Adaptation and Validation of the Life Events and Difficulties Schedule

for use with High School Dropouts

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Abstract

The Life Events and Difficulties Schedule (LEDS) is considered the standard for measuring psychosocial stressor exposure, but it has not been used with academically at-risk adolescents, including high school dropouts. The goal of this study is to 1) adapt the LEDS for use with this population, and 2) examine the reliability (interrater) and validity (concurrent and predictive) of this adaptation among a sample of vulnerable adolescents (N = 545). Good reliability coefficients (.79 to .90) were obtained, and stressor exposure was associated with concurrent criteria indexing mental health outcomes (depression) and major risk factors for dropout (administratively-recorded and self-reported). Also, LEDS scores predicted dropout beyond these risk factors. The adapted LEDS appears useful for describing academically struggling adolescents' stressor exposure.


*Keywords*: Life Events and Difficulties Schedule (LEDS), high school dropout, reliability, validity, psychosocial stressors.

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New conceptualizations of high school dropout suggest that exposure to severe stressors could precipitate the decision to leave school before graduation (see Dupéré et al., 2015). Although there is some empirical support for this proposition, existing studies consider a limited range of stressors in isolation (e.g., teenage pregnancy, incarceration), rather than the full spectrum of potentially relevant stressors. Thus, the impact of exposure to any major stressor on dropout, or to an accumulation of such stressors, remains unexplored. To fully investigate the potential precipitating role of stressors in dropout, a measurement strategy that allows for a complete and reliable assessment of stressors among adolescents at high risk for dropout is required.

A promising instrument in this regard is the adolescent version of the Life Events and Difficulties Schedule (LEDS; Brown et al., 1992; Frank, Matty, & Anderson, 1997). The LEDS is widely considered the gold standard to assess exposure to psychosocial stressors among both adults and adolescents (Harkness & Monroe, 2016). However, among adolescents, it has only been used in studies examining the onset of depression and related internalizing problems. The goal of this study was to adapt the instrument for use with adolescents at high risk for dropout, and to examine the reliability (interrater) and validity (concurrent and predictive) of this adaptation. The next paragraphs outline the characteristics of the LEDS, and the adaptions made to use it with dropouts.

The LEDS was developed in the UK in the 1970s, as an alternative to stressor assessment via self-reported checklists (Brown, 2002). Checklists were popular then and remain so now, with 98% of studies in the field relying on them (Grant, Compas, Thurm, McMahon, & Gipson, 2004). Despite being rapid and economic, checklists have important drawbacks. Checklist items tend to

lump together disparate stressors (Harkness & Monroe, 2016). Participants endorsing a checklist item can do so in reference to a wide variety of situations, ranging from the mundane to the severe. For instance, some participants may endorse an item about severe illnesses because of a mild flu, whereas others endorse the same item because of a life-threatening condition. Participants' ratings may thus tell more about their tolerance to stress than about stressors' inherent severity.

To address these issues, instruments based on semi-structured interviews were developed, of which the LEDS is the most prominent example (Harkness & Monroe, 2016). With such instruments, the researchers, not the participants, are responsible for eliciting complete descriptions of stressful situations during individual interviews, and for deciding whether these situations qualify as severe (among other dimensions). These decisions are made after the interviews, based on written reports containing short vignettes describing each stressor objectively, by raters who are unaware of the respondents' status regarding the outcome of interest (e.g., depressed or non-depressed) and emotional reaction to stressors. To make these decisions, raters refer to manuals containing sets of explicit, pre-determined rules. Distinct rules are provided for broad domains of stressors, and for specific categories within each domain. These rules are illustrated via numerous examples of stressors accumulated over the years (Bifulco et al., 1989).

Thanks to detailed rules and multiple examples, good to excellent interrater reliability is obtained when two raters independently code stressors extracted during LEDS interviews, with coefficients in the 0.70s- 0.90s (e.g., Grant et al., 2004). Interview-based instruments thus effectively deal with major interpretation problems that plague self-reported checklists. This advantage has increased validity: links between exposure to severe stressors and mental health

outcomes are much stronger and consistent when stressors are assessed via interview-based measures than via self-reports (Harkness & Monroe, 2016).

These desirable psychometric properties rest on the explicit rules and examples laid-out in the coding manuals. As such, they could be altered when the LEDS is adapted for use in a new context. LEDS adaptations often imply considering new categories of stressors, for which researchers need to establish and compile new rules and illustrative examples to guide ratings. So far, adaptations were mostly carried out to use the LEDS in different countries, Western and non-Western (Brown, 2002). Relatively minor changes were required, such as the addition of a few interview questions and of corresponding adaptations in the coding manuals to cover culturally specific stressors, such as polygamy in Zimbabwe.

Although it entailed adding interview questions and examples in the coding manuals, the present adaptation was different. It was not so much about incorporating new aspects not previously covered like in the polygamy example. It was rather about further specifying existing domains that were already considered, but in a comparatively superficial manner. Existing coding manuals provide detailed categories illustrated with numerous examples for stressors that are frequent among groups traditionally studied with the LEDS (i.e., depressed individuals). In contrast, stressors that are not particularly common among depressed individuals but that are characteristic of adolescents at high risk for dropout tend to be lumped into less fine-grained categories illustrated with fewer examples. We found this to be particularly true for education-related stressors. In the LEDS manuals, many domains (e.g., work, romantic relationships) are subdivided into 8 or 9 specific categories, whereas the education domain includes only 3 (about selection interviews, starting/leaving school, and exams). All other education-related stressors fall into a residual "other educational crisis" category amalgamating disparate situations, such as conflicts with teachers, expulsions, or schoolmate harassment.

Because these stressors are probably important among youth at high risk for dropout, adapting the LEDS for this population involved splintering the "other educational crisis" category into four more specific, theoretically relevant categories (school expulsions, conflicts with school personnel, conflicts with schoolmates, disciplinary actions), each with its own set of rules and illustrative examples. Some changes were made outside the education domain, mostly involving the addition of new illustrative examples in key existing categories (e.g., to further illustrate stressors related to placement in foster care). New examples were added gradually as interviews were conducted, until the full spectrum of severity was represented in all categories. Of course, the new "splintered" categories had originally a limited number of illustrative examples. This relative scarcity could alter psychometric properties.

The goal of this study is to examine whether the adapted version of the LEDS for use with adolescents at high risk for dropout provides a reliable and valid measure of stressors in general, and of school-related stressors in particular. For reliability, we focus on interrater reliability, because it represents a core strength of the instrument. For validity, we assess concurrent validity by examining associations between stressors and three criteria known to be associated with dropout or stressor exposure: school suspensions (measured via administrative records), a general index of dropout risk (self-reported) and the presence of a depression diagnosis (self-reported). We also assess predictive validity, by examining whether LEDS scores predict dropout (reported by school personnel) over and above other key risk factors.

## Method

### Recruitment and Sample

Twelve disadvantaged high schools of the greater Montreal (Canada) area participated between 2012 and 2015. At the beginning of the school year, all students of at least 14 years old were invited to provide informed consent and participate. More than 97% of targeted students

participated (N = 6,773) and were administered a screening questionnaire including a validated

dropout risk index (see measures) and items about basic socio-demographics.

A subset of participants was invited to take part in an interview during which the LEDS

was administered. The goal was to interview 45 adolescents per school (or 540 overall): 15 who

had recently dropped out, 15 matched at-risk students, and 15 with an average level of risk. The

schools informed us whenever a student dropped out. These students were invited for an

interview. After each completed interview with a dropout, a matched persevering schoolmate

with a corresponding academic and socio-demographic profile (according to the screening

questionnaire) was interviewed. Also, not-at-risk students with average scores on the risk index

were invited to participate. A total of N = 545 adolescents were interviewed. Table 1 presents

descriptive statistics.

Overall, 16% of those targeted could not be reached after multiple calls. Among those

who were, 70% agreed to be interviewed. Non-participation correlated weakly with dropout

status ($r = .12$, $p < .001$) and male gender ($r = .13$, $p < .001$), but not with the other variables in

Table 1.

**Measures**

*School Dropout*

Students were counted as dropouts when they filed an official notice of schooling

termination, when they did not show up in school for at least one month without justification, or

when they transferred to the adult sector (GED equivalent), as GED recipients are typically

counted as non-graduates. School personnel identified students who met one of these criteria.

*Adolescent LEDS*

Thirteen research assistants (RAs) were trained and supervised by the lead author (herself

trained by the authors of the original LEDS) to conduct LEDS interviews and rate vignettes,

based on the adapted version of the instrument (Authors, 2015). During the interviews (lasting

approximately 60-90 minutes), they assessed two types of stressors (using booklets with

guidelines and examples of probing questions) experienced in the past year: discrete events (e.g.,

a car accident) and chronic difficulties lasting at least a month (e.g., poverty). Stressors occurring

in ten broad domains were examined: education, work, reproduction, housing, money, criminal or

legal issues, accidents or health problems, personal relationships (with romantic partners and

family and friends), and miscellaneous.

After each interview, interviewers prepared lists of short vignettes (~150 words)

describing each stressor; then, two other RAs who were unaware of the respondents' dropout

status independently rated these vignettes along various dimensions, using the original and

adapted coding manuals (Authors, 2015; Bifulco et al., 1989; Brown et al., 1992). Discrepant

ratings were resolved in team meetings to obtain final scores, following standard LEDS

procedures. Overall, the coding procedure took about 15 hours.

A first dimension captured *severity*. For discrete events (N = 4,623 or 8.5 per person on

average), raters made two distinct ratings. One represented short-term severity (i.e., on the day

the event occurred) and the other long-term severity (i.e., about two weeks after the event

occurred). To illustrate, a car accident with no serious injury would have an elevated severity in

the short-term, but a low one in the long-term. However, if the participant were handicapped in

the aftermath, then long-term severity would be elevated as well. Short- and long-term severity

were respectively rated on a four- (1 = marked [2% of events]; 2 = moderate [36%]; 3 = some

[42%]; 4 = little [19%]) and five-point (1 = marked [0.2%]; 2 = moderate-high [5%]; 3 =

moderate-low [10%]; 4 = some [38%]; 5 = little [47%]) scale. For enduring difficulties (N =

2,406 or 4.4 per person on average), severity was captured using a six-point scale (1 = high-

marked [0.1%]; 2 low-marked [3%]; 3= moderate-high [17%]; 4 = moderate-low [41%]; 5 = mild

[31%]; 6 = very mild [8%]).

A second dimension captured the *classification* or nature of stressors. For each stressor,

one domain (out of 10) and category (out of about 100) was chosen. In terms of broad domains,

the most common ones for events were related to school (29.5%) followed by romantic (16.2%)

and family (15.0%) relationships. For difficulties, the most common domains were family-

(34.6%), school- (28.1%) and health-related (19.4%).

A last dimension represents the level of *independence*. Independent stressors are certainly

or almost certainly out of the control of the participant, and unlikely to be influenced by his or her

behavior (e.g., grandmother's death). In contrast, dependent events are at least partly influenced

by the participant's behavior (e.g., interpersonal conflicts). Independence was rated along a three-

point scale (1 = totally independent event [25%]; 2 = probably independent [12%]; 3 = dependent

[63%]).

*Concurrent criteria*

*School suspensions* were selected as a criterion, as they represent one key school-related

category added in the revised LEDS. School boards provided records listing the number of class

periods during which students were suspended during the school year (M = 1.2; SD = 4.2). This

information was available for a subset of students from two schools (n = 93) who participated in

a special project (Authors, 2015). Also, the *dropout risk index* used for matching participants

doubled-up as a criterion. This index is calculated from seven self-reported items about academic

achievement, retentions, and school engagement; final scores center at 0 with a *SD* = 1 in the

general population (Archambault & Janosz, 2009). It has shown excellent predictive validity

generally, including in the present sample (with an area under the ROC curve = .81; Authors,

2015). To assess *depression*, participants were asked about any mental-health diagnosis that they

had received from a health professional in the past year. Those with a diagnosis of depression (9%) were distinguished from those without such a diagnosis.

## Results

### Adherence to Interview and Coding Protocol

A senior interviewer listened to a random subset of 52 audiotapes and indicated, using a checklist of 57 items, whether each topic was covered. On average, interviewers covered 88% of the topics. Often, topics were omitted because they were irrelevant (e.g., pregnancies among virgin adolescents). To assess adherence to the coding protocol, the senior interviewer independently prepared a new set of vignettes based on the audio recordings. This second set was independently rated by another RA. Results showed that 92% of stressors that were rated as at least moderately severe in the original set of vignettes were also listed and rated as such in the second one.

### Reliability and Validity

Using the two sets of ratings prepared by independent, blinded raters, *interrater reliability* was calculated separately for events and difficulties. Coefficients were obtained for three dimensions: severity, classification, and independence, based on the full range of possible codes. For ordinal measures (severity and independence), interrater reliability was assessed with intraclass correlations (ICCs); for nominal measures (classification), Cohen's kappa $\kappa$ was used. As measures of interrater reliability, ICCs $\geq 0.70$ and $\kappa \geq 0.50$ are generally considered adequate.

Results are presented in Table 2 for both events and difficulties. For severity and independence, ICCs for the overall sample ranged between 0.79 and 0.90, indicating good to excellent reliability. For classification, $\kappa = 0.81$, indicating substantial agreement. These reliability estimates did not vary much as a function of status (dropout, matched at-risk or average, results available upon request). However, small variations were observed as a function

stressor type, with reliability coefficients being slightly lower for school-related stressors than for non-school-related ones.

Concurrent validity was assessed by correlating, in the full sample, the three criteria with the total number of school-related and non-school-related severe stressors, with a severity rating of moderate-high or above (on long-term threat for events). Results in Table 3 (left panel) show significant correlations for severe school-related events and difficulties for the three criteria, with one exception (*r* between school-related difficulties and suspensions). Non-school-related stressors (right panel) were correlated with depression, but not with suspensions and dropout risk (except for a weak association between non-school-related events and dropout risk). Additional analyses showed that moderate and mild stressors were not correlated, or not as strongly, with the three criteria (results available upon request).

Finally, predictive validity was assessed via a multiple logistic regression predicting dropout from exposure to severe stressors (school-related and non-school-related), while controlling for the background characteristics listed in Table 1. The results showed that the total number of severe stressors (sum of events and difficulties) independently predicted dropout at $p <$ .001 both for school-related (OR = 1.72, 95% CI = 1.28-2.32) and non-school-related (OR = 1.29, 95% CI = 1.10-1.52) stressors; however, moderate and mild stressors did not significantly predict dropout (results available upon request). More detailed results taking into account timing and independence are available elsewhere (Authors, submitted).

## Discussion

Studies linking adolescents' exposure to severe stressors and educational outcomes are few. To bridge this gap, high-quality measures of stressor exposure need to be adapted for use with adolescents struggling in school. In this study, we have successfully adapted for this

population what is widely recognized as a standard measure of stressor exposure, the LEDS (Harkness & Monroe, 2016).

In terms of interrater reliability, results indicate that with relatively modest adaptations, the LEDS can be used reliably with academically at-risk adolescents. Good reliability coefficients between .79 and .90 were obtained in the sample overall. These were generally on par with those reported in previous LEDS studies conducted with children or adolescents, although some teams obtained coefficients in the .80s and .90s (see Grant et al., 2004). The coefficients were similar among dropouts and non-dropouts, but slight variations emerged as a function of stressor type. For non-school-related stressors, good to excellent reliability coefficients in the .80s were obtained. For school-related stressors, reliability coefficients were good but slightly lower ($M =$ .77). This finding is not surprising, as new examples were added gradually to illustrate the new categories in the education section. Even though respectable reliability coefficients were obtained, perhaps even better ones could be attained in future studies, especially if new examples continue to be added to the extant corpus as additional interviews are conducted.

In terms of concurrent validity, exposure to severe school-related stressors was positively associated with school suspensions and with scores on a validated risk index for high-school dropout, with one exception: school-related difficulties were not associated with school suspensions. This exception can be seen as a form of discriminant validity, since by definition suspensions are time-limited events rather than enduring difficulties. Also supporting discriminant validity to some extent is the finding that non-school-related stressors were not or only weakly associated with suspensions and dropout risk. In addition, both school-related and non-school-related severe events and difficulties were associated with depression, reflecting findings from previous LEDS studies focusing on mental health (Harkness & Monroe, 2016).

Finally, the results also supported predictive validity. Exposure to school-related and non-school-related stressors was associated with high school dropout, independent of other preexisting risk factors.

The fact that the LEDS could be adapted relatively easily for studying educational adjustment problems raises one obvious question: why was it never used in this context before? One explanation revolves around disciplinary boundaries between educational and stress research. On the one hand, stress researchers typically focus on the impact of stressors on mental health outcomes, rather than on educational ones. On the other hand, researchers focusing on educational attainment typically pay more attention to rather stable risk factors such as low parental education or learning problems than to exposure to proximal stress (Dupéré et al., 2015). Hopefully, the proposed adaptation will facilitate future interdisciplinary work on critical turning points in educational trajectories brought about by stressors.

One aspect that could slow such developments is the fact that interview-based instruments like the LEDS are time-consuming and thus rarely used to assess stressor exposure (in less than 2% of studies, see Grant et al., 2004), with expedient but flawed checklists being overwhelmingly preferred. A recent review underscores the urgent need to reverse this trend to achieve validity, replicability, and to avoid potentially misleading findings (Harkness & Monroe, 2016). Solutions proposed to facilitate the use of demanding and costly interview-based instruments in the future include targeted sampling and collaborative efforts, among other things.

In terms of strengths and limitations, high participation rates were obtained in a population that is notoriously challenging to recruit. In addition, 545 adolescents participated, a large sample considering that the LEDS is labor-intensive, and as compared with previous LEDS studies conducted with adolescents. Also, two criteria measured from different, independent sources (administrative records and self-reports) were used to assess validity. Despite these

strengths, the sample was recruited in one region and may not be generally representative. Moreover, not all forms of psychometric properties were considered; for instance, test-retest reliability and convergent validity remain to be examined.

This study was the first to adapt the adolescent LEDS for use with academically vulnerable youth. The adapted LEDS produced reliable assessments of stress exposure, which in turn correlated with important educational and mental health outcomes. The resulting instrument provides a valuable tool to further specify the role of proximal stressors in the dropout process and related outcomes. A better understanding of these processes will help school personnel to identify students requiring help because of acute crises.

References

Archambault, I., & Janosz, M. (2009). Fidelity, discriminant and predictive validity of the

Dropout Prediction Index. *Canadian Journal of Behavioral Sciences, 41*, 187-191.

doi:10.1037/a0015261

Bifulco, A., Brown, G. W., Edwards, A., Harris, T., Neilson, E., Richards, C., & Robinson, R.

(1989). *Life Events and Difficulties Schedule (LEDS–2)*. Retrieved from London, UK:

Brown, G. W. (2002). Social roles, context and evolution in the origins of depression. *Journal of

Health and Social Behavior, 43*(3), 255-276. doi:10.2307/3090203

Brown, G. W., Harris, T. O., Andrews, B., Hepworth, C., Lloyd, C., & Monck, E. (1992). *Life

Events and Difficulties Schedule (LEDS-2) - Teenage supplement*. London, UK: Royal

Holloway and Bedford New College, University of London.

Dupéré, V., Leventhal, T., Dion, E., Crosnoe, R., Archambault, I., & Janosz, M. (2015). Stressors

and turning points in high school and dropout: A stress process, life course framework.

*Review of Educational Research, 85*, 591-629. doi:10.3102/0034654314559845

Frank, E., Matty, M. K., & Anderson, B. (1997). *Interview Schedule for Life-Events and

Difficulties (Adolescent version)*. Pittsburgh, PA: University of Pittsburgh Medical

School.

Grant, K. E., Compas, B. E., Thurm, A. E., McMahon, S. D., & Gipson, P. Y. (2004). Stressors

and child and adolescent psychopathology: Measurement issues and prospective effects.

*Journal of Clinical Child and Adolescent Psychology, 33*, 412-425.

doi:10.1207/s15374424jccp3302_23

Harkness, K. L., & Monroe, S. M. (2016). The assessment and measurement of adult life stress:

Basic premises, operational principles, and design requirements. *Journal of Abnormal

Psychology, Advance online publication*. doi:10.1037/abn0000178

Table 1

*Participant Characteristics*

|  | Dropout (n = 183) | | Matched at-risk (n = 183) | | Not-at-risk (n = 179) | |
| --- | --- | --- | --- | --- | --- | --- |
|  | *M*/% | *SD* | *M*/% | *SD* | *M*/% | *SD* |
| Male | 54.1 | | 54.1 | | 48.6 | |
| Age | $16.5_a$ | 0.9 | $16.4_b$ | 1.0 | $16.0_{a,b}$ | 0.8 |
| Visible minority | 19.1 | | 26.0 | | 26.0 | |
| Parental education[1] | $2.5_a$ | 1.0 | 2.6 | 0.9 | $2.7_a$ | 1.0 |
| Special education | $42.6_a$ | | $45.9_b$ | | $4.5_{a,b}$ | |
| Dropout risk index | $1.1_a$ | 2.1 | $1.3_b$ | 1.9 | $-0.6_{a,b}$ | 0.5 |

*Note*. Means and percentages sharing subscripts in each row differ significantly at *p* < .05.

[1]Highest level attained by either parent, 1 = primary to 4 = university.

Table 2

*Interrater Reliability*

| | Overall | Stressor Type | |
| --- | --- | --- | --- |
| | | Non-school-related | School-related |
| | ICC/$\kappa$ | ICC/$\kappa$ | ICC/$\kappa$ |
| Discrete events | | | |
| Short-term severity[a] | 0.85 | 0.86 | 0.81 |
| Long-term severity[a] | 0.81 | 0.82 | 0.76 |
| Classification[b] | 0.81 | 0.80 | 0.82 |
| Independence[a, c] | 0.90 | -- | -- |
| Chronic difficulties | | | |
| Severity[a, d] | 0.79 | 0.80 | 0.68 |
| Classification[b] | 0.81 | 0.80 | 0.78 |
| Independence[a, c] | 0.83 | -- | -- |

*Note*. [a] Intraclass correlations (ICCs). [b] Cohen's kappa ($\kappa$). [c] For independence, coefficients are not calculated as a function of event type, because there was little variance for school-related events (by definition, many of these events involve conflicts, failures, etc. and are thus almost never fully independent).

Table 3 Concurrent validity: correlations between the number of severe school-related and non-school-related stressors and three criteria

| | | Severe stressors | | | |
| | | School-related | | Non-school-related | |
| | n | Discrete events | Chronic difficulties | Discrete events | Chronic difficulties |
|---|---|---|---|---|---|
| School suspensions | 93 | 0.38*** | -0.10 | 0.03 | -0.02 |
| Dropout risk index | 545 | 0.21*** | 0.26*** | 0.10* | 0.05 |
| Depression | 545 | 0.09* | 0.11** | 0.25*** | 0.13** |

*Note*. Severe stressors are those with a severity rating of moderate-high or above (on long-term severity for events).

* *p* < .05. ** *p* < .01. *** *p* < .001.