The benefits of supporting the autonomy of individuals with mild intellectual disabilities: An experimental study.

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Abstract

The benefits of autonomy support with the general population have been demonstrated numerous times. However, little research has been conducted to verify if these benefits apply to people with special needs. The goal of the study was to examine whether autonomy support (AS) can foster the sense of autonomy of people with a mild intellectual disabilities (MID) and improve their experience while engaging in an important but fastidious learning activity. This experiment compares the effects of two contexts: with and without AS. All participants (N = 51) had a MID and were recruited from rehabilitation centers. The results showed that compared to participants in the control group, participants in the AS group experienced greater autonomy satisfaction, perceived more value to the activity, were more engaged, and experienced a steeper decrease in their anxiety over time. This study suggests that the benefits of AS extend to individuals with MID.

Keywords: Autonomy support, mild intellectual disability, self-determination, internalization, engagement, well-being.
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Studies have shown that the level of social participation (Wehmeyer & Palmer, 2003; Wehmeyer & Schwartz, 1997) and quality of life of people with an intellectual disability (ID; Chou, Schalock, Tzou, Lin, Chang, Lee, & Chang, 2007; Lachapelle, Wehmeyer, Haelewyck, Courbois, Keith, & Schalock, 2005; Wehmeyer & Schalock, 2001; Wehmeyer & Schwartz, 1998) are linked to their level of self-determination. The development of self-determination has thus become a crucial element in the provision of adequate services for this population (Wehmeyer, 2007a; Wullick, Widdershoven, Schrojenstein Lantman-de Valk, Metsemakers, & Dinant, 2009). For example, the American Association on Intellectual and Developmental Disabilities (AAIDD, 2010) considers self-determination as a central objective in people with an ID and recommends that when a personalized intervention plan is being developed, the person’s dreams, needs, interests and preferences, that is their need for self-determination, should be prioritized (Ryan & Deci, 2000).

According to Wehmeyer and Bolding (2001), the development of self-determination in people with an ID rests not only on their abilities to exert it and on the opportunities to practice it in their environment, but also on the support they receive from socialization figures, including the manner in which these figures communicate and interact with them. Surprisingly, few studies within the ID domain have examined how socialization agents can communicate and interact in order to promote self-determination in people with an ID (Wong & Wong, 2008).

Despite the acknowledgment of the importance of self-determination, research has shown that it could be challenging to support it in people with an ID (Caouette, 2014; Hooren, Widdershoven, Van den Borne, & Curfs, 2002). For example, one of the obstacles that
professionals face is their lack of knowledge of what self-determination is and how to promote it (Caouette, 2014; Wehmeyer, Agran, & Hugues, 2000).

Self-determination theory (SDT; Deci & Ryan, 2000; Ryan & Deci, 2000) postulates that every human being has three basic psychological needs: the need for competence, relatedness and self-determination (also called autonomy). This humanistic theory also explains that all humans have an innate and universal tendency to internalize the rules and behaviours that are required of them in order to function optimally in their social environment. Even though this internalization process is natural, it tends to be facilitated when basic needs are satisfied, while it is hindered when needs are thwarted (Deci & Ryan, 2000; Ryan & Deci, 2000). It is important to note that a person is self-determined when he/she acts according to his/her interests, needs and values. It is not a question of “not depending on anybody” but rather to feel that our actions stem from ourselves as opposed to being controlled by external (e.g., reward, punishment) or internal forces (e.g., avoid feeling ashamed).

Numerous studies have shown that the more autonomous people feel, the better they learn, perform and feel. This link has been demonstrated across various developmental periods (e.g., infancy, adolescence, adulthood) and contexts (e.g., academic, work, health, sports; Ryan & Deci, 2000). The need for autonomy and the benefits that result when it is satisfied are said to be universal (Deci & Ryan, 2000). While socialization agents tend to be more controlling with people with an ID, Deci (2004) postulates that autonomy support would be equally beneficial to them, even though they are often perceived as being less motivated, more passive and inattentive (Grolnick & Ryan, 1990; Reeve, 2009; Witzel & Mercer, 2003). According to Deci (2004), people with an ID should learn in an environment where their need for autonomy is supported so that they can better learn new activities and experience greater well-being.
According to SDT, the manner in which socialization agents communicate and interact with a person with an ID can more or less satisfy his/her need for psychological autonomy (Ryan, Deci, Grolnick, & La Guardia, 2006). Autonomy support (AS) aims to satisfy this essential psychological need. AS is typically defined in the context of hierarchical relationships (e.g., teacher-student, parent-child) in which the authority figure acknowledges and considers the other person’s perspective (even if it is different from their own), supports his/her initiatives, minimizes the use of controlling strategies and provides sufficient challenges according to the person’s developmental level (Ryan et al., 2006). In operational terms, AS is defined by four elements: offering rationales with requests (i.e., explain the reason/value), offering choices in the manner to accomplish a task, being empathic towards the other person’s perspective (i.e., to recognize and accept the thoughts and feelings) and avoiding controlling language and strategies (e.g., "you should", threats, rewards, guilt induction; Koestner, Ryan, Bernieri, & Holt, 1984).

The goal of the present study is to evaluate the effect of AS on the experience of individuals with a mild intellectual disability (MID).

AS is different from independence promotion (i.e., encouraging to do things without help), permissiveness (i.e., absence of structure) and neglect (i.e., the absence of implication; Joussemet, Landry, & Koestner, 2008; Soenens, Vansteenkiste, Lens, Luyckx, Goossens, Ryan, & Beyers, 2007). In fact, AS is compatible with structure (i.e., the presence of limits, rules and expectations) and the involvement of socialization agents. Studies have shown that to facilitate the internalization process, socialization agents must be involved, provide structure, all the while supporting the other person’s need for autonomy (Jang, Deci, & Reeve, 2010; Sierens, Vansteenkiste, Goossens, Soenens, & Dochy, 2009). The opposite of AS is psychological
control: a controlling interpersonal style that hinders the person’s autonomy by manipulating, invalidating and forcing him/her to be or act in a certain way (Barber, 1996).

AS has been largely studied in normative populations and in diverse domains (Ryan & Deci, 2000). Studies have shown that socialization agents who support their subordinate’s autonomy promote a wide range of positive effects on behaviour (higher level of engagement, motivation, effort, persistence; Jang, 2008; Jang et al., 2010; Hardre & Reeve, 2003; Reeve, Jang, Carrell, Jeon, & Barch, 2004; Reeve, Jang, Hardre & Omura, 2002; Vallerand, Fortier & Guay, 1997), emotion (decrease in anxiety, increase in positive affect, interests, decrease in negative affect; Black & Deci, 2000; Joussemet, Koestner, Lekes & Houlfort, 2004; Savard et al., 2013) and cognition (performance in problem-solving, development of executive functions, increased memory; Boggiano, Flink, Shields, Seelbach & Barett, 1993; Bernier, Whipple & Carlson, 2010; Cleveland & Morris, 2014). Many of these studies used experimental research designs where participants had to learn an important but uninteresting task and/or had to follow an established set of rules. In these studies, AS was compared to a control condition without AS (which consisted of a neutral or controlling interpersonal style). Though limited in number, some studies have examined the impact of AS on people with special needs (e.g., children and adolescents with emotional and behavioural problems or who have a learning disorder; Deci, Hodges, Pierson & Tomassone, 1992; Grolnick & Ryan, 1990; Savard, Joussemet, Emond-Pelletier & Mageau, 2013). To our knowledge, to date no study conducted within SDT attempted to evaluate the impact of AS (empathy, rational, choice, non-controlling language) on individuals with an ID. The goal of the present study is to evaluate if AS, as defined by SDT, can satisfy the need for autonomy of individuals with mild intellectual disabilities (MID) and if it can generate some of benefits that have been seen in normative populations.
Anchored within SDT (Ryan & Deci, 2000), the study will investigate the effects of AS in a problem-solving context, an important but fastidious task for this population (AAIDD, 2000; Wehmeyer, 2007b). Compared to the condition without AS (control group with a neutral interpersonal style), it was hypothesized that the AS from a socialization agent (animator) will satisfy the participants’ need for autonomy and will lead to motivational, behavioural and emotional (i.e., increase internalization of the inherent value of the task, increase in the level of engagement and decrease in anxiety) benefits. Given the importance of the needs for relatedness and competence in this population (Grolnick & Ryan, 1990; Switzky, 2001), the satisfaction levels of these two other psychological needs were also measured in order to control for their potential effects. However, no difference between the conditions was expected given the fact that the experimental manipulation targeted autonomy specifically.

**Method**

**Recruitment**

Participants with a mild intellectual disability (MID) were recruited amongst the users of a rehabilitation center in the Montreal area that offers adaptation, rehabilitation and integration services for people with an ID. The study’s inclusion criteria were the following: be diagnosed with a MID, be at least 12 years old, speak French and be able to complete a questionnaire about one’s subjective experience during an activity. The exclusion criterion was to have a severe elocution problem or a verbal disorder that prevented communication (i.e., an unfamiliar person is unable to understand this person with he/she speaks).

After obtaining consent from the ethics committee, the principal investigator met with the centers’ educators to seek their help with recruitment. The educators’ role was to identify the users who met the inclusion criteria and inform them about the study. Users who were interested
in the study communicated with the researcher by telephone (alone or with help) and scheduled a meeting at the center.

Participants

Over an initial total of 66 participants, 11 referred participants did not meet the inclusion/exclusion criteria (some had an autism spectrum disorder, a moderate ID, and/or significant communication problems). In addition, with four participants, the experimental manipulation could not be conducted in a standardized manner for reasons out of the researcher’s control (e.g., participant’s sickness or behavioural problem, unsettling room change). Hence, the data from these 15 participants were not used in the analyses. The final sample was composed of 51 participants (28 women and 23 men) with a MID. These participants were aged between 16 and 61 years of age and were capable of completing the self-report questionnaire (with the help of an assistant).

Procedure

Each participant took part in the study individually, with the help of the animator (the principal investigator) and in the presence of an assistant (observer). The consent form, adapted to suit participants’ comprehension abilities (simple words and short sentences), was first read aloud and explained in person by the assistant.

The animator introduced herself as a researcher interested in the experience of people who participate in the proposed activity. The assistant was introduced as a person who was there to evaluate the work of the animator. In addition to presenting the consent form, s/he was responsible for observing the animator and the participants (see Measures section) and to help them complete the questionnaire. The assistant’s role was alternately played by one of the three
research assistants, depending on their availabilities. They were all blind to the goal and experimental manipulation of the study and they were trained to code the observed measures.

The animator presented the activity stating that it was not a "test" and told the participant what to expect of the meeting as well as what was expected of him or her (i.e., attentive listening, questions when needed, expression of ideas, respect). She then presented the first problem as an introduction to the activity, which was later used as an example to illustrate the problem-solving method. At the end of the activity, the animator warmly thanked the participant and offered him/her positive constructive feedback on his/her participation before leaving the room, for questionnaire completion with the assistant.

When presenting the questionnaire, the assistant underlined the importance of expressing one’s own opinion, which may help the researcher improve the activity. The goal was to diminish the tendency of acquiescence, a phenomenon often observed in people with a MID when completing self-report questionnaires (Finlay & Lyons, 2002). The assistant offered help only when necessary and read the items and the multiple choices answers aloud. If a participant seemed confused, the assistant would explain an item by using a predetermined script; a recommended procedure to maximize the validity of self-report questionnaires completed by people with a MID (Finlay & Lyons, 2002). Upon completing the questionnaire the participant received a gift-certificate of 20$ (from a popular drugstore selling various products such as make-up and candy) as a compensation for their time as well as a bottle of water with the university’s logo (unexpected thank you gift). Finally, the animator came back into the room for debriefing. She described the research goal and inquired how the participant felt after the activity.
**Experimental task.** The task was a problem-solving activity on self-assertion. Learning to problem-solve and assert oneself are two important skills to master for people with a MID, as they are essential components to the development of self-determination (Wehmeyer, 2007c). In addition, this activity corresponds to the types of activities that are offered to the rehabilitation centers’ members during “group social skills” (M. Joyal, supervisor of clinical activities at the center, personal communication, September 20th, 2013). In addition to being ecologically valid, this fastidious activity is appropriate for an internalization study, since problem-solving is important but recognized as being fastidious for individuals with MID (Wehmeyer, 2007b).

The activity was composed of two problems, each lasting 20 to 30 minutes. The animator taught the method to use to solve these problems (four steps; see Table 2). The problems and their solutions were inspired from the program “Thinking it Through” which specifically addresses students with a MID (Foxx & Bittle, 1989). The two problems were chosen for their simplicity (few elements) and for their low level of stimulation. Furthermore, they addressed assertiveness, with characters having to find a way to express their needs. The problems were illustrated (large comic books) and the animator read them aloud to the participant.

The first problem was read as though it really happened to the animator, to make the activity seem more concrete (see Table 3, problem 1). Next, the participant practiced applying the problem-solving method to this first problem with the animator’s help, using each of the four steps. Next, the animator presented a second problem (A or B) to the participant to practice the method again with help (see Table 3, problem nos. 2a and 2b).

**Experimental manipulation.** All participants engaged in this same activity but it was led with AS or without AS (control group) depending on the experimental condition.
Participants were randomly assigned in each of the two conditions. The animator adopted an interpersonal style that corresponded to the experimental condition, which remained coherent throughout the activity. Based on the procedure in Savard et al. (2013), responses to various situations conditions (with or without AS) were prepared in advance. The autonomy-supportive responses were based on prior studies on AS (e.g., Koestner et al., 1984; Joussemet et al., 2004; Savard et al., 2013) and on a parenting program that includes autonomy-supportive communication skills (Faber & Mazlish, 1990, 2005; Joussemet, Mageau & Koestner, 2014).

The animator followed prepared scripts (with or without AS; see Table 1) to maximize the standardization of each condition and to minimize differences in support for relatedness or competence. These scripts, prepared by the authors, were revised by two special education teachers.

**AS condition.** In the AS condition, the animator attempted to actively support the participants’ need for autonomy. The script was based on SDT’s operational definition of AS (Deci, Eghrari, Patrick, & Leone, 1994; Koestner et al., 1984) and included the four main elements of AS (i.e., rational, empathy, choice and non-controlling language; see Table 1).

First, the animator explained the rational for the activity, explaining the reasons why it is important to practice problem-solving. The rational, adapted from a previous study (Savard et al., 2013), was simple and short in order to facilitate the participants’ comprehension. The animator asked the participant to find a reason why practicing problem-solving may be useful, to first consider his/her perspective and to use it in the activity (see Table 1).

A choice was also offered to participants in the AS group. During the second exercise, they could choose what problem they preferred to solve (problem 2a or 2b, store or restaurant problem; see Table 3). The animator also expressed empathy towards the perspective of the
participant throughout the activity. For example, she named the emotions the participant could have had towards the activity (e.g., "It can be stressful to do a new activity and to also do it with a new person we do not know"). She also named the emotion that the participant seemed to feel, if she detected signs of stress or frustration for example.

Finally, the language used was the least controlling as possible. The animator minimized the use of expressions such as "You should", "You have to" or "I want you to". The rules were explained to the participant in an impersonal style by referring to the instructions (e.g., "This part of the activity requires that we listen carefully") as opposed to the participant (e.g., "Listen to me"). The positive feedback given at each step was also impersonal: it was descriptive (e.g., "You found Jonathan’s goal in the story") rather than evaluative ("You are really good").

Control condition. In the control condition, the animator communicated with a neutral interpersonal style that did not actively support the participants’ need for autonomy all the while not being controlling. The goal was not to make the condition particularly controlling by trying to hinder the participants’ need for autonomy, nor to hinder their need for competence or affiliation. This way, while the rational, empathy and choice elements were absent, no form of psychological control (e.g., invalidation of emotions or pressure; Barber, 1996) was included in this condition.

Regarding the second exercise, the participants in the control condition did not have the opportunity to choose which problem they preferred to solve. In order to have an equal number of participants having done each problem (store and restaurant) in both experimental conditions, the animator chose the problem the last participant in the AS group had chosen ("yoked" procedure; Goodwin, 2010).
The language used by the animator in the control condition consisted of common expressions (e.g., "You must", "You have to") to represent language normally used. Finally, the positive feedback given by the animator was evaluative (e.g., "You are good", "You did that like a pro!", "Continue just like that!") thus reflecting the typical feedback often given in school settings. Furthermore, the instructions given at the beginning of the activity were formulated with commands such as "Look, “Listen to me” instead of being formulated impersonally such as in the AS condition (Reeve, 2009; Reeve & Halusic, 2009).

**Measures**

First, individual differences such as the diagnosis for a MID, the age and the gender of participants were collected from their educator. Regarding self-reports, the measures were selected with care, adapted to take participants' cognitive and language limitations into account. All of the items were chosen for the simplicity of their vocabulary and grammatical structure, with four-point response scales going from "not at all" to "a lot" were chosen. These various precautions were recommended by Finlay and Lyons (2002) to increase the validity of self-report questionnaires for individuals with a MID. Prior to the present study, the self-report measures were tested (Emond-Pelletier, Brouillard, & Joussemet, 2013) with 12 individuals with a MID, and this pilot study revealed satisfactory internal consistency (α = .76 to .92).

**Satisfaction of the needs of autonomy, competence and relatedness (self-reports).**

The perception of the satisfaction of the needs of autonomy, competence and relatedness during the task were measured using 15 items from the Intrinsic Need Satisfaction scale (Forest & Mageau, 2008; Savard et al., 2013). Amongst them, five items measured the satisfaction of the need for autonomy (α = .61; e.g., "I could do the activity at my own rhythm", "I felt free to tell my ideas and opinions during the activity"). Four items measured the satisfaction of the need for
competence ($\alpha = .73$; e.g., "I thought I was good", "I found that I did good in this activity") and six items measured the satisfaction of the need for relatedness ($\alpha = .53$; 6 items; e.g., "I got along with the animator", "I felt appreciated by the animator") during the activity.

**Internalization of the inherent value of the activity (self-report).** The degree of internalization of the activity was reflected in the degree to which participants’ perceived it has value/usefulness (Ryan & Deci, 2000). The activity’s value was measured using the seven items of the "value/usefulness” subscale from the Intrinsic Motivation Inventory (McAuley, Duncan, & Tammen, 1989). These items were translated to French using back translation (Vallerand, 1989). In the present study, the scale had very good internal consistency ($\alpha = .93$; e.g., "I believe that doing this activity could be beneficial for me”, "I would be willing to do this again because it has some value to me ”).

**Level of engagement (observed).** The observer (one of the three research assistants), who was blind to the experimental manipulation, evaluated participants’ levels of engagement during the activity, using five items that have been used with adolescents previously (Reeve et al., 2004), to measure the behavioural, cognitive and emotional components of engagement during school activities. This instrument measures the frequency and intensity of attention (focused vs. dispersed), efforts (passive, slow, minimal effort vs. active, rapid, intense effort), verbal participation (verbally silent vs. verbally participating), perseverance (gives up easily vs. persists) and positive emotions (flat vs. positive emotional tone). In the present study, this measure was translated to French using a back translation (Vallerand, 1989) and had good internal consistency ($\alpha = .78$).

**Anxiety at the beginning and end of the activity (observed).** Four items ("nervous", "stressed", "anxious", "worried") were chosen from a French adapted version of the PANAS-C
(Laurent, Catanzaro, Joiner, Rudolph, Potter, Lambert, & Gathright, 1999; Savard et al., 2013) to measure participants’ anxiety. The observer evaluated participants’ level of anxiety on a scale from 1 (not at all) to 4 (a lot) at the beginning (T1; first five minutes) and at the end of the activity (T2; last five minutes), to assess how participants’ anxiety changes over the course of the activity. The scale had very good internal consistency ($\alpha = .95$).

**Level of patience of the animator (observed).** The animator’s level of patience was measured by the observer, using a scale from 1 (not at all) to 6 (very high). This was done in order to control for any individual differences that may have occurred between the two experimental conditions (Savard et al., 2013).

**Results**

**Preliminary Analyses and Analytical Strategy**

According to Stevens (1996), it is often necessary to adjust the statistical significance level from .05 to .10 when the sample size per group is small ($n \sim 20$). Opting for the common .05 level largely limits the statistical power and the probability to detect significant effects (if they exist). In this case, given the small sample size in this study ($n \sim 25$ per group instead of 64 as recommended by Cohen, 1992) and the high probability of making a type 2 error, the principal analyses were conducted with a significance level of $p < .10$.

Firstly, analyses of variance (ANOVAs) were conducted to evaluate if the observed variables (participants’ levels of engagement and anxiety, animator’s level of patience) were significantly different between both assistants who acted as observers. No significant difference was detected between both assistants in terms of the animator’s perceived level of patience ($p > .10$) while significant differences were found between perceived levels of engagement ($F(1, 41) = 3.28, p = .08, d = .50$) and anxiety at T1 ($F(1, 41) = 4.14, p = .05, d = .64$) and at T2 ($F(1, 41) = 4.30, p = .05, d = .64$).
\( 41) = 4.15, p = .05, d = .75 \). Consequently, observation scores were transformed into Z scores. As such, a participant having an elevated Z score signifies that he was above the average of the other participants observed by the same evaluator, thus permitting the comparison of scores (Haccoun & Cousineau, 2007). All analyses pertaining to observed variables used were the Z scores.

The descriptive analyses for the main variables of the study are presented in Table 3 while Table 4 presents the results of the correlational analyses. In light of the correlation pattern, the principal analyses will take into account the age of the participants, their gender, their experience of relatedness and of competence as covariables if they correlate significantly \((p < .10)\) with the dependant variable of interest (see Table 4). We will also control for the effects of the satisfaction of the needs for competence and relatedness; these needs being very important in populations with special needs (Deci et al., 1992; Switzky, 2001).

**Principal Analyses**

Table 5 presents the means and standard deviations for each of the main variables according to the experimental conditions. Although the analyses with the observed variables used standardized scores, the pattern of results is similar to the one derived from analyses using raw scores.

**Verification of the experimental manipulation.** In order to verify the validity of the experimental manipulation, a series of ANCOVAs were completed to examine whether the two experimental conditions differed in the level of satisfaction of the needs for autonomy, competence and relatedness. These analyses controlled for the age of the participants, which was negatively correlated with the satisfaction level of all three needs \((rs \text{ between } -.27 \text{ and } -.39, ps < .01)\). Further, the factors of gender and relatedness were considered as covariables. These analyses yielded significant differences in level of satisfaction for the needs for autonomy: a significant interaction between experimental conditions and gender was found, with females exhibiting higher satisfaction for autonomy than males. Additionally, the experimental conditions differed significantly in level of satisfaction for the need for competence, with participants in the experimental condition exhibiting higher satisfaction for competence than those in the control condition. No significant differences were found for the need for relatedness.
Furthermore, an ANOVA was conducted to compare the animator’s level of patience and to ensure that it didn’t differ between both groups.

Concerning the need for autonomy, the results of the ANCOVA showed that participants in the AS group report significantly greater satisfaction levels of their need for autonomy \((F (1, 49) = 2.80, p = .10, \eta^2_{\text{partial}} = .06)\) than participants in the control group (Table 5). The difference between both groups represented a medium effect size (Cohen, 1992).

No significant difference was found between the two groups in terms of the satisfaction levels for the needs for competence, relatedness or the animator’s level of patience (all \(p\) values > .10; Table 5). Together, these results indicated that the experimental manipulation of AS had the expected effect, by specifically modifying the participants’ need for autonomy without affecting the satisfaction of their needs for competence or relatedness (Table 5). These results also confirmed that the animator demonstrated the same amount of patience in both groups.

**Internalization of the inherent value of the task.** An ANCOVA was conducted to compare the level of inherent value that participants gave to the task. Since the perceived task value was significantly related with participants’ age, their experience of relatedness and competence \((r = -.23, r = .37, r = .30, \rho < .10)\) as well as with their gender \((F (1, 49) = 3.00, p = .08; M_{\text{woman}} = 3.85 > M_{\text{man}} = 3.60)\), the analysis controlled for these four covariates. The results revealed that there was a significant difference between both groups \((F (1, 48) = 2.79, p = .10, \eta^2_{\text{partial}} = .06)\). As expected, participants in the AS group perceived the task as more valuable than participants in the control group (Table 5). The difference between both groups constituted a medium effect size according to Cohen (1992).

**Level of engagement.** In terms of participants’ engagement, the results of the ANOVA indicated that a significant difference was present between the participants in the AS group and
the control group \( (F(1, 41) = 8.85, p = .01, d = .91) \). Specifically, the participants in the AS group were perceived as being more engaged during the activity by their evaluator compared to participants in the control group. The difference between the two groups was of large effect size according to Cohen (1992).

**Anxiety.** Firstly, two ANCOVAs were conducted to compare participants’ levels of anxiety in both groups at the beginning (T1) and end (T2) of the activity. These analyses controlled for participants’ feeling of relatedness which correlated negatively with anxiety \( (rs = -.41 \) and -.34, \( ps < .10 \)). The results indicated that there was no difference between the two groups at T1 \( (p > .10) \). However, at T2, there was a significant difference between participants in the AS group and those in the control group \( (F(1, 47) = 3.65, p = .06, \eta^2_{\text{partial}} = .09) \). Participants in the AS group were rated as being less anxious at T2 by their evaluator than participants in the control group (Table 6). The difference between both groups was of medium effect size (Cohen, 1992).

Finally, controlling for relatedness, a mixed ANCOVA was conducted to verify if the evolution of participants’ anxiety differed according to the experimental condition. The results indicated the presence of a significant interaction between time and experimental condition \( (\text{Lambda de Wilks} = .89, F(1, 40) = 4.98, p = .03, \eta^2_{\text{partial}} = .11) \). Figure 1 illustrates participants’ evolution of anxiety over time, in each group. While there was a decrease for participants in both groups, the anxiety level of participants in the AS group declined significantly more compared to those for participants in the control group, as observed by their evaluator.

**Discussion**

The goal of the present study was to evaluate whether providing AS can satisfy the need for autonomy in people with a MID as well as lead to the benefits seen in normative samples. Tested in a learning context, the hypotheses of this study were all supported.
Firstly, when participants were learning the problem-solving method, it was possible to meet their need for autonomy by adopting an autonomy-supportive interpersonal style, even in a context where the task was fastidious. Considering the motivational and personality characteristics of individuals with a MID (i.e., low intrinsic motivation, high anxiety levels; Switzky, 2001) that could hinder learning a new and fastidious task, it is encouraging to observe that AS also had a positive impact on the internalization of the inherent value of the activity, on the participants’ desire to engage in the activity and on the anxiety they felt throughout the task. By acknowledging their perspective, explaining the rational and by adopting an impersonal communication style, it was possible to improve the emotional, motivational experience of participants and their engagement.

In all, the participants reported feeling very competent and affiliated during the course of the activity. The satisfaction of these two basic psychological needs was very high and similar in both groups. Methodological and ethical considerations were central in our decision to solely manipulate the support for autonomy. Particular attention was given to conceive an experimental manipulation that did not impact the needs for competence and relatedness which, unfortunately, are often hindered in the ID population (Switzky, 2001). For this reason, we were always careful to be patient and warm with all participants in both conditions, to reassure them of the goal of the activity (e.g., "The task is not a test") and to give them positive feedback all the way through it. Finally, the presence of two individuals (animator and observer) who came to meet participants individually and ask for their opinion probably contrasted their reality since sadly, isolation and stigmatization are habitual for individuals with an ID (Chou, Pu, Lee, Lin, & Kröger, 2009; Krauss, Seltzer, & Goodman, 1992; Luftig, 1988).
Surprisingly, the older the participants were, the less their needs for autonomy, relatedness and competence were satisfied during the course of the experiment. This result could be explained by the choice of the task. In fact, the format of the activity resembled a school task, with instructions and steps to follow which could have been perceived as being too childish and less adapted to older individuals, thus potentially hindering their basic needs. The fact that age was significantly correlated (table 4) with a lower level of perceived value of the task also supports this interpretation. According to SDT, a task must be developmentally appropriate for the person in order to satisfy his/her psychological needs (Deci, 2004). One of the main challenges of the present study was to select a task that was appropriate for everyone. In fact, the priority was to ensure that no participant felt incompetent while doing it. In contrast, the level of competence in this type of task can vary greatly from one person to the next and the age range of our sample was also quite large. A future study could aim to recruit participants whose ages and capacities are more homogenous or select a task with gradually more difficulty levels and use the optimally challenging level for each participant.

The fact that participants’ gender was related to value they attributed to the task was another surprising result. This gender effect may possibly be explained by the activity chosen. For example, it is recognized that girls value some school activities (i.e. reading) to a greater extent than boys (Eccles, Wigfield, Harold & Blumenfeld, 1993). Given that the activity was somewhat similar to school activities (i.e., reading material, steps and rules to follow), it is possible that female participants perceived more value to it than male participants. Alternatively, it is possible that this activity was more valued by women than men because of its social nature (i.e., social problems, assertiveness).
**Limits and future research.** To our knowledge, the present study was the first one to evaluate whether autonomy support (AS), as defined by SDT, can promote autonomy, motivational, emotional and behavioural benefits in people with a MID during a learning activity. Although this study integrated knowledge from two large research domains (social/motivational psychology and intellectual deficiency), it is not without limits. Firstly, it was impossible to obtain enough statistical power to detect small effects (sample of approximately 25 participants per group as opposed to the recommended 64; Cohen, 1992). The results of the current study would need to be replicated using larger sample sizes.

The exclusion criteria of the study also limits the generalization of the findings. In fact, mild intellectual deficiency is often accompanied with other conditions such as those seen in the autism spectrum (Matson & Shoemaker, 2009) and those characterized by expressive and receptive communication difficulties (AAIDD, 2010). Participants who had these difficulties were ineligible for the study because the selected task, although conceived and adapted for people with a MID, had verbal instructions (Deci, 2004). Therefore, future research could use a non-verbal task and explore how to adapt elements of AS in order to evaluate its effects on individuals who have severe language and social impairments.

On the other hand, it would have been pertinent to know participants’ intelligence quotient (which could vary from 56 to 70) and if they have a comorbid mental health problems, knowing that 20 to 25% of individuals with a MID also suffer from mental disorders (International Association for the Study of Intellectual Disabilities, 2001). These individual characteristics, which were beyond the scope of this study, could have influenced the target variables, especially the capacity of participants to evaluate the satisfaction of their need for autonomy. In fact, this feeling can be difficult to identify, perhaps particularly when faced with
significant cognitive limitations and/or mental health problems that could alter perceptions of social interactions. One study actually demonstrated a positive correlation between the level of ID and the feeling of self-determination (Wehmeyer & Garner, 2003). Future studies could account for these aspects and investigate potentially moderating effects.

Although Finlay and Lyons’ (2002) recommendations were followed and a pilot study was conducted beforehand (Emond-Pelletier, Brouillard, & Joussemet, 2013), the means of the self-reported measures were high (Table 5). This ceiling effect can be explained by the tendency of individuals with an ID to answer “yes” (Finlay & Lyons, 2002). This phenomenon probably limited the possibilities to detect significant differences between both conditions because of the lack of variability. Although Deci (2004) mentioned that SDT’s measures could be used as is or could be easily adapted, future studies should take into account this “yes-saying” tendency and please others when developing questionnaires.

Although the present study measured motivational, behavioural and emotional variables, future research could seek to evaluate the effects of AS on cognitive and performance variables. Studies with normative samples have shown that AS is associated with numerous benefits such as better performance on problem-solving tasks (Boggiano et al., 1993), optimal development of executive functions (Bernier et al., 2010) and increased memory (Cleveland & Morris, 2014). Much like individuals without incapacities, those with a MID are influenced by the social context they live in; and this context can also influence their capacity to use and mobilize their cognitive resources and impact their capacity to learn a new task (Switzky, 2001).

Finally, it would be pertinent to ask socialization agents (e.g., parents, educators) who interact and intervene with individuals with a MID how they support their need for autonomy on a daily basis. For example, Caouette’s (2014) qualitative study explores the ways educators try
to foster self-determination in people with an ID. It would be interesting to compare and contrast these strategies to the ones proposed in previous studies on AS (Koestner et al., 1984; Jang, 2008; Jang et al., 2010, Joussem et al., 2004; Reeve et al., 2004; Savard et al., 2013). These educators have great insight into the characteristics of people with a MID and how to convey AS. This would enrich current knowledge and provide concrete and effective examples on how to support the fundamental need for autonomy of individuals with an ID. For example, if a person with an ID is unable to understand the rational or the choice that is offered, other ways to support his/her autonomy could be explored. It would also be important to better understand how socialization agents perceive AS as well as the obstacles they could face when they want to put it into practice. As Deci (2004) stated, it could be difficult to support the autonomy of individuals with an ID because of their high tendency to self-regulate based on external contingencies (e.g., in order to please or avoid disappointing others, to obtain a reward) as opposed to internal ones (e.g., acting according to one’s own interests and needs). According to some authors (Deci, 2004; Grolnick & Ryan, 1990; Reeve, 2009), such a passive an externally-oriented style leads socialization agents to employ more controlling strategies, leading to a vicious circle lacking self-determination.

Furthermore, although one could strongly value self-determination and its support, it could be very challenging to support the autonomy of a person whose judgement and decision-making are severely affected by their cognitive limitations (Caouette, 2014). Certain disorders associated with an ID can also influence the type of support that is given. For example, individuals who suffer from Prader-Willi syndrome have an insatiable appetite which puts their health in danger. Hooren et al., (2002) stated that their significant others are constantly in conflict between (1) giving the person adequate care to protect her against the negative
consequences of her choices (e.g., preventing the person from eating too much) and (2) supporting her autonomy (i.e., respecting her choices and decisions). As Reeve (2009) mentioned, numerous factors can influence the extent to which these individuals’ need for autonomy can be supported or hindered. Considering the characteristics of people who have a MID (e.g., cognitive and adaptive limitations, external motivation style, passivity), it is easy to understand how difficult it could be to support their autonomy. An investigation into the specific characteristics of individuals with special needs could help better identify the obstacles to AS and its development.

**Implications.** Based on prior knowledge in human motivation (SDT; Deci & Ryan, 2000; Ryan & Deci, 2000) and on self-determination of individuals with a MID (Wehmeyer, 2001; Wehmeyer, Little, & Sergeant, 2009), the present integrated and contributed to two research domains. Although studies will need to evaluate other possible effects of AS on this population, the experimental design of the current study enables us to draw causal links between AS and motivational, behavioural and emotional benefits with individuals with a MID.

The present findings contribute to the advancement of knowledge by suggesting concrete ways to promote the learning and well-being of individuals with a MID. According to Lachapelle and Wehmeyer (2003), a significant shift must occur in service-providers’ perceptions and beliefs in order to prioritize the autonomy of individuals with an ID in the interventions that are offered to them. For example, although the use of rewards is advocated in specialized education to achieve behavioural goals, facilitate motivation and learning (Witzel & Mercer, 2003), Deci (2004) stressed that their long-term use can have devastating effects on the person’s capacity to act autonomously; that is, to self-regulate according to internal cues and
points of reference (e.g., unique preferences, interests and values) instead of external ones (e.g., praise, reward).

Finally, the present findings support the hypothesis that the need for autonomy is universal (Deci & Ryan, 2000) by demonstrating that people with a MID equally benefit from a relational context where their need for autonomy is supported, despite their cognitive and motivational vulnerabilities. The AS components (Deci et al., 1994; Faber & Mazlish, 1980; 2005; Koestner et al., 1984) that are used can serve as examples for parents, educators and other professionals who aim to provide the necessary structure and support in a way that takes the person’s autonomy into account.
References


Faber, A., & Mazlish, E. (1980). *Parler pour que les enfants écoutent, Écouter pour que les enfants parlent*. [How to talk so kids will listen & listen so kids will talk]. Cap-Pelé, NB: Relations plus Inc.


doi:10.1037/1040-3590.11.3.326


doi:http://dx.doi.org/10.1016/j.ridd.2009.06.003

McAuley, E., Duncan, T., & Tammen, V. V. (1989). Psychometric properties of the Intrinsic
Motivation Inventory in a competitive sport setting: A confirmatory factor analysis.
*Research Quarterly for Exercise and Sport, 60*(1), 48-58.

Reeve, J. (2009). Why teachers adopt a controlling motivating style towards students and how
they can become more autonomy supportive. *Educational Psychologist, 44*, 159-175.
doi:10.1080/00461520903028990

doi:10.1177/1477878509104319

doi:10.1023/B:MOEM.0000032312.95499.6f

supportive way as a strategy to motivate others during an uninteresting activity. *Motivation
and Emotion, 26*, 183-207. doi:10.1023/A:1021711629417


motivational differences in persons with mental retardation (pp. 57-143). Mahwah, NJ: Lawrence Erlbaum Associates.


Footnotes

1 Although these expressions are considered to be less autonomy-supportive and reflective of a more controlling style by researchers who work within SDT (Reeve, 2009), they are frequently used in day-to-day language and for this reason we included them in the control condition.

2 The analyses conducted with the observation data (engagement, anxiety at T1 and T2) were performed with 44 participants instead of 51 because a methodological error occurred: one of the research assistants only viewed participants in the control condition. This random assignment error could not allow us to use the scores of those seven participants.
Table 1

*Description of the problem-solving method*

<table>
<thead>
<tr>
<th>Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>What is the character’s goal in the story?</strong></td>
</tr>
<tr>
<td>2. <strong>Where will the character go to solve his/her problem?</strong></td>
</tr>
<tr>
<td>3. <strong>Who will he/she go to solve his/her problem?</strong></td>
</tr>
<tr>
<td>4. <strong>What will he/she say to the chosen person to accomplish his/her goal and to assert his/herself?</strong></td>
</tr>
</tbody>
</table>
"Yesterday, at my house, I prepared a cake for a friend’s birthday and while baking, I realized that I didn’t have enough eggs to do the whole recipe. I forgot to buy eggs at the grocery store! So, I stopped baking and decided to go ask my neighbour for eggs."

When I arrived in front of her door, I knocked on the door and I told her: “Hi, it’s Julie, your neighbour that lives next door from you! I’m missing eggs to make a recipe and I’m in a bit of a hurry! Would you be so kind as to give me some?” And the neighbour kindly gave me some.

<table>
<thead>
<tr>
<th>Problem no. 1</th>
<th>Problem no. 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Yesterday, at my house, I prepared a cake for a friend’s birthday and while baking, I realized that I didn’t have enough eggs to do the whole recipe. I forgot to buy eggs at the grocery store! So, I stopped baking and decided to go ask my neighbour for eggs.”</td>
<td>A) Martín buys a pair of pants at a store. When he gets back home, he realizes that the zipper is broken. What can he do to solve his problem?</td>
</tr>
<tr>
<td>When I arrived in front of her door, I knocked on the door and I told her: “Hi, it’s Julie, your neighbour that lives next door from you! I’m missing eggs to make a recipe and I’m in a bit of a hurry! Would you be so kind as to give me some?” And the neighbour kindly gave me some.</td>
<td>B) Karine goes to the restaurant with a friend and she orders spaghetti for dinner. When the waitress brings her meal, she gives her a chicken salad. That’s not what she wanted to eat. What can s/he do to solve his/her problem?</td>
</tr>
</tbody>
</table>
Table 3

Descriptions of the experimental conditions

<table>
<thead>
<tr>
<th>With Autonomy Support</th>
<th>Without Autonomy Support</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rational</strong></td>
<td>None</td>
</tr>
</tbody>
</table>
| "Before we begin, I have a question for you. I would like to know if you believe that learning how to solve problems, like we are going to do today together, would help you in real-life? If yes, how could it help you? Oh yes! Practicing can *(use the participant’s words)*!"
| I would like to tell you why, you and I will do problem-solving activities today. We are practicing problem-solving because as you know, every day, everyone faces problems in life and it requires us to try to find solutions to solve them as best as possible. So, the more we practice solving problems, the easier it would be for us when we will face problems in real life!" |
| **Empathy**            | None                     |
| "I know that it is not always fun to face problems! Sometimes, we could have a hard time trying to find solutions." |
| **Choice**             | None                     |
| "Before we start solving the next problem, you will be able to choose the problem you want to solve. You have the choice between two stories and each have a problem that must be solved. You could choose the story you want." |
| **Language**           | "You are going to have to solve a new problem with my help." |
| "We are going to practice solving a new problem together." |
| **Feedback**           | "Super!", "Bravo, you are good !" |
| Descriptive: "You just learned all the steps to the problem-solving method."
| Impersonal: "The activity that we will do together requires us to listen carefully to the explanations." |
| **Structure**          | Personal: "You have to really listen to my explanations." |
| Impersonal: "The activity that we will do together requires us to listen carefully to the explanations." |
### Table 4

**Descriptive Analyses**

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>Theoretical</th>
<th>Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy</td>
<td>51</td>
<td>3.80</td>
<td>.36</td>
<td>1-4</td>
<td>2.6-4</td>
</tr>
<tr>
<td>Competence</td>
<td>51</td>
<td>3.86</td>
<td>.30</td>
<td>1-4</td>
<td>2.82-4</td>
</tr>
<tr>
<td>Relatedness</td>
<td>50</td>
<td>3.92</td>
<td>.17</td>
<td>1-4</td>
<td>3.32-4</td>
</tr>
<tr>
<td>Value</td>
<td>51</td>
<td>3.74</td>
<td>.51</td>
<td>1-4</td>
<td>1.81-4</td>
</tr>
<tr>
<td>Engagement</td>
<td>42</td>
<td>5.13</td>
<td>.88</td>
<td>1-7</td>
<td>2.4-6.8</td>
</tr>
<tr>
<td>Anxiety T1</td>
<td>43</td>
<td>2.26</td>
<td>1.01</td>
<td>1-4</td>
<td>1-4</td>
</tr>
<tr>
<td>Anxiety T2</td>
<td>42</td>
<td>1.80</td>
<td>.88</td>
<td>1-4</td>
<td>1-4</td>
</tr>
<tr>
<td>Animator’s patience</td>
<td>41</td>
<td>5.95</td>
<td>.22</td>
<td>1-6</td>
<td>5-6</td>
</tr>
<tr>
<td>Age</td>
<td>51</td>
<td>35.86</td>
<td>13.6</td>
<td>12-…</td>
<td>16-61</td>
</tr>
</tbody>
</table>

*Note.* The means and standard deviations are reported as raw scores.
Table 5

Bivariate correlations of all variables in the study

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Autonomy</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Competence</td>
<td>.35*</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Relatedness</td>
<td>.51** .43**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Value</td>
<td>.55** .30* .37**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Engagement</td>
<td>.05</td>
<td>.15</td>
<td>.11</td>
<td>-.06</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Anxiety T1a</td>
<td>-.24</td>
<td>-.18</td>
<td>-.41**</td>
<td>-.28†</td>
<td>-.46**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Anxiety T2a</td>
<td>-.21</td>
<td>-.09</td>
<td>-.34*</td>
<td>-.27†</td>
<td>-.40**</td>
<td>.74**</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Age</td>
<td>-.32*</td>
<td>-.39**</td>
<td>-.27*</td>
<td>-.23†</td>
<td>-.09</td>
<td>.19</td>
<td>.15</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>9. Gender</td>
<td>-.21</td>
<td>.06</td>
<td>.16</td>
<td>-.24†</td>
<td>.23</td>
<td>.09</td>
<td>-.03</td>
<td>-.17</td>
<td>-</td>
</tr>
<tr>
<td>10. Animator’s patiencea</td>
<td>-.12</td>
<td>.03</td>
<td>-.09</td>
<td>-.13</td>
<td>.25</td>
<td>-.08</td>
<td>-.19</td>
<td>-.002</td>
<td>.06</td>
</tr>
</tbody>
</table>

Notes. * For these variables, the correlational analyses were done using standardized scores (Z score).
†p < .10. *p < .05. **p < .01.
Table 6

Means and standard deviations of the principal variables of the study, according to the experimental condition

<table>
<thead>
<tr>
<th>Variables</th>
<th>Autonomy Support</th>
<th>Without Autonomy Support</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Autonomy</td>
<td>3.88</td>
<td>.21</td>
</tr>
<tr>
<td>Competence</td>
<td>3.90</td>
<td>.23</td>
</tr>
<tr>
<td>Relatedness</td>
<td>3.92</td>
<td>.16</td>
</tr>
<tr>
<td>Animator’s patience</td>
<td>6.00</td>
<td>0</td>
</tr>
<tr>
<td>Value</td>
<td>3.84</td>
<td>.27</td>
</tr>
<tr>
<td>Engagement</td>
<td>5.57</td>
<td>.68</td>
</tr>
<tr>
<td>Anxiety T1</td>
<td>2.17</td>
<td>1.00</td>
</tr>
<tr>
<td>Anxiety T2</td>
<td>1.56</td>
<td>.92</td>
</tr>
</tbody>
</table>

*Note.* The means and standard deviations presented in this table are all based on raw scores.
Results of the mixed ANCOVA for anxiety at time 1 and time 2 in function of the experimental condition

Figure 1. Means of anxiety for each experimental condition at time 1 and time 2. To facilitate comprehension, figure 1 is presented with raw scores instead of standardized scores. The same interaction effect between time and experimental condition is observed with both types of scores.