Self-Determination, Intellectual Disability, and Context:

A Meta-Analytic Study

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Abstract

The relation between self-determination and intellectual functioning is complex, as other contextual factors may also play significant roles in explaining variability in self-determination. This study used meta-analytic techniques to assess how self-determination measures vary between people with disabilities classified as having intellectual disability (ID) or not, and contextual variables that moderate this relation. The literature search yielded 16 eligible studies, whose variables of interest were coded and analyzed. The results showed that when comparing self-determination measures among disability classification groups, gender, disability label and race/ethnicity were associated with the effect size estimation. These findings empirically support the relevance of personal variables when understanding self-determination levels and their impact in the operational classification of ID.

Key Words: *self-determination; intellectual disability; meta-analysis; review; personal factors*

Self-determination, defined as a "dispositional characteristic manifested as acting as the causal agent in one's life" (Shogren et al., 2015, p. 258), has received significant attention in the intellectual disability (ID) field. Researchers have acknowledged the role of both personal capacities and environmental opportunities in shaping the development and expression of self-determination (Mithaug, Mithaug, Agran, Martin, & Wehmeyer, 2003; Wolman, Campeau, DuBois, Mithaug, & Stolarski, 1994). And, assessments have been developed that evaluate self-determination as a dispositional characteristic (e.g., The Arc's Self-Determination Scale [Wehmeyer & Kelchner, 1995]) as well as that explore capacities and opportunities for self-determination available to youth and adults (e.g., the AIR Self-Determination Scale [Wolman et al., 1994]). Variability in scores on assessments of self-determination have been identified in the literature, and researchers have studied the impact of various contextual factors on self-determination scores, including personal characteristics (i.e., demographic characteristics, such as the presence of absence of ID; Shogren, 2013a) and environmental factors (i.e., level of inclusion in schools and community; Malian & Nevin, 2002). Context has been recently framed as encompassing both independent and intervening variables, understanding the former as variables that cannot be generally changed or manipulated such as personal factors (e.g., age, gender, and ethnicity); and the latter as policies and practices that can be handled, usually to improve the person's functioning (Shogren, Luckasson, & Schalock, 2014). Traditionally, research has focused on the previously defined independent contextual variables, specifically regarding personal factors.

One of the most commonly researched personal factors, as mentioned previously, has been the presence of ID. For example, researchers have consistently found that students with ID tend to report lower levels of self-determination than students with other disability labels, including high-incidence disability labels (Shogren, Kennedy, Dowsett, Garnier-Villarreal, & Little, 2012), learning disabilities (LD; Carter et al, 2010; Shogren et al., 2013), autism

spectrum disorders (ASD; Carter et al., 2013b), and emotional and behavioral disorders (EBD; Pierson, Carter, Lane, & Glaeser, 2008). Researchers have also suggested relations between level of intellectual functioning and self-determination for students with ID (Carter et al., 2013b; McGuire & McDonnell, 2008; Shogren et al., 2007; Wehmeyer & Garner, 2003), with people with lower IQ scores showing lower levels of self-determined behavior. However, it is important to note that other researchers have suggested that environmental opportunities are more important than IQ in predicting self-determination (Lee et al., 2012; Shogren et al., 2007; Wehmeyer & Palmer, 2003), stressing the need for a multidimensional classification system (Schalock & Luckasson, 2014, 2015) in understanding the relation between self-determination and the presence or absence of ID. For example, the limited work examining the influence of environmental factors on self-determination suggests the impact of access to inclusive environments on self-determination (Zhang, 2001), with findings generally suggesting that access to inclusive settings with supports leads to higher levels of self-determination independent of intellectual functioning (Carter et al., 2013a; Shogren et al., 2007; Stancliffe, 1997).

Other research has examined the relation of self-determination to other personal factors, such as age, socioeconomic status, or cultural factors. Researchers have found that self-determination tends to increase over the lifespan, from childhood to adulthood (Nota, Soresi, Ferrari, & Wehmeyer, 2011; Shogren et al., 2013) although, again, environmental factors such as exposure to self-determination instruction or prior involvement in taking a leadership role in educational planning (Karvonen, Test, Wood, Browder, & Algozzine, 2006) interacts with age (Vicente et al., 2017). Researchers have found conflicting impacts of gender, with some researchers finding gender differences in youth, with females showing higher levels of self-determination (Lee et al., 2012; Shogren et al., 2007) but no differences based on gender in adults (Wehmeyer & Garner, 2003), whereas other results have been

inconsistent (Seo et al., 2012; Shogren et al., 2013; Vicente et al., 2017) or varied across cultural contexts (e.g., young Italian men have been found to show higher levels of self-determination than females; Nota, Ferrari, Soresi, & Wehmeyer, 2007).

Race/ethnicity has also been studied in regard to self-determination. For example, researchers have found that Hispanic youth, in comparison with African Americans and Caucasians, tend to show lower levels of self-determination (Shogren et al., 2012). Those differences might be partially explained by the family culture in which people are embedded. In contrast to individually oriented cultures, self-determination may be expressed differently in family-oriented cultures, where decisions that directly affect the person may be made with family consensus (Wehmeyer, Abery, et al., 2011; Zhang, Wehmeyer, & Chen, 2005). However, results regarding race/ethnicity remain inconsistent, as race/ethnicity has also been found not to have a significant effect on self-determination (Carter et al., 2010; Cavendish, 2017).

As suggested in the previous paragraphs, multiple personal and environmental factors impact the development and expression of self-determination in people with ID. Researchers have suggested the importance of understanding context as an integrative framework (Shogren, Luckasson, & Schalock, 2014) to systematically identify and consider personal and environmental factors that should be assessed to tailor self-determination interventions to improve people's outcomes (Shogren, 2013b). To use contextual factors in this way, however, work is needed that synthesizes available research on ID on self-determination levels and other personal and environmental factors that influence this relation. Such research has the potential to provide guidance for the development of individualized supports for self-determination that account for contextual factors that potentially impact the development and expression of self-determination and interventions to promote it in people with ID. The purpose of this study, therefore, was to begin this work by systematically meta-analyzing the

research studies that examine self-determination based on the presence or absence of ID and the role of other contextual factors in influencing this relation with the goal of providing direction for future research and practice.

Method

Literature Review and Inclusion Criteria

Following the guidelines set by Botella and Gambara (2006), an exhaustive literature review was undertaken to identify empirical studies examining the self-determination of people with ID, with a specific focus on articles examining the impact of the presence or absence of ID on self-determination. The literature search was performed using electronic databases – specifically PsycInfo, Web of Science, ERIC, and PubMed. The key words used, in different combinations, were "self-determination," "intellectual disability," "developmental disabilities," "context," and "personal characteristics." The thesaurus of each database was checked to ensure that close synonyms of keywords were also recognized and included in the search. Once eligible articles were selected, their reference lists were crosschecked to identify additional studies that the electronic database search failed to identify.

Six criteria were used to screen articles identified through the literature search. Included studies were required to be empirical studies that examined the association among self-determination, intellectual functioning, and other contextual factors. The articles needed to (a) measure self-determination with a valid and reliable tool and (b) describe how contextual factors (i.e., personal and environmental factors) were measured and quantified. As such, case studies, qualitative research, literature reviews, and theoretical article were excluded. The articles were also required to include participants with ID and no age limits were imposed. Only articles published in the last 13 years (i.e., 2002-2015) were included. The start data of 2002 was selected based because of the publication of the 10th edition of the American Association on Intellectual and Developmental Disabilities terminology and

classification manual that year that introduced a multidimensional model of human functioning that included context as a factor that influenced functioning, leading to a growing focus on contextual factors that influence outcomes in the field. Finally, included articles needed to be peer-reviewed and published in English, French, or Spanish, as these were the languages mastered by the authors.

The initial literature yielded 636 peer-reviewed articles, 83 of which were identified for further review after title and abstract review. Of these 83 articles, 12 met all of the inclusion criteria. Of those that did not meet inclusion criteria, most were non-empirical (n = 27); did not provide numerical details on the relation between self-determination and intellectual disability or other personal factors (n = 29); did not focus on contextual factors (n = 11), or focused on a skill associated with self-determination (i.e., choice making), not global self-determination (n = 4). Additional hand searches based on included articles' reference lists identified four additional articles, yielding 16 articles (identified with * in the references). To promote reliability, two independent researchers conducted the literature review and had complete agreement on results (K = 1). This selection process is illustrated in Figure 1.

INSERT FIGURE 1 ABOUT HERE

Coding Framework and Variables

As our primary focus was the relation between ID classification and self-determination and the personal and environmental factors that moderated this relation, we first coded all articles based on whether the participants were people with disabilities with intellectual impairment or disabilities without intellectual impairment. This was our primary grouping variable for the analysis reported subsequently. For participants with autism spectrum disorders, if the level of intellectual functioning was reported, they were included in the appropriate group, as

listed previously. If it was not, findings were excluded from the analysis, as the level of intellectual functioning was unknown.

To further understand and analyze other personal factors, we applied a systematic coding framework to all articles. Variables related to the sample characteristics and research design and analytic approaches were coded following procedures recommended by Sánchez-Meca and Botella (2010). Regarding the sample characteristics, all contextual factors assessed in the article were coded. This included personal factors including (a) age (mean and standard deviation of the sample), (b) gender (1 = female, 2 = male), (c) specific disability label (1 = intellectual disability, 2 = autism spectrum disorder, 3 = learning disabilities, 4 = emotional and behavioral disorders), and (d) race/ethnicity (1 = White/Caucasian; 2 = Hispanic, African American, Native American, Other). Because of the small representation of race/ethnicities other than White/Caucasian in the studies, all other groups were collapsed into another category, leading to a comparison of White and Non-White participants in the analyses. For studies with school-age populations, socioeconomic status was also coded based on eligibility for free and reduced lunch, and the environmental factor of inclusion was coded (1 = participants spent the majority of their time in general education contexts, 2 = participants spent the majority of time in self-contained contexts).

In terms of study characteristics, the following variables were coded: (a) sample size, (b) sampling procedures (1 = non-probabilistic, 2 = probabilistic), (c) instrument used to measure self-determination (1 = The Arc's Self-Determination Scale [Wehmeyer & Kelchner, 1995], 2 = AIR Self-Determination Scale [Wolman et al., 1994], 3 = other instruments), (d) study design (1 = descriptive designs, 2 = quasi-experimental designs), and (e) respondent on self-determination measures (1 = parents or educators, 2 = person with disability). The findings were also coded for each study, including obtained effect sizes or

the information needed to compute effect sizes. Two independent researchers conducted the entire codification process separately, with total agreement across all codes ($K = 1$).

Data Analysis

Descriptive statistics were computed on all coded variables, and given the limited reporting of effect sizes, the research team calculated effect sizes based on findings from each study using Freeman-Tukey double arcsine transformed proportions (Freeman & Tukey, 1950) for each of the study characteristics and personal factors measured in the study (except age and sample size that were calculated through the raw mean). Separate meta-analyses were then performed for each of the variables crossed with ID classification (*yes/no*), when necessary data for such calculations was available from the study, which was not the case for educational setting and socioeconomic status. There were no studies that included a sample of students with disabilities with and without ID who also reported on education setting or socioeconomic status. Therefore, crossed effect sizes between ID classification and personal variables were calculated using the log odds ratio, estimated with Peto's method (Yusuf, Peto, Lewis, Collins, & Sleight, 1985) except when calculating effect sizes based on sample size, which was computed using Freeman-Tukey double arcsine transformed proportions (Freeman & Tukey, 1950). Four articles used multiple measures of self-determination and reported findings distinctly, and each finding was analyzed separately. For codes that had small numbers (i.e., the "Other" category for assessment), effect sizes were not computed. Further, as studies did not tend to report age information (i.e., mean and standard deviation) separately based on the presence or absence of ID, effect sizes could not be calculated for this variable. Random effects models were applied for each analysis to test the degree to which study characteristics and personal factors predicted differences in effect sizes based on the presence or absence of ID. Random effects models were used because the effect sizes previously calculated were extremely diverse, and there was considerable variability between

studies. Each analysis reported the Q test for heterogeneity (Sánchez-Meca, Marín-Martínez, & Huedo, 2006). Publication bias was not considered due to the scarcity of studies reaching our inclusion criteria. Statistical analyses were performed with the R.3.2.3 metafor package (Viechtbauer, 2010).

Results

Table 1 provides a brief overview of the 16 studies included in the review, including their key characteristics, sample, and findings. Table 2 provides the key findings related to the study characteristics and personal factors measured in the studies. Study characteristics did not explain variability of the effect sizes in self-determination in people with and without ID. Neither sampling procedures, the study design, the instrument used to measure self-determination, nor the respondent were found to have a significant effect on the relation between self-determination and the presence or absence of ID. The date of publication of the study did, however, impact the effect sizes in self-determination in people with and without ID ($Q_B = 11.80$, $p < .05$, $R^2 = .18$). In particular, studies published between 2010 and 2015 were more likely to report a statistically significant relation between self-determination and the presence of ID ($p < .05$). Finally, sample size predicted variability in effect sizes ($B = .302$, $Q_{R(5)} = 297.72$, $p < .01$, $R^2 = .41$).

INSERT TABLES 1 & 2 ABOUT HERE

Personal factors explained significant variance in the relation between self-determination and the presence or absence of ID ($Q_B = 72.16$, $p < .01$, $R^2 = .29$). Gender accounted for a high amount of the variability in the model ($Q_B = 53.37$, $p < .01$, $R^2 = .41$). Specifically, the relation between the presence or absence of ID and self-determination was higher for women ($r = .38$; $p < .01$) the relation between these two variables in males did not reach statistical significance ($r = .11$, $p > .05$). Race/ethnicity was found to explain significant variability in effect sizes ($Q_B = 424.08$, $p < .01$, $R^2 = .61$). Both the White/Caucasian ($r = .46$;

$p < .01$), and Non-White/Other ($r = .33$; $p < .05$) groups showed statistically significant results. Disability label (coded separately from the presence or absence of ID) was also found to be a major variable in regard to explaining the variability in effect size ($Q_B = 178.11$ $p < .01$, $R^2 = .46$), specially when comparing participants with Intellectual Disability and Autism Spectrum Disorders ($r = .38$; $p < .01$) and Emotional and Behavioral Disorders ($r = .43$; $p < .01$). No statistically significant results were found when comparing Intellectual Disability and Learning Disabilities ($r = .12$, $p > .05$).

Discussion

The main purpose of this meta-analytic study was to determine if study characteristics or contextual factors measured in the studies predicted variability of effect sizes in the relation between self-determination and the presence or absence of ID. Unfortunately, it was not possible to examine environmental factors, as there were not studies that included participants with and without ID that also reported on environmental factors (i.e., degree of inclusion, socioeconomic status). This reflects a limitation of the present analysis and a direction for future research. However, the findings related to personal variables analyses suggest that gender, disability label, and ethnicity are related to the effect size estimation when comparing self-determination scores based on the presence of ID. Concretely, the person's functioning (reported in terms of having or not having ID) is related to their self-determination performance and that this relation is strongly influenced by personal factors such as gender, disability label, and ethnicity. Then, when gauging the person's functioning, more attention needs to be driven to self-determination competence that may in turn differ according to the person's gender, the presence of another disability, and ethnicity. This confirms the importance of measuring and taking into account these variables when attempting to understand self-determination, and confirms the reasons why inconsistent findings have been obtained in previous studies, which have typically not assessed an array of

personal factors in addition to ID classification concurrently. Further, more nuanced attention is needed to defining personal and cultural factors, as well as measuring these factors in future research. For example, because a large number of studies did not report on race/ethnicity, we had to collapse this into a White/Non-White variable for the present analysis. And, multiple factors related to one's cultural identity should be measured, as only then can personal and cultural frames of reference be considered in efforts to promote self-determination (Wehmeyer, Abery, et al., 2011; Zhang et al., 2005). The values inherent in efforts to promote self-determination can differ across cultures and societies (Frankland, Turnbull, Wehmeyer, & Blackmountain, 2004), so additional research must be undertaken to develop culturally responsive frameworks for promoting self-determination, and critical indicators of culturally responsive practices for those of varying racial, ethnic, linguistic, and regional backgrounds. Interestingly, we found that there was additional predictive utility of disability label (e.g., autism spectrum disorders, learning disability), above and beyond the presence or absence of ID. This suggests the need for future research that further examines the impact of intellectual functioning and disability label on outcomes.

Overall, despite the limitations, the findings confirm the importance of considering factors beyond only the presence or absence of ID in attempting to understand self-determination scores, and the use of these scores to develop interventions to promote self-determination. The application of a multidimensional classification system that addresses multiple contextual factors is needed. Intellectual functioning alone might not always explain higher levels of self-determination (Lee et al., 2012; Shogren et al., 2007; Wehmeyer & Palmer, 2003), as other personal factors clearly moderate the relation between ID classification and outcomes. Our findings show other personal factors must be considered. Research has begun focusing on context as encompassing both independent and intervening variables, and the importance of understanding and planning for both (Shogren et al., 2014).

Our results support the idea that independent variables (gender, ethnicity, and disability label) play a role in explaining self-determination scores in people with ID, and must be considered in designing supports and intervening to enhance personal outcomes. Our results also highlight the need for more research on intervening factors (e.g., inclusion and other factors that can be changed in the environment) as there were not enough studies to systematically analyze these factors. Overall, despite the lack of precision in grouping because of the small number of studies, the current study has gathered empirical evidence to support the crucial role that gender, race/ethnicity and disability label play in explaining variability in self-determination, and confirming the interactive role of these factors. Based on the components of the classification system proposed by Schalock and Luckasson (2014, 2015) we recommend, in future research, taking these variables into account for classification purposes as well as intensity of support needs and other cultural factors not measured in these studies.

As would be hoped for, we did not find an influence of study characteristics on self-determination outcomes. Neither the design nor the sampling procedures and measurement tools employed in the different studies were found to have an impact on the relation between self-determination and the presence or absence of ID. This suggests that the findings hold across different methodologies and assessment tools used. The measures used showed robustness across disability groups, speaking in favor of the lack of impact of the conceptualization of the self-determination construct handled in the different studies within the analyzed relation. No differences were found based on respondent. Both the person with disabilities and the educator or parents reported similar levels of self-determination for people with and without ID. Sample size, however, did impact the correlation between self-determination and the presence or absence of ID. Larger sample sizes resulted in stronger effects, suggesting better discrimination among ID classifications on self-determination measures with larger samples, as would be expected (Tipton, 2015). As interest in self-

determination measurement continues to increase, ensuring an adequate sample to detect differences, particularly as larger numbers of personal and environmental factors are examined, will be important.

Overall, the emphasis on understanding and promoting self-determination has increased, as shown by the rise of scientific literature from 2010 to 2015 concerning the topic. However, the lack of research examining certain personal factors and more notably environmental factors must be used to guide future research. Empirical studies that examine contextual factors and self-determination, particularly the interaction of factors, remain limited. In future research, there is a need to convey results in terms of effect sizes and to report full and robust descriptions and measures of personal and contextual variables related to the sample characteristics. Although our results should be interpreted as preliminary, given the different methodologies and data analysis techniques, as well as asymmetric sample sizes that made comparisons across studies and across ID classifications complex, they empirically confirm that there are multiple factors that impact each person and their outcomes, and that divergent findings can be obtained across studies when contextual factors are not systematically analyzed. Future research must address these issues to effectively build individualized supports that enhance self-determination outcomes, considering the multiple personal and environmental factors that impact the development and impact of interventions to promote self-determination.

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*References marked with an * indicate studies in the meta-analysis.*

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Table 1
Brief Description of the Selected Papers

Reference	*N*	Disability	Design	Conclusions
Carter et al., (2009)	135	85% ID 15% ASD	Descriptive	No significant differences in SD based on age or gender.
Carter et al., (2010)	196	25% ID 50% LD 25% EBD	Descriptive	No significant differences in SD based age or ethnicity. Women showed higher levels of SD.
Carter et al., (2013a)	624	30% ID 49% ASD 29% Others	Descriptive	Higher levels of SD with: • Older women • Less severe intellectual disability • Lower socioeconomic status • Access to inclusive environments
Carter et al. (2013b)	68	60% ID 22% ASD 18% Others	Descriptive	Higher levels of SD for those with higher intellectual functioning.
Hughes et al., (2013)	47	100% ID	Descriptive	Higher levels of SD at higher socioeconomic status.
Lee et al., (2012)	168	14% ID 4% ASD 63% LD 11% EBD 8% Others	Quasi-experimental	No significant differences in SD based on age. Women showed higher levels of SD.
Palmer et al., (2012)	109	100% ID	Quasi-experimental	No significant differences in SD based on gender. Higher levels of SD for those with higher intellectual functioning.
Pierson et al., (2008)	90	52% LD 48% EBD	Descriptive	Higher levels of SD in LD compared to EBD.
Seo et al., (2012)	230	33% ID 9% ASD	Descriptive	No significant differences in SD based on gender or educational

		37% LD 9% EBD 12% Others		context. Higher levels of SD in students with LD, and lower in ASD.
Seong et al., (2015)	954	37% ID 63% LD	Descriptive	Higher levels of SD in students with LD compared to ID.
Shogren et al., (2007)	327	49% ID 35% LD 12% Others	Descriptive	No significant differences in SD based on educational context. Women showed higher levels of SD.
Wehmeyer & Garner (2003)	301	80% ID 20% Others	Descriptive	No significant differences in SD based on age. Higher levels of SD in those without intellectual disability.
Wehmeyer & Palmer (2003)	94	36% ID 64% LD	Quasi-experimental	No significant differences in SD regarding age and severity of intellectual disability.
Wehmeyer, Palmer et al., (2011)	493	27% ID 6% ASD 37% LD 8% EBD 22% Others	Quasi-experimental	Higher levels of SD in older students. Significant differences in SD based on gender.
Wehmeyer et al., (2013)	371	28% ID 72% LD	Quasi-experimental	No significant differences in SD based on age and disability label.
Williams-Diehm et al., (2008)	276	43% ID 9% ASD 27% LD 7% EBD 14% Others	Descriptive	No significant differences in SD based on disability level. Higher levels of SD in older students.

Note. ID = Intellectual Disability; ASD = Autism Spectrum Disorders; LD = Learning Disabilities; EBD = Emotional and Behavioral Disorders; Others = sensory and orthopedic disabilities or multiple disability labels; SD = Self-determination.

Table 2
Effect Sizes Variability Based on Levels of Disability Severity

Moderator Variables	k_j	r_{+j}	Q_B	R^2
Study Characteristics			4.74	.03
Sampling procedures	6		3.48	-
Non-probabilistic	5	.11		
Probabilistic	1	.09		
Study Design	6		10.52	-
Descriptive	4	.08		
Quasi-experimental	2	.03		
Measurement Instrument	6		9.19	-
ARC	3	.04		
AIR	3	.02		
Respondent	6		2.79	-
Parents and/or Educators	4	.03		
Person with disability	2	.05		
Publication Date	6		11.80 *	.18
2010-2015	4	.32*		
2002-2009	2	.11		
Personal Variables			72.16 **	.29
Gender	6		53.37 **	.41
Women	4	38*		
Men	2	.14		
Ethnicity	13		424.08**	.61
White/Caucasian	8	.46**		
Hispanics, African American, Others	5	.33*		
Disability Label	16		178.11**	.46
ID/Autism Spectrum Disorder	3	.38**		
ID/Learning Disabilities	4	.12		
ID/Emotional and Behavioral Disorders	9	.43**		

Note. k = number of studies; B = is the non-standardized regression coefficient; Q_R = statistical signification test for each regression coefficient; R^2 = the determination coefficient. *$p < .05$. **$p < .01$.

Figure 1.
Flow chart of studies included in the meta-analysis.