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Arabic Version of the Arc's Self-Determination Scale for Saudi Female Adolescents with Intellectual Disabilities, Learning Disabilities, and Multiple Disabilities

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Abstract

There is limited recognition of the concept of self-determination in Middle Eastern cultures. Consequently, there are no adapted measures of self-determination for Arabic adolescents with intellectual disabilities, learning disabilities, or multiple disabilities (intellectual disability and physical impairment). The purpose of this study was to examine the internal consistency reliability and construct validity of a translated and adapted version of the Arc's Self-Determination Scale. The participants in this study were 364 Saudi female adolescents between 14 and 22 years old who had intellectual disabilities, learning disabilities, or multiple disabilities and were enrolled in educational organizations in Saudi Arabia. An Arabic version of the Arc's Self-Determination Scale was translated and back-translated by the researchers and then refined and validated by a panel of experts. The translated and adapted Arc's self-determination scale was administered to the participants by their teachers at their schools. Thirty-four items were deleted from the scale, and seven items were modified by the researchers because they were culturally inappropriate. Factorial analysis showed proof of construct validity. The findings of this study showed that the translated and adapted version of the Arc's Self-Determination Scale is a validated assessment within Saudi culture; however, further validation studies with larger samples are needed. This study replicated the findings of previous studies with an international sample and confirmed the universality of the concept of self-determination as well as differences in the operationalization of the self-determination construct across cultures.

Key Words: Self-determination, Adolescents, Validation, The Arc's Self-Determination Scale

Self-determination refers to the ability to act volitionally and intentionally to make choices that contribute to one's own quality of life. Promotion of the development of self-determination is a topic that has been extensively examined and reviewed in the realm of special education worldwide (Ginevra et al., 2015). According to Shogren (2011), self-determination is a universally accepted phenomenon; however, specific components and practices associated with the topic of self-determination are more accepted in some cultures than others. Because of cultural differences, it is important to design and implement culturally responsive self-determination assessments and interventions.

Trainor, Lindstrom, Simon-Burroughs, Martin, and Sorrells (2008) demonstrated that several factors impact an individual's identity, such as gender, disability, race, and

ethnicity, language, and socioeconomic background. In addition, Bronfenbrenner (1979) considered the influence that the environment, experiences, and various social settings have on an individual's identity. All of these factors should be taken into consideration when developing assessments or interventions of self-determination that involve culturally diverse adolescents.

The importance of promoting self-determination behavior is associated with Anglo-European cultures, because the roots of the concept of self-determination are closely related to the normalization movement that originated in Europe, specifically the Scandinavian nations, during the 1960s and 1970s (Frankland, Turnbull, Wehmeyer, & Blackmountain, 2004). In contrast, Eastern cultures have limited recognition of the concept of self-determination, which helps explain the operationalization of self-determination behavior.

In fact, self-determination behavior is an essential skill to increase the independence and self-efficacy of individuals with disabilities (Wehmeyer & Bolding, 2001). Besides, individuals with disabilities themselves demonstrate the need to develop self-determination behavior to advocate for their rights and to be the primary causal agent in their lives (Wehmeyer, 1999; Wehmeyer & Abery, 2013). However, the emphasis on self-determination behaviors is greater in some cultures than in others. For example, in Eastern cultures, especially in the Middle East, females with disabilities experience more challenges and difficulties related to employment, marriage, and education (Al-Zboon, 2013). Therefore, Eastern females with disabilities require intentional support to foster self-determination behaviors and develop skills such as self-advocacy so they have the capacity to demand their rights and achieve a high quality of life.

Although self-determination is a widely accepted concept in different cultures (Shogren, 2011), very little research has investigated aspects of the construct from different cultural perspectives (Zhang & Benz, 2006). Current self-determination assessments have been operationalized in Western culture, which leads to biased results when they are conducted with individuals from different cultures. Moreover, few studies have investigated the effect of Middle Eastern cultures on the ability to obtain accurate assessment data related to the self-determination characteristics of female adolescents with disabilities (Al-Zboon & Smadi, 2015).

According to Almuaqel (2006) and Alruwaili (2016), Saudi Arabia has not developed any structural programs to promote self-determination behavior among adolescents with intellectual disabilities (ID), learning disabilities (LD), and multiple disabilities (MD; intellectual disabilities and physical impairment) to prepare students to be more independent and self-determined after high school. We can assume that one of the reasons for this situation is the absence of an Arabic self-determination measurement scale to assess and monitor levels of students' self-determination as they mature. Validated self-determination scales measure the level of self-determination behavior and aspects of the strengths and weaknesses of the functional characteristics of self-determination for adolescents with ID, LD, and MD. Consequently, professionals and program developers can review and examine the necessary self-determination enhancement programs and promote strategies based on the scores obtained on these validated scales. It is necessary to translate and validate a self-determination scale so that it can serve as a foundational tool for building a new program to promote self-determination among individuals with disabilities.

There is a dearth of literature related to the self-determination construct and Middle Eastern cultures. Therefore, there is a need to investigate various interpretations of the self-determination construct within Middle Eastern communities. Although the literature has reported investigations of the construct of self-determination from various cultural perspectives, including American, European, and Eastern Asian (Ginevra et al., 2015; Lee & Wehmeyer, 2004; Ohtake & Wehmeyer, 2004), no studies have focused on Middle Eastern cultures. Therefore, comparisons of outcomes across cultures are highly limited. None of the available self-determination scales can be used in the Middle East because they have not been developed in or translated into Arabic or adapted to Middle Eastern culture. Moreover, newer measures of self-determination, such as the Self-Determination Inventory (Shogren et al., 2018), is computer-based and requires Internet access to be completed. This poses a challenge for researchers and teachers because not all schools in Saudi Arabia provide internet access or computers. Therefore, the Arc's Self-Determination Scale (SDS) was used in this study because it is a paper-based scale.

One study has used the Arc's SDS to assess the level of self-determination among Jordanian women with intellectual and sensory disabilities. However, Al-Zboon and Smadi (2015) translated and validated the scale for their study with a small sample size ($n = 30$), and all of the participants were Jordanian females. In addition, their version of the scale was not supplied for implementation beyond their study. Further validation studies should be conducted with larger sample sizes from different regions in the Middle East. Adapting and validating a self-determination scale might aid the development of self-determination interventions and programs in the Middle East, specifically in Saudi Arabia.

LITERATURE REVIEW

There are two types of assessment procedures used in the self-determination domain: standardized and informal procedures. They are useful tools for eliciting and obtaining

student data from multiple sources, including students themselves, teachers, and family (Wehmeyer, 2013). All of the available self-determination scales propose to measure levels of self-determination; however, each scale focuses on different specific attributes related to self-determination due to variations in the theoretical perspective each uses (Shogren et al., 2008).

Self-determination theory is a framework for conceptualizing the motivation behind people's decisions by defining intrinsic and extrinsic sources of motivations. According to the self-determination theory, there are two types of motivation: autonomous (i.e., intrinsic) motivation and controlled (i.e., extrinsic) motivation. According to Eisenmann (2001), in special education the construct of self-determination is driven by intrinsic motivation. Wehmeyer (2013) identified theoretical models describing the construct of self-determination that are useful for designing adaptive interventions and promoting self-determination for individuals with and without disabilities. One of these theoretical models is the functional model of self-determination (Wehmeyer, Agran, & Hughes, 1998; Wehmeyer, 2003). In this model, self-determination is defined as a dispositional characteristic based on the function that behavior serves for an individual. The model contains four essential characteristics related to self-determination behavior: (a) behavioral autonomy, (b) self-regulated behavior, (c) psychological empowerment, and (d) self-realization. It was operationalized by the development of the Arc's SDS (Wehmeyer & Kelchner, 1995), which included four subdomains of the four main self-determination characteristics (autonomy, self-regulation, psychological empowerment, self-realization) proposed in the functional model of self-determination. The functional model of self-determination theory allows researchers to understand the construct of self-determination without studying the social context or environmental factors, although this theory emphasizes the influence of opportunities and the environment on individuals' level of self-determination. Because the goal of this study was to understand the construct of self-determination within Saudi culture and how it can be operationalized with Saudi cultural values, the Arc's SDS was linked to the functional model of self-determination theory and was selected to be validated in this study.

Aware of the limitations of the Arc's SDS for applications within various linguistic and cultural groups, international researchers have translated the Arc's SDS scale into many languages and adapted the instrument for use in different cultures. Subsequently, researchers conducted validation studies to ensure the validity and reliability of the translated versions of the scale. For example, Kim, Cho, Moon, and Kim (2001) conducted a confirmatory factor analysis (CFA) to determine the construct validity of the Korean version of the adolescent version of the Arc's SDS. The researchers distributed the translated version of the scale to 710 Korean adolescents with and without disabilities in South Korea. The internal consistency of the scale was .95, indicating that the adapted version of the scale had strong reliability and validity coefficients. Furthermore, a Dutch version of the Arc's SDS was developed by Snoeren (2008), who validated and adapted the Arc's SDS with 211 students between 14 and 22 years old with ID and LD. The structure of the scale was examined through CFA of each subscale and the scale as a whole. The factor analysis showed that the structure of the Dutch version of the scale demonstrated good correspondence with the original structure of the Arc's SDS, except for the autonomy and psychological empowerment sub-scales. However, the results indicated good internal reliability for the autonomy sub-scale and sufficient internal reliability for the psychology empowerment and self-regulation sub-scales. In addition, the scale as a whole showed good internal reliability (Cronbach's $\alpha = .802$). In Spain, Verdugo et al. (2015) conducted a study to determine the validity and reliability of the Spanish version of the Arc's SDS. The participants were 279 Spanish adolescents with ID and LD between 11 and 19 years old. Cronbach's alpha was higher than .80 for the four sub-scales. The ordinal alpha for the scale as a whole was .91, and Armor's theta was .93. These results are proof of the scale's validity and internal reliability.

In other studies, the Arc's SDS was validated as an approach to answer different research questions. For example, Al-Zboon and Smadi (2015) conducted a study to determine the level of self-determination among Jordanian women with disabilities. The researchers validated the scale with 30 women who were not included in the final sample ($n = 141$). The adapted version of the Arc's SDS included 60 items that were formatted using a five-point Likert-type response scale (1 = always, 2 = almost always, 3 = usually, 4 = almost never, 5 = never). The results demonstrated good levels of internal consistency and test-retest reliability. In addition, Ginevra et al. (2015) evaluated the comparability of the self-determination construct across Italian and American adolescents and identified differences in the operationalization of self-determined behavior in Italian and American culture. The study included 237 Italian and 285 American high school students between 14 and 19 years old. The researchers conducted two-group CFA to assess the comparability of the self-determination constructs across cultures. The results showed that the self-determination construct has universal aspects; however, there are differences in the operationalization of self-determination behaviors.

Previous studies have translated and adapted the Arc's SDS to different languages and cultures, varying in research design and participant characteristics but emphasizing the universality of the self-determination construct. However, none of the adapted scales are eligible for use with Saudi adolescents due to the particular characteristics of Saudi

culture and values. Therefore, this study translated the Arc's SDS into Arabic and adapted it to Saudi principles in order to understand the construct of self-determination in Saudi culture and initiate culturally appropriate programs to enhance self-determination.

Research Purpose/Questions

The purpose of this study was to examine the validity and reliability of the translated and adapted version of the Arc's SDS (Wehmeyer & Kelchner, 1995) within Saudi culture. This study was guided by the following research question:

When implementing the translated and adapted version of the Arc's SDS among Saudi female adolescents with ID, LD, and MD, does it yield:

1. an acceptable internal consistency coefficient.
2. acceptable construct validity.

METHOD

Participant Recruitment

Prior to conducting the study, the researchers obtained approval to conduct research involving human subjects from the researchers' university. In addition, a letter of permission was acquired from the Saudi Arabian Ministry of Education to access the educational organizations involved in this study. Then, the researcher -who was in Saudi Arabia- visited the educational organizations to describe the purpose and procedures of this study to the schools' administrators, request their initial oral approval to conduct the study, and distribute the consent and assent forms.

After distributing the forms, the researcher -who was in Saudi Arabia- scheduled two two-hour appointments with each of the educational organizations that agreed to participate in the study. During the first appointment, the researcher collected the signed consent and assent forms and described the steps by which the translated and adapted version of the Arc's SDS would be distributed and administered to the school administrators and teachers. During the second appointment, the teachers implemented the adapted and translated version of the Arc's SDS.

Participants

Because the participants in this study were selected based on specific characteristics, the researchers employed a purposeful criterion-based sample procedure (Johnson & Christen, 2014). The inclusion criteria were as follows: (a) age ranging from 14 to 22 years, (b) first language of Arabic and a Saudi background, (c) minimum of fourth-grade reading skills at the time that the assessment was conducted, (d) a primary diagnosis of ID, LD, or MD, and (e) receipt of special education services while attending educational organizations.

The study also employed the following exclusion criteria to select participants: (a) lack of enrollment in the school system within the last year, (b) a first language other than Arabic, (c) residence in a Western country for more than one year, and (d) one parent from a Western culture.

The researchers were not able to access male educational organizations because all of the researchers are female and were not allowed to enter. In addition, the administrators of these organizations did not agree to collaborate with the male assistants willing to work on the researchers' behalf. Therefore, As shown in Table 1this study included no male participants, only female adolescents with ID, LD, and MD ($n = 364$). Their ages ranged from 14 to 22, with a mean age of 16.17 years and a standard deviation of 2.28 years. Students were at various grade levels: intermediate, high school, or vocational training. There were 182 participants enrolled from participating intermediate schools (50%), 124 from high schools (34.1%), and 58 from educational centers (15.9%). There were 134 participants with ID (34.1%), 214 with LD (58.8%), and 16 with MD (4.4%). In regard to educational settings, 109 participants were taught in a self-contained classroom (29.9%), 233 were provided special education services at full inclusion schools (64%), and only 22 were taught at an educational center (6%).

Setting

This study was conducted in Saudi Arabia within the participants' classrooms at educational organizations. All of the educational institutions involved in this study were public and received support from the government. Two types of educational organizations were involved in this study: general education public schools that included students with ID, LD, and MD and educational centers that included only students with ID. The researchers contacted 94 male educational organizations and 102 female educational organizations seeking their approval to participate in this study. Thirty-five female educational organizations agreed to participate in this study, including nine all-female general education public schools that provided special education services for students with ID and MD (25.71%), 25 public schools that provided services for students with LD (71.42), and one female educational center for students with ID (2.87%).

All of the 34 general education public schools that participated in this study provided special education services, such as special accommodations for students with LD, in full inclusion settings or self-contained special education classrooms for students with ID and MD. These services were designed by a team of special education teachers, general education teachers, social service specialists, and psychologists. Regarding the teaching approach of

Table 1
Demographics of Participant Sample

		Female adolescents with ID ($n = 134$)	Female adolescents with LD ($n = 214$)	Female adolescents with MD ($n = 16$)
Age According to Grade Level				
	14–15 years (intermediate school)	37%	58%	50%
	16–18 years (high school)	35%	36%	6%
	19–22 years (vocational training)	28%	6%	44%
Educational Setting				
	Self-Contained classrooms	68%	6%	31%
	Full Inclusion classrooms	16%	94%	68%
	Educational centers	16%	0%	0%

the general education public schools, students with LD are placed into an ordinary classroom with peers who demonstrate typical development but provided dedicated support from school staff members inside and outside the classroom. The level of support ranged from minimal (e.g., extra time on tests) to very comprehensive (e.g., individual instruction in a resource room for specific periods) depending on the students' needs. Students with ID and MD were enrolled in separate self-contained classrooms and socialized with the other students only during extracurricular activities.

The second type of educational organization was the educational center. Students enrolled in this organization were 12 to 30 years of age and diagnosed with ID. It provided educational and social services, and the staff had various educational backgrounds, including special education, psychology, social service, general education, and education leadership.

Research Design

This study implemented a correlational research design. The Cronbach's alpha was computed to determine the internal reliability of the translated and adapted version of the Arc's SDS, and factorial analysis was conducted to examine its construct validity.

Data Collection Instrument

This study employed a single tool to collect data: the locally translated and adapted Arabic version of the Arc's SDS originally developed by Wehmeyer and Kelchner (1995). In this study, the instrument was adapted using the approach proposed by the International Test Commission (ITC, 2010), which included eight stages. First, two translation experts translated the instrument from the original language (English) into the target language (Arabic). Second, two different translation experts performed a back-translation of the scale from the target language (Arabic) into the original language (English). To ensure the compatibility of the translated version in terms of semantic, idiomatic, and conceptual equivalence, the researchers evaluated linguistic comparisons and synthesized the original version of the scale with the back-translated version of each item separately. Furthermore, to identify items that were inappropriate for Saudi culture, cultural evaluation and synthesis of the translated scale were performed by a panel of experts from a Saudi university. The panel collaborated to create a list of culturally inappropriate or irrelevant words in the Arc's SDS and provided replacement words for each. For example, item 21 in the original scale stated, "I take part in youth groups (like 4H, scouting, church groups)," and it was changed to "I take part in youth groups (like 4-H, scouting, volunteer groups)." Also, item 39 in the original scale stated, "Where do you want to live after you graduate?" and it was changed to "Where do you want to live after you marry or have a job away from your parents?"

Then, the researchers sent the corrected and evaluated back-translated version of the Arc's SDS to Dr. Susan Palmer. This version of the scale was written in English and included all of the expert panel's suggestions regarding culturally inappropriate items to ensure that the revised items in the final version of the Arc's SDS had the same meanings as those in the original version. Dr. Susan Palmer is a research professor at the Beach Center on Disability and the Kansas University Center on Developmental Disabilities both within the Schiefelbusch Institute for Life Span Studies at the Lawrence campus of the University of Kansas. Dr. Palmer's feedback and comments for improvements to the revised items were integrated into the final version of the translated and adapted version of the Arc's SDS after each revised item was translated into Arabic by

the aforementioned panel of experts. After that, the panel conducted a pilot investigation with a sample of female adolescents to ensure the clarity of the scale items and instructions in the translated and adapted version of the Arc's SDS (Gudmundsson, 2009). The pilot study participants ranged in age from 15 to 22, with a mean of 15.55 years and a standard deviation of 2.66 years. The participants were attending intermediate school ($n = 11$) or high school ($n = 9$). Five students were diagnosed with ID and received educational services in a self-contained classroom for students with ID, and the other 15 participants were diagnosed with LD and received educational services in full inclusion schools. Based on the feedback provided by the pilot study participant group, minor modifications were made to the translated and adapted version of the Arc's SDS to be used in the final study. These modifications were related mainly to the clarity of the printed questionnaire.

Data Collection Procedure

The researcher -who was in Saudi Arabia- collaborated with the administrator of each educational organization to determine a time to administer the translated and adapted version of the Arc's SDS that fit in the students' schedules. During the second of the two appointments mentioned previously, the teachers implemented the translated and adapted version of the Arc's SDS. The researcher was present in the classroom during each assessment to ensure the administration's fidelity to the translated and adapted version of the Arc's SDS, provide support when needed, and collect the completed scales.

The translated and adapted version of the Arc's SDS was administered in one session and took between 60 and 90 minutes to complete. The scale was administered in a group setting with no more than 15 participants in each group, as required by the procedural guidelines described by Wehmeyer (1995). Immediately following completion, the researcher collected and scored each student's scale.

Administration's Fidelity to the Protocol

To assure that the adapted and translated version of the Arc's SDS was administered with strict fidelity to the protocol, the researchers developed and implemented a checklist based on Wehmeyer's (1995, p. 31) "Tips for Administration of the Scale." The researchers checked 100% of the sessions in which the translated and adapted version of the Arc's SDS was administered against this checklist.

Data Analysis

IBM SPSS Statistics software (v. 24; SPSS, 2016) was used to calculate the descriptive statistics and corrected homogeneity indexes. In addition, frequencies and cross-tabulation were used to analyze the participants' demographic information. LISREL (v. 9.30; Jöreskog & Sörbom, 2006) was used as reference software to perform factorial analysis.

Cronbach's alpha was used to measure the internal consistency of the entire translated and adapted version of the Arc's SDS and separately analyze each sub-scale. The self-regulation subscale was eliminated from this analysis because it contained an open-ended answer, which does not lend itself to this form of statistical analysis. In addition, CFA was performed to determine construct validity. Specifically, the researchers tested the hypothesized factor structure of the model to demonstrate the relation among the observed variables (i.e., students' responses to the translated and adapted version of the Arc's SDS). The present study examined five fit indices, including two incremental fit indices (IFI and CFI) and three absolute fit indices (SRMR, GFI, AGFI).

RESULTS

Missing Data and Data Distribution

Although the dataset showed no missing values and all scale items were completed by the participants, a pattern of items scored with a zero was observed. Specifically, more than 180 items received a score of zero for more than 180 cases in the dataset. This pattern of a zero value caused biased parameter estimates of the model, leading to invalid conclusions. Therefore, the researchers deleted all of the translated and adapted Arc's SDS scale items that scored with zero for more than half of the cases in the dataset. The deleted items were excluded from statistical and factorial analysis to simplify the analysis of the data and ensure valid estimation of parameters.

Internal consistency reliability. The internal consistency reliability of the entire scale was good, with a Cronbach's alpha of .88. In addition, the internal consistency reliability was good for the autonomy subscale ($\alpha = .88$), acceptable for the psychological empowerment subscale ($\alpha = .77$), and acceptable for the self-realization subscale ($\alpha = .79$).

Construct validity. In this study, three models were tested: 1) a unidimensional model with one common factor, self-determination, 2) a correlational structure with four related factors (autonomy, self-regulation, psychological empowerment, and self-realization), and 3) a hierarchical structure with four underlying domains (autonomy, self-regulation, psychological empowerment, and self-realization) and a higher order factor (self-determination). The models' fit was examined using different fitness indices, including X2, SRMR, IFI, CFI, GFI, and AGFI. Table 2 presents the fit indices of the three models obtained by CFA.

As shown in Table 2, two models (i.e., the hierarchical and correlational models) were found to have better fit compared with the third model (i.e., the unidimensional

Table 2
Model Fit Indices Obtained by Confirmatory Factor Analysis

Indices of fit	Unidimensional model	Correlational model	Hierarchical model
X2	1126.520	559.505	565.664
Significance	.000	.998	.996
SRMR	.070	.0464	.0477
IFI	.741	1.056	1.053
CFI	.736	1.00	1.00
GFI	.795	.921	.920
AGFI	.771	.911	.910

model). The data related to each of these models are presented below.

Unidimensional model. The unidimensional model (Figure 1) showed acceptable fit value according to four fit indices (IFI = .741; CFI = .736; GFI = .795; AGFI = .771). However, the results for the SRMR fit index indicated low acceptable fit (SRMR = .070).

Correlational model. The correlational model (Figure 2) demonstrated good fit according to the fit indices (SRMR = .0464; IFI = 1.056; CFI = 1.00; GFI = .921; AGFI = .911). Overall, the goodness of fit of the correlational model was slightly better than that of the hierarchical model.

Hierarchical model. The hierarchical model (Figure 3) also showed a good fit according to the fit indices (SRMR = .477; IFI = 1.053; CFI = 1.00; GFI = .920; AGFI = .910).

In general, the indices of the correlational and hierarchical models were satisfactory and demonstrated similar goodness of fit; the CFI, IFI, GFI, and AGFI values indicated good model fit (> .99), and the SRMR values revealed good fit indices (< .05). However, the unidimensional model had poor fit, as indicated by the increased SRMR value and decreased IFI, CFI, GFI, and AGFI values. Overall, the fit indices indicated that the correlational and hierarchical models showed a good fit and explained the self-determination structure in relation to Saudi culture, although the correlation model fits the data better than the other models.

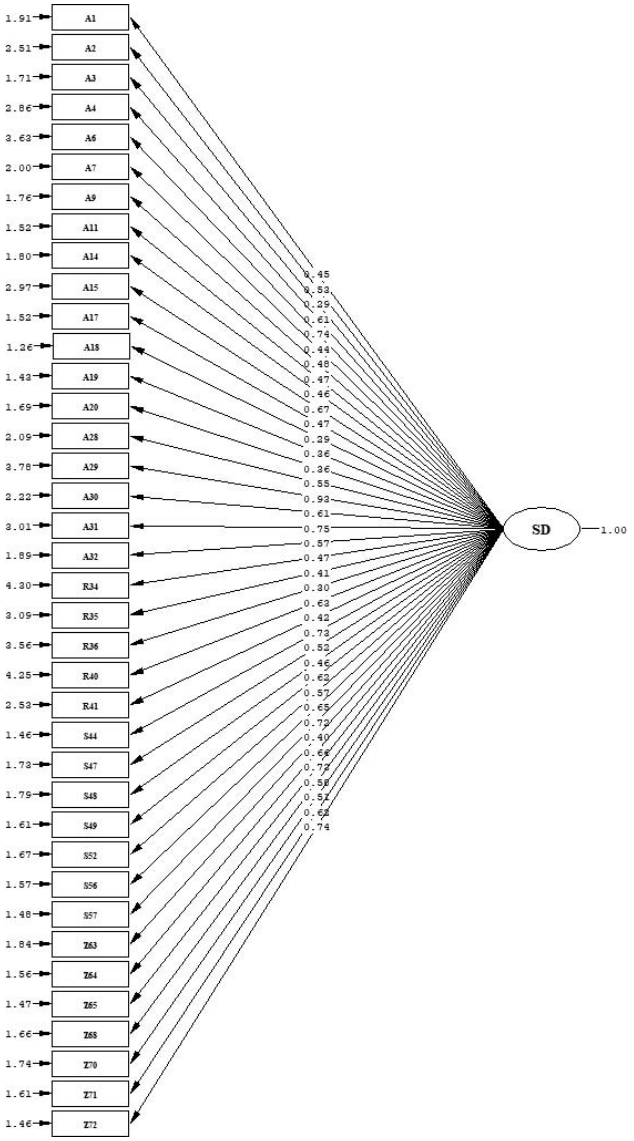

Figure 1: *Confirmatory Factor Analysis Results for the Unidimensional Model. SD = self-determination; A = items included in the autonomy sub-scale; R = items included in the self-regulation sub-scale; S = items included in the psychological empowerment sub-scale; Z = items included in the self-realization sub-scale.*

DISCUSSION

The findings of this study indicated that the structure of the translated and adapted version of the Arc's SDS had good internal consistency and construct validity. However, the consistency and validity values did not match those of the original version of the scale. Specifically, the current translated and adapted version of Arc's SDS demonstrated good internal consistency (Cronbach's $\alpha = .88$), but lower than the Korean version (Cronbach's $\alpha = .95$; Kim et al., 2001) and the Arabic version (Cronbach's $\alpha = .90$) developed by Al-Zboon and Smadi (2015). However, the reliability of the scale developed for this study was higher than that of the Dutch version (Cronbach's $\alpha = .802$; Snoeren, 2008) and the Spanish version (Cronbach's $\alpha = .82$; Verdugo et al., 2015).

One possible explanation for why the translated and adapted version of the Arc's SDS had lower reliability than the Korean version and Al-Zboon and Smadi's (2015) Arabic version is the number of scale items. In the current study, the final version of the scale consisted of 38 items, while the Korean version of the Arc's SDS included 75 items, similar to the original version, and Al-Zboon and

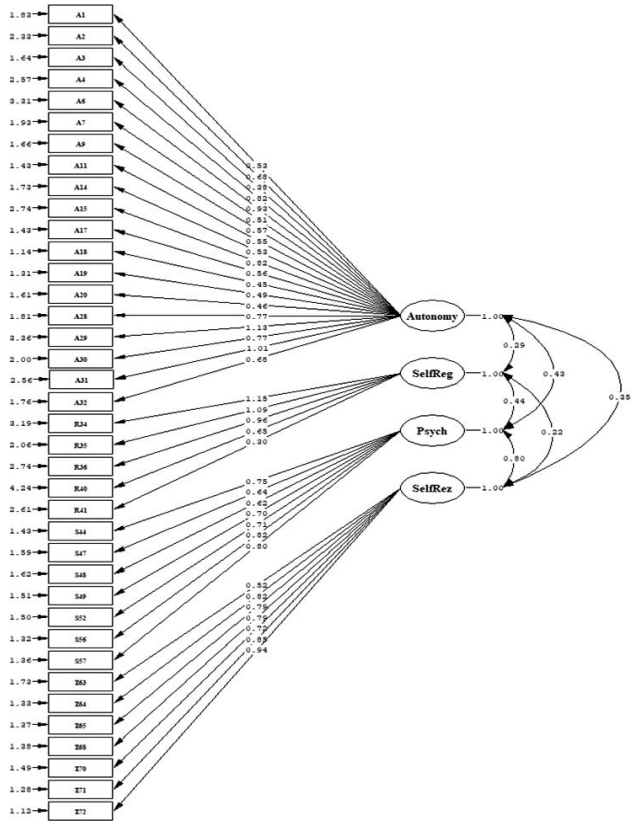

Figure 2: *Confirmatory Factor Analysis Results for the Correctional Model. SelfReg = self-regulation sub-scale; Psych = psychological empowerment sub-scale; SelfRez = self-realization sub-scale; A = items included in the autonomy sub-scale; R = items included in the self-regulation sub-scale; S = items included in the psychological empowerment sub-scale; Z = items included in the self-realization sub-scale.*

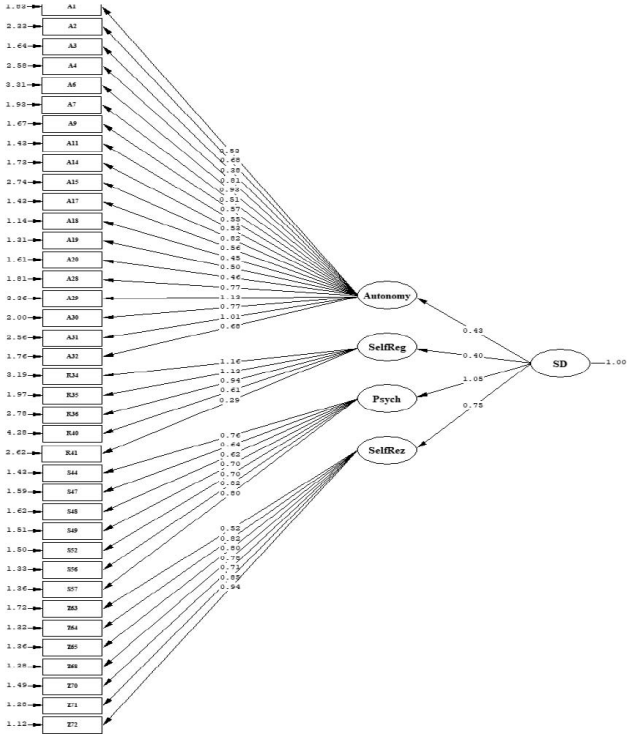

Figure 3: *Confirmatory Factor Analysis Results for the Hierarchical Model. SD = self-determination; SelfReg = self-regulation sub-scale; Psych = psychological empowerment sub-scale; SelfRez = self-realization sub-scale; A = items included in the autonomy sub-scale; R = items included in the self-regulation sub-scale; S = items included in the psychological empowerment sub-scale; Z = items included in the self-realization sub-scale.*

Smadi's (2015) Arabic version included 60 items. However, as mentioned earlier, Al-Zboon and Smadi (2015) aimed to assess the level of self-determination among Jordanian women with disabilities, and validation of the Arc's SDS was not the primary goal of their study. Therefore, there was insufficient information regarding the cause of deletion of 12 items (and their specific numbers) in the final version of their scale.

Regarding the self-determination construct, CFA proved the validity of the internal structure of the translated and adapted version of the Arc's SDS scale and revealed good data fit in both the correlational and hierarchical models. However, the unidimensional model demonstrated poor fit of the data. These results are similar to those of Verdugo et al. (2015), who found good data fit for the correlational and hierarchical models and poor fit for the unidimensional model. Moreover, the good fit of the hierarchical model of the translated and adapted version of the Arc's SDS construct was also supported. Shogren et al. (2008) examined the construct of self-determination as defined in the Arc's SDS and the AIR self-determination scale as well as the relation between these two measures. They found that the four subscales involved in the Arc's SDS contributed to a higher factor (self-determination construct). In addition, Ginevra et al. (2015) investigated the comparability of the Arc's SDS between samples of Italian and American adolescents, finding that the hierarchical model structure had good model fit.

The unidimensional model in this study demonstrated poor fit. However, good fit was found for the correlational and hierarchical models. These findings support the multidimensional structure of the translated and adapted version of the Arc's SDS scale that involved four main domains, as proposed in the functional model of self-determination (Wehmeyer, 1999).

Study Limitations

There were three key limitations of this study. The first is related to the participant demographics and sample size. This study took place in the central region of Saudi Arabia within two different types of educational organizations (i.e., educational centers and general education public schools). Consequently, the findings of this study relate only to female adolescents from one region of Saudi Arabia and are not generalizable to the entire Saudi population with ID, LD, and MD.

The second limitation is related to the methods used in this study. First, only the construct validity of the

translated and adapted version of the Arc's SDS was examined in this study; different types of validity, such as criterion-related validity, were not examined because the Arabic version of the Arc's SDS developed by Al-Zboon and Smadi (2015) was not provided to the researchers for comparison. Additionally, no study on the Arc's SDS with Saudi participants was available for comparison with this study. Future studies should consider further adaptation of the Arc's SDS and replication of this study with a larger sample that is more representative of Saudi adolescents.

Third, 34 items were deleted for the translated and adapted version of the Arc's SDS. Although the scale showed good construct validity according to the structure models obtained by CFA, cultural differences showed that the original construct of the scale with 72 items could not be maintained for the targeted population. All 34 deleted items were culturally relevant and appropriate, but more than half of the sample scored zero on them. There were no rational justifications for this pattern because of the lack of studies conducted in Saudi Arabia. Therefore, further studies must explore the construct and the operationalization of the concept of self-determination in Saudi culture.

Future Research

There is a need to continue examining the validity of the translated and adapted version of the Arc's SDS for both genders in multiple locations within Saudi Arabia that vary in terms of urbanization, educational services, and financial resources. As the participant sample in this study was limited to female adolescents with ID, LD, and MD, it is recommended that future research conduct additional studies with a broader sample of participants.

The findings of this study showed proof of the construct validity and internal reliability of the Arabic version of the Arc's SDS. However, this version of the scale needs to be further examined with a larger and more representative sample of participants in order to be applied in Saudi educational organizations. Therefore, this study will be utilized to initiate a national project to enhance awareness of the concept of self-determination in Saudi Arabia as well as to develop and implement culturally appropriate interventions to increase the level of self-determination among Saudi adolescents.

The translated and adapted version of the Arc's SDS examined in this study involved 72 items measured with different types of scales (e.g., binary items and ordinal items of SDS), which required approximately 60–90 minutes to complete. The items caused some confusion, especially in the self-regulation domain (which involved open-ended responses). Therefore, future studies need to develop a short form of the Arabic version of the Arc's SDS that has a different number of items and different types of measurements.

Continual validation studies aiming to build on this study by revising the latest version of the translated and adapted version of the Arc's SDS, which consists of 38 items, need to reconsider the scale format and number of items. The four different measurement formats in the scale caused difficulties because participants had to respond to each sub-scale differently. Therefore, the revised version of the translated and adapted version of the Arc's SDS could be modified to use a single format, such as a multiple-answer format with four options or a four-point Likert scale. Moreover, future studies should justify the deletion of 34 items from the translated and adapted version of the Arc's SDS and provide alternatives for these items.

There is a dearth of self-determination literature in the Middle East. This gap in the literature created serious difficulties when attempting to explain the self-determination construct from a Middle Eastern perspective. Therefore, in-depth knowledge of self-determination among individuals with disabilities, their parents, and those working in the field of special education must be gained through qualitative research to understand the operationalization of the self-determination concept from a different cultural perspective. Moreover, additional studies are needed to design and implement intervention programs for enhancing self-determination behaviors among adolescents in the Middle East.

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