

Personal Characteristics and School Contextual Variables Associated with Student Self-Determination in Spanish Context

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Abstract

Background: Most theoretical models of self-determination suggest that both environmental and personal factors influence the development of self-determination. The design and implementation of interventions must be conducted with foreknowledge of such mediating and moderating factors if the intervention is to be successful.

Methods: The purpose of this study was to examine the degree to which several personal factors and school characteristics affect and explain students' self-determination. A total of 232 students with intellectual disability from Spain participated. Their self-determination level was assessed by the ARC-INICO Scale.

Results: Students with moderate levels of intellectual disability obtained significantly lower scores on self-determination than their peers with mild intellectual disability. There were significant differences in relation to the level of support needs and their experience with transition programs. The level of support needs was a significant predictor. **Conclusion:** These findings contribute to current research in this field and practical implications were discussed.

Keywords: intellectual disability, self-determination, support needs, personal characteristics, school context.

Personal Characteristics and School Contextual Variables Associated with Student Self-Determination

Assessing and promoting self-determination of students with intellectual disability (ID) is a key educational consideration that is highly valued by general and special education teachers (Agran, Snow, & Swaner, 1999; Carter, Lane, Pierson, & Stang, 2008; Grigal, Neubert, Moon, & Graham, 2003; Thoma, Nathanson, Baker, & Tamura, 2002). Research and professionals agree that students with a wide range of disabilities can be taught the skills associated with self-determination (Algozzine, Browder, Karvonen, Test, & Wood, 2001; Wehmeyer, Palmer, Shogren, Williams-Diehm, & Soukup, 2012; Wehmeyer, Shogren, Palmer, Williams-Diehm, Little, & Boulton, 2012). Research has also shown that self-determination, and the implementation of strategies and curricula that have been developed to teach skills associated with self-determined behaviour, are significant predictors of postschool outcomes, such as living an independent life or finding and keeping a job (Martorell, Gutierrez-Recacha, Pereda, & Ayuso-Mateos, 2008; Wehmeyer & Palmer, 2003; Wehmeyer & Schwartz, 1997); as well as improving quality of life (Lachapelle et al., 2005; McDougall, Evan, & Baldwin, 2010; Wehmeyer & Schalock, 2001; Wehmeyer & Schwartz, 1998). Recent studies have established a causal relationship between self-determination and positive school (Palmer, Wehmeyer, Shogren, Williams-Diehm, & Soukup, 2012; Shogren, Palmer, Wehmeyer, Williams-Diehm, & Little, 2012; Wehmeyer, Palmer, Lee, Williams-Diehm, & Shogren, 2011;) and postschool outcomes (Shogren, Wehmeyer, Palmer, Rifenbark, & Little, 2015), as well as raising teacher expectations for students (Shogren, Plotner, Palmer, Wehmeyer, & Paek, 2014).

Given the importance of promoting self-determination for school and post-school outcomes of students with ID, it is important to explore the impact of personal characteristics and

contextual variables on students' self-determination. Most theoretical models of self-determination suggest that both contextual and personal factors influence the development and expression of self-determination (Abery & Stancliffe, 1996, 2003a, 2003b; Field & Hoffman, 1994; Shogren, Wehmeyer, Palmer, Forber-Pratt, et al., 2015; Wehmeyer, 1996a, 1999, 2003). These personal and contextual variables often serve as moderating and mediating variables influencing the effect of interventions to promote self-determination and, as such, must be considered in the design and implementation of such interventions.

Shogren, Wehmeyer, Palmer, Forber-Pratt, et al. (2015) recently reformulated causal agency theory, a reconceptualization of the functional theory of self-determination (Wehmeyer, 1999, 2005). Causal agency theory, defines self-determination as a “dispositional characteristic manifested as acting as the causal agent in one’s life” (p. 17). Self-determined people (i.e., causal agents) act in service to freely chosen goals. Self-determined actions function to enable a person to be the causal agent in his or her life. A dispositional characteristic as an enduring tendency to act or think in a particular way, though, presumes contextual variance (Shogren, Wehmeyer, Palmer, Forber-Pratt, et al., 2015). Causal agency refers to making or causing things to happen in one’s life; a person “acts with an eye toward causing an effect to accomplish a specific end or to cause or create change” (Wehmeyer & Little, 2013, p. 119). Similarly, these authors claimed that behaviour is self-determined if its function (e.g., its purpose) is to enable the person to act as the causal agent in his or her life. Causal agency theory proposes three essential characteristics of self-determined action: (1) volitional action (autonomous and self-initiated action); (2) agentic action (self-regulation, self-direction, and pathways thinking); and (3) action-control beliefs (psychological empowerment, self-realization, control expectancy, agency beliefs, causality beliefs). These characteristics refer not to the specific behaviour but to the function (e.g., the

purpose) of the behaviour. Causal agency theory is aligned with current conceptualizations of ID (Schalock et al., 2010) emphasizing person-environment fit understandings of disability in which supports are essential to improve individual performance, achieve valued personal results and increase the quality of life of people with disabilities. According to causal agency, the emergence of self-determination is influenced by: (a) individual capacities, (b) contextual and environmental opportunities, and (c) supports and accommodation to close the gap between personal capacity and the demands of the environment or context. It is therefore critical to provide needed supports and enriched environments so as to be able to develop and improve the skills associated with self-determination.

Several studies have identified personal characteristics that are associated with self-determination. This research has shown that people with ID are less self-determined than their peers with learning and other disabilities (Wehmeyer & Schwartz, 1998) and that there is a positive correlation between intellectual functioning, as measured by IQ tests, and self-determination (Nota, Ferrari, Soresi, & Wehmeyer, 2007; Wehmeyer & Garner, 2003). The correlation between self-determination and IQ score has been shown to be statistically, though not practically significant and research has shown that other factors, particularly environmental and contextual factors, are stronger predictors of self-determination status than intellectual level (Lee et al., 2012; Stancliffe, Abery, & Smith, 2000) and suggests that all individuals can develop enhanced self-determination when appropriate supports are provided (Shogren, Wehmeyer, Palmer, & Paek, 2013).

Wehmeyer and Bolding (1999; 2001) demonstrated that where a person with intellectual disability lived or worked strongly predicted higher or lower self-determination status, with people who lived or worked in more inclusive, community-based settings being more self-

determined. Similar results have been found in other studies (Nota et al., 2007; Stancliffe et al., 2000). In fact, it seems evident that while IQ level does have an impact on the complexity of the knowledge and skills people with intellectual disability can acquire (e.g., personal capacity), the most significant impact IQ has on self-determination is as a predictor of where people with intellectual disability live, learn, work, or play. Wehmeyer and Bolding (1999) found that while IQ did not predict self-determination status in a series of regression analyses, it did significantly predict where a person would live or work, with people with lower IQ scores living or working in more restrictive settings (institution, group home, sheltered workshop, work activities centre) and that, in turn, living and working environments were predictors of self-determination status, with more restrictive settings related to lower self-determination. Wehmeyer and Garner (2003) suggested that choice opportunities are restricted in more congregate settings, which are likely opportunities to act as the causal agent in one's life. Clearly, environmental factors such as where one lives, learns, works, or plays become important to consider in efforts to promote the self-determination of people with ID.

Few studies, however, have explored factors related to school environment and self-determination status. Research has suggested a positive impact of inclusive settings on students' level of self-determination (Shogren et al., 2007; Shogren et al., 2013), as well as a relationship between self-determination and access to the general education curriculum (Lee, Wehmeyer, Palmer, Soukup, & Little, 2008; Shogren, et al., 2012).

A recent study (Shogren et al., 2013) explored the degree to which multiple personal characteristics (age, gender, disability status, and need for educational support) and school environment characteristics (hours in academic classes with education peers, hours in non-academic classes with age-peers, attendance at the most recent Individualised Education Program

(IEP) meeting, transition goals for the future discussed at the IEP, and experience with setting goals for the future) predicted a student's relative level of self-determination. The study concluded that disability labels, goal setting experience, age and hours in academic classes with general education peers were significant predictors of self-determination, explaining 22% of the variance in self-determination scores.

With regard to personal characteristics related to self-determination status, both age and gender have been identified as potentially relevant. One would expect that as students develop through adolescence, experiencing the growth in opportunities to act autonomously and as a causal agent in one's life, that there would be a trend toward enhanced self-determination as a function of age. And, in general, this has been reflected in the extant research; self-determination scores increase as a function of increased age (Nota, Soresi, Ferrari, & Wehmeyer, 2011; Wehmeyer 1996b; Wehmeyer & Garner 2003). These findings have not, however, been replicated in other studies (Gómez-Vela, Verdugo, González-Gil, Badia, & Wehmeyer, 2012) and it is likely these findings are mediated by other factors, including context and other personal factors. Gender is one variable that has been examined with regard to self-determination status with mixed findings; Wehmeyer and Garner (2003) found no differences in self-determination according to gender with a US-based sample of adults, whereas Nota et al. (2007) and Shogren et al. (2007) found significant differences by gender, though with adolescents and not adults. It does appear that after adolescence, self-determination status levels off and becomes more stable over time, and that cultural context and age play important roles in gender-based findings. There is a need, however, for more research into the effect of personal characteristics such as age and gender across more cultural contexts to begin to tease out how such factors mediate or moderate the effect of interventions across developmental ages and contexts.

All these studies are focused on identifying personal and environmental factors that are associated with self-determination. However it should be noted that few of them have been carried out in Spain (Gomez-Vela, et al., 2012; Martorell, et al., 2008) or other European countries (Nota et al., 2007).

Taking into account the need for more research on personal characteristics and environmental context variables that impact self-determination status across cultural contexts, the purpose of this study was to explore the influence of personal characteristics (age, gender, intellectual disability level, and support needs) and school context variables (school setting, type of classroom placement, and experiences with transition programs) on students' self-determination in a sample of Spanish students with intellectual disability. The goals of this study were to: a) analyse the role of these variables on the self-determination level of students with intellectual disability (i.e. how the level of self-determination could be influenced by several personal and environmental factors) and; b) examine the contribution of these factors to explain self-determination scores (i.e. which of these factors could explain the self-determined behaviour). In short, the purpose of this study is to contribute to the considerable theoretical and empirical international knowledge achieved in this field (adding other potential personal and educational variables associated to self-determination, such as support needs or experiences with transition programs). At the same time, it tries to bring fresh evidence and knowledge to the limited Spanish researches in the area of self-determination.

Method

Design

In order to gain an in-depth understanding, mixed methods were used to analyse the role of personal and school context variables on the self-determination. Quantitative methods of data collection and analysis were used. Declaration of Helsinki (World Medical Association, 2001) was followed in the conduct of the research to guarantee an ethical process during the study. All the participants were identified through the use of pseudonyms and the assessment was carried out guaranteeing the anonymity and confidentiality of the collected data.

Participants

Participants included a convenience sample of 232 students with mild or moderate ID from different regions (autonomous communities) throughout Spain (i.e. the first-level political and administrative territorial division in Spain). The mean age of participants was 15.78 years ($SD = 1.84$; range 11-19). With regard to gender, 124 participants were male (53.4%) and 108 were female (46.6%). Table 1 provides demographic data for student participants. To recruit participants, several schools and associations in Spain were contacted by email and phone. After the first contact, the research team sent a letter explaining the purpose of the study and requesting collaboration. This letter also explained the three selection criteria to identify participants: (a) people with intellectual disability (b) aged between 11 and 19; and (c) with an appropriate communication level for understanding and answering questions in the self-determination scale. Informed consents, information sheets, and privacy and confidential statements were sent to the organizations prior to starting the evaluation. After schools and associations agreed to collaborate in the study and identified student participants, informed consent signed by a parent or guardian of each participant was obtained. Then two trained assessment administrators went to the organizations and administered *The ARC-INICO Self-*

Determination Assessment Scale, described subsequently. In the same session, teachers and educators were taught how to gather the rest of the required information, including demographic and educational data, and were instructed on how to fill out the Spanish preliminary adaptation (Verdugo, Arias, Guillén, & Jiménez, 2012) of the Supports Intensity Scale-Children's Version (Thompson et al., 2008), which was used to assess the level of a student's support needs as described below. All the self-determination assessments were done either individually or in small groups (two or three students), regarding their reading specific skills and providing the supports needed. Teachers and educators provided the remaining information, using school reports and their knowledge of students. Informed consents (i.e. written and signed agreements) were collected for all participants and the assessment was carried out guaranteeing the anonymity and confidentiality of the collected data. .

Some reasons (i.e., teachers who had not sent all the information and questionnaires about their students and missing data in the obtained scales) involved that sample was not consistent across variables. However, taking into account the kind of analysis performed, this missing information does not raise questions about the results.

“<<Please insert Table 1 about here>>”

Instrumentation

The ARC-INICO Self-Determination Assessment Scale. The ARC-INICO Self-Determination Assessment Scale (Verdugo et al., 2013; Verdugo, Vicente, Gómez-Vela, Fernández, et al., 2015) was used to measure student self-determination. The ARC-INICO Scale is a 61-item self-report measure based on *The Arc's Self-Determination Scale* (Wehmeyer, 1995, 1996a). Using this scale, an overall self-determination score can be calculated; higher scores

indicate a greater level of self-determination. Overall scores can also be calculated for each of the four subscales. The autonomy section assesses the student's independence in different contexts (daily living, leisure or community) and the degree to which he or she acts on the basis of personal preferences, interests and future plans. The self-regulation section assesses skills related to goal setting, planning, and attainment behaviours and the use of self-management strategies (including self-monitoring, self-instruction, self-evaluation and self-reinforcement). The psychological empowerment section assesses the self-efficacy and outcome expectancy and skills in self-advocacy (with oneself and in social environments). Finally, the self-realization section assesses the students' knowledge about themselves, and their self-esteem.

The Scale uses a multiple answer format with three options based on frequency for the autonomy section (I never do; I sometimes do; I always do) and with four options based on the level of agreement for the remaining sections (ranging from disagree strongly to agree strongly).

The scale was developed and validated with 279 students with ID (Verdugo, Vicente, Fernández, Gómez-Vela, & Guillén, 2015; Vicente, Verdugo, Gómez-Vela, Fernández, & Guillén, 2015). The scale demonstrated adequate psychometric properties. Construct validity was determined by exploratory and confirmatory factor analyses of each subscale and the global scale. Reliability was measured by internal consistency coefficients (Cronbach's $\alpha = 0.92$).

Demographic and school context information. Teachers completed a form that included basic information about each student, including gender, age, and level of intellectual disability (mild or moderate ID). Although specific measurement of intellectual and adaptive functioning was not used in this study, teachers estimated the level of intellectual disability based on the information including on school reports (e.g. IQ) or their knowledge of students. The demographic data form also included questions about the students' typical educational setting.

Teachers also had to complete all this information through their knowledge or reviewing reports and other school documents.

Teachers were asked to provide information regarding whether the students attended general or special education schools (type of classroom placement), and whether they went to public or private school (school settings). Type of classroom placement refers to access to the special or general curriculum. In Spain, students with disability can be placed in a general school and learn the same curriculum provided to students without disabilities (General Education) or in a general school but receive a specially designed instruction (Combined Education) or in a special school and receive a specially designed instruction (Special Education). School setting refers to the type of school in terms of whether the school is fully funded with public funds (public school) or partially funded or even non-funded (private school).

Finally, teachers were also asked for information regarding the number of years each student had participated in a transition program. Teachers had to indicate between three options (never, one year or less, and more than one year) the previous experience of their students in transition programs. These programs must be focused on facilitating children's movement from school to post-school activities, including both regulated programs (offered by special education schools for students at 16 years old) and non-regulated programs (offered by associations and usually designed to start at 12 years old).

Supports Intensity Scale-Children's Version (Spanish pilot version). The Supports Intensity Scale-Children's Version (SIS-C) was created by the American Association on Intellectual and Developmental Disabilities (AAIDD) as an international tool to assess the support needs of children and adolescents (5-16 years old) with intellectual or developmental

disabilities (Thompson et al., 2008). The development in Spanish of the SIS-C was made by taking into account the steps proposed by Tassé and Craig (1999) as necessary to effectively adapt a tool to any context different from the original (Guillén, Verdugo, Arias & Vicente, 2015). To ensure not just a linguistic translation, but also a semantic, conceptual and cultural adaptation, guidelines from the International Commission of Tests (Muñiz & Hambleton, 1996; Muñiz, Elousa, & Hambleton, 2013) were also followed. The scale is composed of 61 different activities, which are split into seven daily life domains: home living activities, community and neighbourhood activities, school participation activities, school learning activities, health and safety activities, social activities, and advocacy activities. The support needs assessment in the proposed activities must take into account three measurement indices (type of support, frequency of support, and daily support time) each of them represented is scored on a 5-point scale (0-4) in which higher numeric values reflect a higher intensity of needed support. Scores from seven domains are used to compute subscale standard scores and generate a composite standard score. The standard scores indicate the relative intensity of a child's support needs against a normative sample of children (Verdugo et al., 2016). The composite score as a global indicator of daily life support needs in children and adolescents with ID was used in this study.

The preliminary properties of this scale have been analyzed in the Spanish context, taking into account data obtained from children and adolescents with ID (Guillén, Verdugo, & Arias, 2012; Guillén et al., 2015; Verdugo, Arias, Guillén, & Vicente, 2014). The scale has demonstrated adequate psychometric properties using both Classical Test Theory and Item Response Theory. Reliability was measured by internal Cronbach's alpha (0.984) and inter-respondent reliability (0.864). In relation to its unidimensionality, positive results were achieved

by performing a principal components analysis, taking into account each of the seven areas of daily life evaluated independently.

Analysis

Table 2 depicts the seven independent variables together with the dependent variable used for analysing data, and how each variable was measured. To examine the role of these personal characteristics and school contextual variables on self-determination status, several ANOVAs and independent-sample *t*-tests were conducted using the self-determination score. The Cohen's *d* effect size (according to Dunst & Hamby, 2012) was calculated for the significant differences between mean scores. To identify the factors that best explained students' self-determination, correlations and multiple regression analyses were conducted. The purpose of the correlational analysis was to identify any significant relationships between each independent variable and the students' self-determination. The multiple regression analysis examined which of the variables studied (age, gender, intellectual disability label, support needs, school settings, type of classroom placement and experience with transition programs) could explain the level of self-determination as a dependent variable. The SPSS Statistics 21 program was used to perform these analyses.

“<<Please insert Table 2 about here>>”

Results

Differences observed in self-determination scores obtained from the students in relation to each variable were analysed. Table 3 provides descriptive statistics for self-determination scores in all independent variables, including means (*M*) and standard deviations (*SD*). In

relation to gender, age, school settings, and type of classroom placement, no significant differences were found. Significant differences were found between students with mild and moderate levels of ID ($t_{(164)} = 4.379, p < .001, d = .71$). Students with mild levels of ID consistently obtained higher scores than their peers with moderate levels of ID. Using Cohen's benchmarks for interpreting effect-size estimates (proposed by Dunst and Hamby, 2015), obtained data shows a medium effect size.

“<<Please insert Table 3 about here>>”

Regarding support needs, groups were created based on the mean of the composite score in order to equate the analysis (except in the correlational analysis) and use categorical variables in all of them. The same result was found. Significant differences were found between the group of students scoring above average in the SIS-C and the group of students scoring below average ($t_{(69)} = 3.284, p = .002, d = .79$); the students with lower support needs had significantly higher scores in self-determination than the group of students with higher support needs. The size of effect obtained (close to large size according to Dunst and Hamby, 2015) indicates that students with lower support needs are more self-determined compared to students with higher support needs.

Finally, the influence of experience of transition programs was examined and significant differences were found ($F_{(2, 99)} = 3.101, p = .049$). The post-hoc analysis, using Scheffé's test for differences on self-determination scores, showed significant differences only between students without previous experience, and students with one year (or less) of experience ($d = .74$; a

medium effect size according to Dunst and Hamby, 2015), but there were no differences among the other groups.

To examine the relationship between self-determination status and the independent variables, correlation tests between these variables and a multiple regression analysis were carried out. Pearson's correlations between each independent and dependent variable are presented in Table 4. Significant correlations were found between self-determination scores and the level of ID, and the intensity of needed support. Thus, high self-determination levels were related to mild intellectual disability and lower levels of support needs. These significant correlations suggest that they are highly conceptually interrelated. The score of self-determination also correlated weakly with the students' school setting. However, this factor correlated with neither with support needs nor level of ID.

“<<Please insert Table 4 about here>>”

Based on the pattern of correlations, all variables were entered into the multiple regression analysis, using the stepwise method. First, the personal variables (age, gender, intellectual disability level, and support needs) were entered in the model and then the school context variables (school setting, type of classroom placement, and experiences with transition programs). Table 5 shows the results of this analysis, including the unstandardised regression coefficient (B), the adjusted R^2 , and the model fit statistics. The non-significant variables were dropped from the model and are not shown in Table 5. Only one of the explicative variables (level of support needs) contributed significantly to explain the students' levels of self-determination; this variable explained 15.9% of the variance in self-determination.

“<<Please insert Table 5 about here>>”

Discussion

The purpose of this study was to explore the role of several personal characteristics and school contextual variables in the self-determination status of students with ID in a Spanish context. The conclusions of this study are organised according to the two main goals of this study: (1) analysing how the level of self-determination could be influenced by various personal and environmental factors; and (2) establishing which of these factors could explain the self-determined behaviour. Our findings add to the literature on self-determination in several important ways.

In relation to the first purpose, findings showed that self-determination status was significantly influenced by several personal and educational variables. We found that students with ID with moderate levels of ID showed lower ratings on self-determination than their peers with mild levels of ID. This finding was expected and is consistent with prior research findings (Nota et al., 2007; Wehmeyer & Gardner, 2003; Williams-Diehm, Wehmeyer, Palmer, Soukup, & Garner, 2008). Because the measure of self-determination used provides a snapshot of a person's global self-determination at one point in time, and does not indicate whether the lack of opportunity or limited capacity account for low levels of self-determination, one cannot conclude that the correlation between lower IQ scores and lower self-determination status is entirely a function of intelligence; people with lower IQ scores often have fewer opportunities to learn and practice skills to enable them to be causal agents in their lives. According to Wehmeyer, Abery, et al. (2011), cognitive capacity may identify the level of support a person will need to become

fully self-determined; thus, support needs might play a relevant role in the development of self-determination. This factor (e.g., supports) was included in this study; we also found that students with higher support needs exhibited significantly lower levels of self-determination than their peers with less support needs. This finding contributes to an enhanced understanding of self-determination from the current conception of ID, which establishes supports as a main resource to improve individual functioning.

With regard to the effects of gender and age, we did not find significant differences in self-determination status as a function of either. Differences in self-determination as a function of age or gender seem to be related to cultural contexts, and these findings contribute information about the effect of these variables in a Spanish context. Since the findings are mixed, it is difficult to identify whether gender and age are relevant variables. Soresi, Nota, and Ferrari (2004) found that men tended to show a higher degree of self-determination than women, but other studies (Gómez-Vela et al., 2012; Wehmeyer & Garner, 2003) found no significant differences in self-determination by gender. In relation to age, although most authors accept that there is a developmental trend, with levels of self-determination increasing throughout adolescence (Wehmeyer, 1996b; Wehmeyer, Palmer, et al., 2011), this trend also seems to be a function of context, at least for adolescents with ID (Gómez-Vela et al., 2012; Nota et al., 2007). Nevertheless, although age may not be a significant factor influencing self-determination levels in this study, it must be considered when an intervention is designed (Wehmeyer, Abery, et al., 2011).

In relation to school context variables, the findings showed that school settings and the type of classroom placement did not play an important role in students' self-determination status in this study. Attending public or private schools, as well as the type of classroom placement

(general or special education school), were not relevant factors for students' self-determination levels, according to our data. Nevertheless, transition programs experience had some influence on self-determination levels. There were significant differences in self-determination scores between students with no transition programs experience and students with one year (or less) of experience; however, there were no differences between these groups and students with more than one year of experience. It seems that having some experience with transition programs could influence students' levels of self-determination, however more research is needed to suggest how that experience could improve students' self-determined behaviour, or what specific kinds of experience contribute to promote this behaviour. Neither age nor more experience with transition programs themselves seem to ensure greater self-determination level. According to Pierson, Carter, Lane, and Glaeser (2008), efforts to enhance self-determination should be made throughout multiple transition domains, promoted in diverse settings, and addressed in conjunction with other related skill deficits.

The second purpose of this study was to examine the contribution of these personal and school characteristics (taking them into account jointly) to explain students' self-reported levels of self-determination. The level of support needs was the only significant explicative factor of students' self-determination scores. Despite the observation that there were other variables playing an important role in students' self-determination, and that level of self-determination correlated significantly with several variables, only the *support needs* variable was a significant factor in the multiple regression analysis. In spite of the significant relationship between self-determination and ID label, this factor did not contribute to the regression equation after considering support needs as an independent variable. As found in other studies (Lee et al., 2012; Stancliffe et al., 2000), the level of intellectual impairment as measured by IQ scores was not a

primary contributor to self-determination status when other variables were included in the model. This finding is important, as it places more emphasis on addressing support needs (by providing supports) to enable youth and young adults with ID to become more self-determined than on level of intellectual impairment. According to our data, support needs was a significant predictor of self-determination, but this result contrasts with findings from other studies (Shogren et al., 2013) in which supports needs were not significant. However, these differences across studies could be related to the way in which support needs were assessed. Shogren et al. (2013) asked teachers to rate the student's need for educational support during the school day, while this study uses a specific scale (SIS-C), preliminarily validated to assess daily life support needs in children and adolescents with ID. The validation and publication of this scale (and its adaptation in other countries) opens new research lines.

It is interesting that none of the school characteristics included in this study were significant explicative factors of students' levels of self-determination. It is likely that other instructional factors, such as specific strategies to support all students in accessing the general education curriculum or more specific details on school environments, mediate these effects, and explicating them remains a critical area of research need. Shogren et al. (2013) found that two school environment variables predicted self-determination: hours in academic classes with general education peers, and goal setting experience. These findings pointed towards a strong relationship between self-determination skills and factors associated with access to the general education curriculum suggested by other researchers (Lee et al., 2008; Shogren et al., 2012; Shogren et al., 2013) and not just attendance at general education schools. Cho, Wehmeyer, and Kingston (2010) found, for example, that although both general and special educators reported providing attention to self-determination promotion, these teachers still felt there were barriers to

promoting self-determination skills in their classrooms, such as insufficient instructional time, lack of training, or few available resources.

In spite of the observations that self-determination and adulthood transition are related and their benefits are reciprocal (Lee et al., 2012; Pierson et al., 2008; Wehmeyer, Field, & Thoma, 2011; Williams-Diehm et al., 2008) and goal setting experience is a significant predictor of self-determination (Shogren et al., 2013), we found that involvement in transition programs was not a predictor of self-determination status in this analysis. This could imply that, rather than simply attending transition programs, it is more important to take advantage of the experience in some specific domain related to adulthood transition (such as setting goals or making decisions) or to receive more explicit instruction to promote self-determination. Students with ID may develop skills related to self-determination if they participate successfully in different contexts and activities inside and outside of school (Shogren et al., 2013). More research is needed in this field to suggest which type of specific contexts and activities could be predictors of self-determination levels.

Limitations of the Study

Several limitations should be taken into account when interpreting the results of this study. Firstly, a narrow set of variables were available for analysis in terms of their influence on self-determination. Furthermore, we focused only on personal characteristics and school context variables but, according to self-determination models (Abery & Stancliffe, 1996, 2003a, 2003b; Wehmeyer, 1996a, 1999, 2003), family and community settings may also play a role in the development and expression of self-determination. We could not analyse all personal and environmental factors that might be related to self-determination and our regression model did not reveal as many of the significant associations we expected that could explain the self-

determination construct. A more complex model is needed to clarify how multiple factors may influence the skills and beliefs of people with ID to become self-determined.

Second, although we used formal measures of self-determination (The ARC-INICO Self-Determination Assessment Scale) and intensity of support needs (the Supports Intensity Scale for Children, Pilot Version: Thompson et al., 2008), we were not able to collect data on students' levels of intelligence (IQ). Instead, we used students' intellectual disability labels as an independent variable. It is also important to add that, although we used the Supports Intensity Scale-SIS (recommended by Shogren et al., 2013), only a pilot version of this tool is currently available. There is preliminary evidence available which indicates that it possesses adequate reliability and validity (Guillén, et al., 2015; Verdugo, Guillén, Arias, Vicente, & Badia, 2016); however, more psychometric data are needed.

Finally, this sample was a convenience sample recruited from agencies and schools that agreed to participate in this project, and it is not necessarily representative of the population of students with ID in Spain. Also, the different number of participants across variables could imply difficulties in generalizing the results. Despite these limitations, these data provide important information that advances knowledge within the field of self-determination.

Implications for Research and Practice

The results from this study contribute positively to current research and have clear implications for future research and practice. Within causal agency theory, Shogren, Wehmeyer, Palmer, Forber-Pratt, et al. (2015) said that 'the expression and development of the three essential characteristics of self-determined action are shaped by socio-contextual supports' (p. 260). From the findings of this study, we advocate that personal characteristics and school environmental variables (as socio-contextual factors) should be taken into account when

designing and developing interventions to promote and support self-determination. Importantly, this study suggests that a particular focus on providing supports to enable youth with ID to become more self-determined is important. Meeting the student's support needs is a key issue in improving individual performance, including self-determined behaviours. Although it is difficult to change some personal characteristics, such as the level of IQ, it is not difficult to create a more enriched environment (Gómez-Vela et al., 2012). Providing appropriate supports for people with ID, and creating opportunities for them to learn and develop skills related to self-determination, could be important factors when generating an environment which promotes a successful adulthood transition, as well as improving their quality of life and their social inclusion (Verdugo, 2011).

Educational efforts should focus on reducing the gap between personal capacity and the demands of the environment by enhancing personal factors and modifying the contextual factors (Wehmeyer, 2015). Instructional and environmental supports can be created to promote the growth of three essential characteristics of self-determined action (volitional action, agentic action, and action-control beliefs) and its component elements (express preferences, solve problems, engage in making decisions, or set and attain goals...).

Research is needed to advance the understanding of the construct of self-determination in order to identify a set of personal and environmental factors capable of predicting the development and promotion of self-determined behaviour. An understanding of the influence of these kinds of factors could be relevant in the design of adequate practices to increase self-determination levels and guide future research to assure the efficacy of these intervention programs.

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Table 1: Demographic characteristics of participants.

	N	%
Gender		
Male	124	53.4
Female	108	46.6
Total	232	100.0
Age (Range)		
Less than 13 years old	32	13.8
From 14 to 15 years old	62	26.7
From 16 to 17 years old	95	41.0
More than 18 years old	43	18.5
Total	232	100.0
Intellectual Disability Impairment Level		
Mild	82	35.3
Moderate	150	64.7
Total	232	100.0

Table 2: All dependent and independent variables used for data analysis.

Variable	Variable	Measurement
<i>Dependent Variable</i>	Self-Determination	The ARC-INICO Self-Determination Assessment Scale
<i>Independent Variable</i>	Gender	Reported by teacher. Information Form.
<i>Personal factors</i>	Age	Reported by teacher. Information Form.
	Approximate intellectual disability label	Reported by teacher. Information Form.
	Support Needs	SIS for Children. Pilot Version.
<i>Independent Variable</i>	School setting	Reported by teacher. Information Form.
<i>Educational factors</i>	Type of classroom placement	Reported by teacher. Information Form.
	Experience with transition programs	Reported by teacher. Information Form.

Table 3. Means (M) and standard deviations (SD) for self-determination scores, by each variable.

Factors	Variables	Range or Categories	N	M	SD
Personal Characteristics	Gender	<i>Male</i>	89	164.40	22.26
		<i>Female</i>	78	161.29	21.21
	Age Range	<i>Less than 13years</i>	16	155.94	25.57
		<i>14 to 15 years</i>	49	165.67	17.87
		<i>From 16 to 17 years</i>	66	164.47	20.52
		<i>More than 18 years</i>	36	159.58	26.40
	Intellectual Disability Labels	<i>Mild ID</i>	65	171.72	18.17
		<i>Moderate ID</i>	102	157.36	22.09
	Support Needs	<i>Below mean SIS</i>	38	172.79	20.90
		<i>Children score Group Above mean SIS</i>	33	157.42	18.13
School Context Variables	School Setting	<i>Public</i>	18	150.94	29.82
		<i>Private</i>	148	164.40	20.30
	Type of Classroom Placement	<i>General Education</i>	18	167.39	16.89
		<i>Combined Education</i>	9	169.67	19.05
		<i>Special Education</i>	140	161.95	22.44
	Experience in Transition Programs (years)	<i>Never</i>	56	162.43	16.47
		<i>1 year or less</i>	16	174.69	16.68
		<i>More than 1 year</i>	30	163.70	19.90

Table 4. Correlation matrix of all variables

	1	2	3	4	5	6	7	8
1. Self-determination	1	-.072	-.005	-.323**	-.365**	.192*	-.095	.061
2. Gender		1	-.053	.039	.066	-.081	-.074	.037
3. Age			1	-.044	-.115	-.008	.039	.507**
4. ID label				1	.331**	.079	.040	-.004
5. Support needs					1	-.114	.055	-.008
6. School setting						1	.398**	.095
7. Type of classroom placement							1	.129
8. Experience with transition programs								1

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

Table 5. Multiple regression Coefficients (B), Adjusted R^2 , and Model Fit Statistic (F)

Model	Unstandardised Coefficients		Adjusted R^2	F
	B	Std. Error		
1 (Constant)	183.565	6.645		
Support needs	-.059**	.020	.159	8.756**

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