-à-d., extraversion, trait affectif positif, système d'activation comportementale) et centrée sur l'évitement (c-à-d., névrotisme, trait affectif négatif, système d'inhibition comportementale). Une telle approche, construite autour du modèle proposé par Elliot et Trash (2002), pourrait permettre d'investiguer l'ensemble des variables étudiées dans le cadre de cette thèse (c-à-d., optimisme, pessimisme, PSP, PAC, super-facteurs de coping, atteinte d'objectifs et états émotionnels) à l'intérieur d'un modèle intégrateur de la personnalité, de la motivation et de l'adaptation psychologique. D'ailleurs, ce modèle intégrateur est illustré dans la Figure 1 afin d'orienter les recherches futures.

Insérez la Figure 1

PROFILS MULTIDIMENSIONNELS DE COPING

Un quatrième et dernier objectif de cette thèse consistait à explorer la possibilité de catégoriser les athlètes en groupes homogènes en fonction de leur profil multidimensionnel de coping. Les résultats d'une analyse de classification hiérarchique (*cluster analysis*) ont permis d'identifier des athlètes qui utilisent (I) peu de coping, (II) du coping centré sur la tâche, (III) du coping centré sur le désengagement et (IV) du coping centré sur la tâche combiné à du coping centré sur le désengagement. De plus, ces résultats ont corroboré le postulat de Suls et David (1996) en montrant que différents profils de coping étaient associés différemment à des conséquences fonctionnelles, cognitives et émotionnelles. En lien avec la documentation existante, l'utilisation du coping centré sur la tâche (profil II) était associée à des niveaux inférieurs de colère ainsi qu'à davantage d'affect positif, d'atteinte d'objectif et d'expérience de contrôle que l'utilisation du coping centré sur le désengagement (profil III). Comparée au profil centré sur la tâche (profil II), l'utilisation combinée du coping centré sur la tâche et du coping centré sur le désengagement (profil IV) était significativement associée à davantage de colère ainsi qu'à des niveaux inférieurs d'expérience de contrôle et d'affect positif. Ces résultats contribuent substantiellement à la documentation en montrant que l'utilisation du coping centré sur le désengagement pourrait annuler, ou à tout le moins modérer, les effets bénéfiques de l'utilisation du coping centré sur la tâche. Non seulement les psychologues sportifs devraient-ils développer des programmes d'intervention promouvant le coping centré sur la tâche, ils devraient

également viser à réduire l'utilisation du coping centré sur le désengagement durant les compétitions sportives.

Dans un même ordre d'idée, les résultats de régressions hiérarchiques (voir article 2) ont montré que les relations du coping centré sur la distraction avec des conséquences fonctionnelles et émotionnelles étaient significativement modérées par l'utilisation du coping centré sur la tâche. Il semble que la seule utilisation du coping centré sur la distraction serait ni facilitante, ni nuisible pour le rendement et l'expérience émotionnelle des athlètes. Toutefois, l'utilisation combinée du coping centré sur la distraction et du coping centré sur la tâche serait associée à des niveaux élevés d'atteinte d'objectifs personnels (v.g., indices subjectifs et objectifs) ainsi qu'à davantage d'état émotionnel positif durant les heures suivant une compétition. Ces résultats, qui n'ont pas été reproduits dans l'article 3, suggèrent néanmoins que différentes combinaisons de coping peuvent mener à des conséquences différentes³. Parce que la simple utilisation du coping centré sur la distraction semble associée à des conséquences neutres et que son utilisation combinée avec du coping centré sur la tâche semble mener à des conséquences bénéfiques, les psychologues sportifs devraient s'abstenir de proscrire l'utilisation de la distraction mentale et de la distanciation durant les compétitions sportives. Certes, de nouvelles recherches devront tester la robustesse des profils multidimensionnels de coping identifiés dans cette thèse doctorale.

CONCLUSION

Les articles empiriques présentés dans cette thèse contribuent au développement de la psychologie fondamentale et de la psychologie sportive en répondant à des questions sur la nature conceptuelle (c-à-d., organisation hiérarchique et profils multidimensionnels de coping), théorique (c-à-d., constance intra-situation) et explicative (c-à-d., antécédents et

conséquences ainsi que rôle médiateur) du coping dans le domaine des sports. Les recherches intégratives présentées dans cette thèse (article 2 et 3) démontrent qu'il est possible de modéliser les super-facteurs de coping comme des médiateurs des relations qu'entretiennent des facteurs dispositionnels, motivationnels et cognitifs avec des conséquences fonctionnelles et émotionnelles.

D'un point de vue appliqué, cette thèse doctorale offre aux psychologues sportifs une mesure fidèle et valide des conduites de coping utilisées par les athlètes avant et pendant les compétitions sportives. Certes, des recherches futures devront corroborer ces résultats dans différents contextes. Pour y arriver, il appert important de valider les versions anglaise et espagnole de l'ISCCS. À cet effet, des résultats préliminaires tendent à appuyer la validité factorielle et l'invariance longitudinale du *Coping Inventory for Competitive Sport* (Richard Fletcher, communication personnelle, 30 janvier 2004). De plus, une recherche réalisée par Sara Marquéz et ses collaborateurs de l'Université de Leon, est présentement en cours pour évaluer la structure factorielle de *l'Estrategias de Afrontamiento en la Competicion Deportiva*. En identifiant des stratégies et des profils de coping reliés à l'atteinte d'objectif personnels et au bien-être subjectif des athlètes, la poursuite et le développement de ce programme de recherche devrait contribuer au développement de programmes d'intervention fondés sur des données empiriques probantes.

¹ Pour assurer l'identification de chaque variable latente, une saturation devait être contrainte à l'unité pour chacun des temps de mesure. Des modèles alternatifs ont été testés pour déterminer que les saturations fixées à l'unité étaient invariantes à travers les temps de mesure. En conséquence, il est possible d'affirmer que 37 des 39 saturations étaient invariantes à travers les phases de la compétition.

² Slade et Owens (1998) ont proposé un modèle bidimensionnel du perfectionnisme positif et du perfectionnisme négatif. Bien que libellées différemment, ces deux dimensions représentent essentiellement du perfectionnisme de standard personnel et du perfectionnisme auto-critique.

³ Dans l'article 3, des régressions hiérarchiques modérées ont testé les interactions possibles entre chacun des super-facteurs de coping (VD = atteinte d'objectifs et bien-être subjectif). Aucune interaction n'était significative à $p < .10$. Ces résultats ne sont pas rapportés dans la version finale de l'article 3.

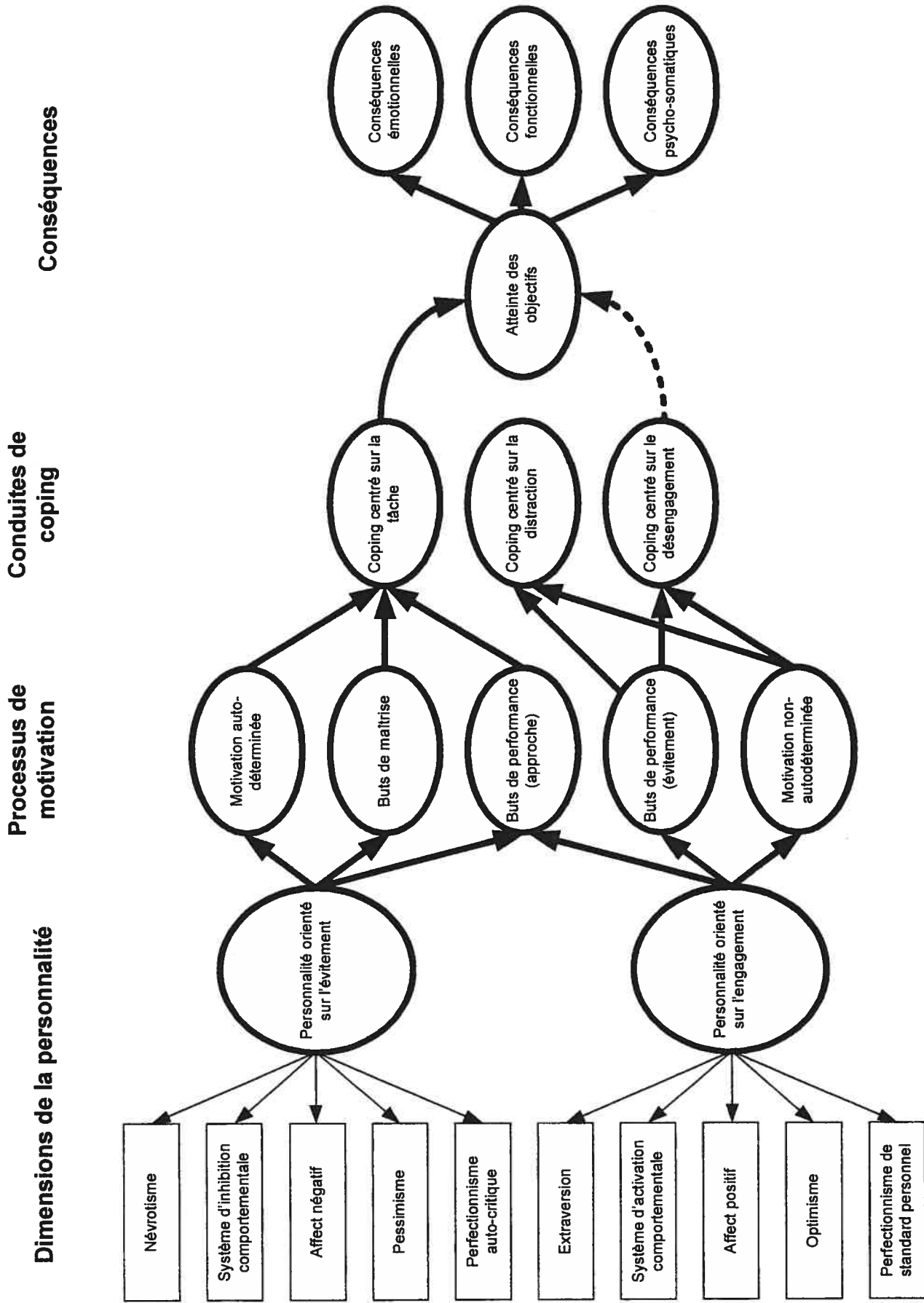


Figure 1. Modèle intégrateur de la personnalité, de la motivation, du coping et de l'adaptation. Les lignes pointillées représentent une relation négative.

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