

RESEARCH ARTICLE

DEVELOPMENT AND INITIAL VALIDATION OF SENSE OF BELONGING SCALE FOR ADOLESCENTS (SOBS): PRELIMINARY INVESTIGATION

*Manal Ahmed Ali Ammar**

*PhD Mental Health-Hurghada, Faculty of Education, South Valley University, Egypt

Abstract

The present study was designed to develop and describe the psychometric properties of the Sense of Belonging Scale (SoBS) among adolescents for the teen's sample. The research included three distinct studies. In Study 1, item pool generation and evaluation of content validity of the new scale by expert panel were carried out. In Study 2 (n=412), the factor structure of SoB was examined with Exploratory Factor Analysis (EFA) and the internal consistency of the new scale was evaluated. In Study 3 (n=362) Confirmatory Factor Analysis (CFA) was performed on the items determined by EFA in a different sample and the convergent validity of the new scale was assessed. EFA results displayed that SoB had five factors accounting for 43.064% of the initial total variance and CFA results confirmed that these five distinct but correlated factors were related to school belonging, home country connectedness, religious affiliation, culture connectedness, and family belonging. The internal consistency (Cronbach's alpha and McDonald's omega) of the SoBS was 0.90 and all subscales had high internal consistency. To assess the convergent validity, SoBS was administered together with Psychological Wellbeing (18 items), Rosenberg Self Esteem Scale (RSES), Positive and Negative Affect Scale (PANAS), and Beck Depression Inventory (BDI). The results revealed that SoBS was positively correlated with the Psychological Wellbeing, positive affect, and RSES while it was negatively correlated with negative affect and BDI. Test-retest reliability (N=83) for total SoBS was 0.81. Findings suggest that SoBS is a psychometrically valid and reliable tool to assess sense of belonging among adolescents. *ASEAN Journal of Psychiatry, Vol. 22(10) December, 2021; 1-22.*

Keywords: Sense of Belonging, Scale, Adolescents

Introduction

Adolescence is a critical time in a person's life for completing important developmental tasks. As children enter adolescence, they want more independence and spend more time with their peers [1]. Parent-child conflict is on the rise, while participation in shared activities is on the decline [2]. However, when these relationships remain emotionally close, parents remain valuable resources for their children. Furthermore, a positive home environment and

feelings of belonging to a family can promote positive adolescent development [3,4].

Besides, educational institutions represent places where students can consolidate sense of belonging. School belonging is critical for adolescents' school-based outcomes as well as their psychosocial adjustment especially for adolescents [5-9]. It is a feeling that students have that includes an affiliation or sense of connectedness to school [10]. Students' sense of belonging at school is influenced by their

perceptions of themselves as significant, meaningful, and valuable members of their respective school [11]. According to the need-to-belong model, the desire to belong is a fundamental and universal human motivator for developing and maintaining positive relationships with others [12].

Belonging is a pervasively accepted concept in literature and research across a wide range of fields. Education, psychology, sociology, and social-psychology have all studied sense of belonging, as have psychiatry, nursing, geography, anthropology, and religion, to name a few. It's a concept that's closely related to other widely accepted and studied psychological, educational, and sociological concepts, such as Holland's concept of fit, Bowen's concept of togetherness, Bowlby's attachment theory, Kegan's concept of inclusion, Guisinger et al. concept of relatedness, and terms like adjustment, association, bonding, engagement, connectedness, security, and even commitment [13-18].

Need for Affection and belongingness rank right after the basic physiological and safety needs, according to Maslow's hierarchy of needs; failure to meet belongingness needs is linked to psychopathology [19]. Love and belonging needs can be met in a variety of ways, including friendships, parent-child relationships, and romantic relationships. Maslow described this need as, "hunger for affectionate relationship with people in general, namely, for a place in his group or family". Due to the survival benefits conferred by being a member of a group, Baumeister et al. proposed that belongingness needs are fundamental to human existence [20].

As previously stated, a number of other theories and concepts closely related to belonging have been researched, and many authors have written about them [20-22]. A single definition of belonging is difficult to come by because of the variety of related concepts. "Happiness felt in a secure relationship" is one common definition of belonging. "The experience of personal involvement in a system or environment such that persons feel themselves to be an integral part

of that system or environment," is another definition of belonging [22]. Belonging is one of our strongest motivations, according to Epstein et al, Lee et al, Bowlby et al, Cohen et al. [23-27]. The interactions between children and their parents lay the groundwork for the nature and quality of future relationships [28]. The need to belong is a basic human objective that consists of a strong impulse to create and also preserve a minimum amount of purposeful and favorable social relationships [29].

Maslow went on to list a slew of negative consequences for people increasingly lacking a healthy sense of belonging, including being a potential source of most types of maladjustment and severe pathology. Maslow emphasizes the importance of love and/or belonging needs by claiming that people require love in order to be healthy and avoid illness. Maslow makes a compelling case for investigating this need for belonging and its impact on people's health [19]. A lack of belonging has been linked to negative outcomes for people who belong to underrepresented groups, particularly in school settings. Poorer intellectual and academic performance and increased drug use are two examples of negative consequences [30]. Gardner et al. also demonstrated some of the negative consequences of a lack of sense of belonging, such as a higher risk of physical illness [31].

Corey added to the importance of belonging by saying, "Only when we have a sense of belonging are we able to act with courage in facing and dealing with our problems". Corey went on to say later in his group therapy discussion that counseling (specifically group therapy) can provide the atmosphere and place for individuals to fulfill their sense of belonging, and that this allows individuals to recognize that many of their difficulties are interpersonal in nature, and that their goals should reflect change in their purposes and interaction within society. Thus, it can be deduced from this perspective that students who have a higher sense of belonging.

According to Hale et al. college students who felt like they belonged had better physical health [32]. In people with a family history of alcohol abuse, Sargent et al. found that a sense of belonging had a buffering effect on depressive symptoms [33]. Another study looked at the benefits of a strong sense of belonging in terms of motivation, concern for others, and positive interpersonal behavior in the classroom, as well as the risk factors associated with students and schools who lack a strong sense of belonging [34]. Research has found links between the sense of belonging and overall mental health, self-efficacy, self-esteem, greater therapeutic benefit, lower levels of stress, depression, and anxiety, better coping, easier adjustment to life changes, improved neurological functioning, healthier and safer schools and communities, improved academic achievement performance and motivation, higher intellect and cognition, improved resistance to disease, and overall better mental health [35].

On the contrary, Pressman et al. argue that social isolation-including a lack of social belonging-has a significant impact on health. They focused on the effect of loneliness and the size of one's social network on immune response. Lacking the sense of belonging, social isolation and small social networks are at the opposite end of the spectrum of belonging. Social isolation is linked to poorer health. Furthermore, people who have a large number of relationships and spend more time engaging in social activities are less likely to contract diseases and have lower mortality rates. Also, Gardner investigated the concepts of belonging and loneliness in term of students' sensitivity to social monitoring included and those who felt isolated [36]. The consequences of loneliness include potentially fatal, such as an increased risk of heart attack and other health issues. Academic success was one consequence that stands to reason based on the other consequences.

School Belonging Among Adolescents

Adolescents' daily lives are dominated by school. Many adolescents have positive relationships with others in school settings, particularly

teachers and peers, and feel like they belong [37]. In school settings, this fundamental psychological need is identified as a sense of belonging [38]. A type of belonging, school belonging, refers to students' subjective perceptions of being valued and supported in their school environment [39]. It includes a student's perception of himself/herself as an important and respected member of his/her school community [40].

Belonging to a group, whether it's a school, family, community, or something else, has a positive impact on a number of key factors that affect our overall health and happiness [41-43]. A sense of belonging refers to the relatedness individuals feel toward the other members of their community [44,45]. The need for young people to experience caring connections with others, as well as a sense of personal inclusion and acceptance, is a common description of school belonging in the literature [46,47]; that is, the degree to which a student feels like they belong at school and is cared for by the school community [48]. In this regard, school belonging describes the quality of social relationships within a student's school experience. To describe the core characteristics of belonging, the literature uses terms such as "membership" [49], "connectedness" [50], and "emotional engagement" [51,52].

However, students' perceptions of school belonging are more complex and multifaceted [53]. According to Nichols, students define belongingness in three dimensions of schooling: interpersonal relationships (teacher-student and student-student), learning /academic community, and school facilities or activities [54]. Moreover, Nichols argue that students' beliefs about belonging, both positive and negative, were dependent on the quality of their relationships with teachers and peers, with the majority of students defining school belonging as being socially supported by their teachers and peers [53,54].

The term "school belonging" has been defined in a variety of ways. There are few consistent definitions of belonging in a school setting.

School connectedness, like belonging for school-aged children, is described using a variety of terminology, according to Libbey, including school bonding, school climate, notions of territory, school attachment, connectedness, and orientation to school [55]. Libbey found that while terminology varied, consistent factors emerged, such as teacher supportiveness and caring, presence of good friends, engagement in academic progress, fair and effective discipline, and participation in extracurricular activities, in a review of measurements. The Wingspread Declaration which is consistent with these findings, defines belonging in school settings as students' belief that adults in their school community care about their learning, are interested in them as individuals, and have high academic expectations. It also includes students feeling safe at school and having positive teacher-student relationships [56].

Individuals' social networks are formed in schools, and schools provide unique opportunities for influencing belonging for school-aged children. The concept of belonging has received little attention as a school and community priority, particularly in comparison to quantitative measures of academic success, which is consistent with other areas of preventative interventions in schools, such as health promotion [57,58]. Students' perceptions of themselves as meaningful, important, and valuable members of their respective schools can be conceptualized as school belonging. According to research, being accepted, integrated, or valued is associated with positive emotions like pleasure and fulfilment, whereas being rejected or excluded is associated with negative emotions like nervousness, hopelessness, and loneliness [38].

Students' well-being is linked to their sense of belonging at school [59-62]. Numerous studies have found that students' positive development and educational outcomes in school settings are linked to a sense of belonging [63]. Many of these studies found that a sense of belonging at school was a significant predictor of academic achievement, absenteeism, academic motivation, dropping out of school, and goals. According to

Sanchez et al. a sense of belonging at school has a significant impact on academic outcomes, influencing motivation, effort, and low absenteeism [63]. Previous research has shown that positive attitudes toward learning and, specifically, academic self-efficacy, are linked to feelings of connectedness to school [64,65].

Family Belonging Among Adolescents

Families are perhaps the most important source of attachments for youths, because attachments formed in childhood continue to develop even during the sometimes-turbulent years of adolescence [66]. Healthy parent and family attachments remain essential to healthy adolescent functioning long after adolescents have exhausted other sources of emotional support [67].

Individuals have a fundamental psychological need to belong to a social group. Family members, particularly parents, can help children meet this need by providing love and affection [68,69]. A positive home environment in which children feel understood and supported, as well as where family members share enjoyable experiences together, can help children feel like they are part of a larger family group. Several studies suggest that belonging to a family is a protective factor against a variety of negative adolescent outcomes, including emotional distress, delinquency, violence, suicidal thoughts and behaviours, substance use, early sexual debut, and poor academic performance [70-73]. Family belonging refers to feelings of inclusion within one's family, such as being understood, having fun together, and being noticed.

Family belonging refers to feelings of inclusion within one's family, such as being understood, having fun together, and being noticed [74]. Feelings of belonging are conceptually distinct from the quality of a person's relationships with each family member [75], though the quality of these relationships is likely to influence perceptions of family belonging [76]. This distinction is supported by empirical evidence, which shows that parent-child relationships and the extent to which children and adolescents feel

they belong to their families are statistically independent predictors of well-being [3].

Feelings of belonging are conceptually distinct from the quality of a person's relationships with each family member [75], though the quality of these relationships is likely to influence perceptions of family belonging [76]. Strong family attachments were found to be inversely related to depression in adolescents by Mueller and similar relationships have been found in minority adolescents by others [77-80]. This distinction is supported by empirical evidence, which shows that parent-child relationships and the extent to which children and adolescents feel they belong to their families are statistically independent predictors of well-being. According

to Dailey adolescent perceptions of validation and acceptance from family were significantly related to a range of positive psychosocial adjustment outcomes, including self-concept.

According to family systems theory, an adolescent's perception of family belonging is influenced by the quality of relationships between family members, and the conceptual model we tested reflects this supposition. Although all family relationships have the potential to contribute to an individual's sense of belonging, relationships with and between parents are likely to be especially important. A close relationship between parents serves as a foundation for positive relationships among other family members, particularly between parents and their children.

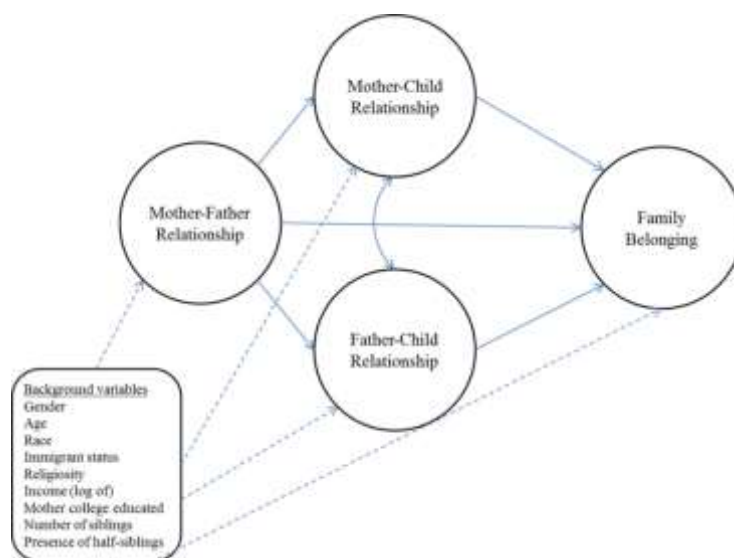


Figure 1. Family belonging model.

Assessing the Sense of Belonging

Because a sense of belonging is widely accepted as an important concept in psychology, it stands to reason that it influences people's overall psychological functioning, well-being, and/or quality of life. Thus, instruments that can measure and define important global concepts of a person's psychological functioning, well-being, and quality of life would be useful in supporting the idea that belonging influences mental health. An instrument that provides multiple scores across a wide range of psychological symptoms, as well as an instrument that examines quality of

life across multiple dimensions, would provide useful data for research into the potential impact of belonging [18].

Despite the literature's emphasis on the importance of belonging, there are few measures available to assess this construct, particularly in applied settings such as clinics and nursing homes. Several belonging measures rely on a scale designed for a single study [81].

Furthermore, many scales used to measure belonging are designed for use with specific populations, such as individuals from a specific

country or culture or school students-including the Psychological Sense of School Membership Scale (PSSM) in keeping with the contextual nature of belonging [82,83].

One of the most widely used measures of belonging is the Sense of Belonging scale (SOB). The SOBI-P (psychological state), which measures sense of belonging in terms of valued involvement and fit in relationships, and the SOBI-A (antecedents), which examines the antecedents to a sense of belonging, comprise a 27-item self-report measure developed by Hagerty et al. [84]. While the SOBI-P (which consists of 18 items) has been found to be a reliable and valid measure of sense of belonging, there is less evidence for the validity and internal consistency of the SOBI-A. Despite this, the SOBI was chosen as the most appropriate measure for this study because it can be used with older adults who live independently, it is easily adapted to other languages, its construct validity has been established using three separate measures, and it has a high internal consistency [84].

Another measure of belonging is Social Connectedness Scale that assesses the degree to which youth feel connected to others in their social environment [85]. The scale has eight items that assess a participant's sense of belonging, as well as their feelings of bonding and connection to the social world. As evidenced by the collected data, the measure has a high internal consistency. Participants rated statements in the measure on a five-point Likert scale ranging from 1 to 5, with the total sum value ranging from 8 to 48 points. Statements like "I feel disconnected from the world around me" and "I feel so distant from people" are among the items on the social connectedness scale. Higher scores on this measure indicate that the participants perceive themselves to be more connected to the social world.

In addition, the Global Belongingness Scale is a measurement of one's sense of belonging. This 12-item questionnaire examines a general sense of belonging on a 7-point Likert scale [86]. In addition to completing the 30-item pool,

participants performed the measure at various points throughout the battery. Other measures were used to isolate the 12-item measure from the item pool. Slaten et al. developed a youth belonging measure that takes into account various important aspects of a young person's life, including family, school, and peer belonging [87]. This 9-item measure includes 3-items for each subscale and a total scale score. Scholars from several fields use this abridged measure as an efficient tool. There are several smaller sets of questions that have been used to assess school belonging in addition to these criteria [88].

Measuring school belonging is an important step in gaining a better understanding of and developing prevention strategies for promoting students' healthy development and welfare. A number of measurement tools have been created [88,89]. For example, the Psychological Sense of School Membership (PSSM) is one of the most extensively used assessments of a child's or adolescent's sense of belonging [39]. The PSSM assesses students' sense of belonging, or psychological membership, in the school setting. It has been used in a variety of academic and cultural settings [90,91]. The School Belongingness Scale (SBS) measures a child's or adolescent's sense of belonging at school [89]. The SBS has good psychometric features and comprises two parts: inclusion and exclusion from school. School inclusion denotes social acceptance in the classroom, whereas school exclusion denotes social rejection. Slaten et al. created a youth belonging measure that takes into account various important aspects of a young person's life, including family, school, and peer belonging [92]. This 9-item measure includes 3-items for each subscale and a total scale score. Scholars from several fields use this abridged measure as an efficient tool. There are several smaller sets of questions that have been used to assess school belonging in addition to these criteria [93].

With regard to family belonging scales, an 11-item self-report measure was used to assess Parent-Family Connectedness [94]. "How much do you think your mother (or father) cares about you?" and "How much do members in your

family understand you?" were two examples of questions. Internal consistency was established across gender and racial groups across 7-12th grade children, as well as concurrent validity with other measures of school connectedness and self-esteem [95].

No previous study has examined the psychometric properties of the Sense of Belonging Scale (SoBS) for adolescents and its specific domains. It is, therefore, important to investigate the factor structure of the SoBS to measure as an indicator of sense of belonging among adults. Besides, the investigation of the psychometric properties of SoBS is expected to provide evidence for its theoretical and empirical validity and reliability of the constructs it is intended to measure. Given the limited number of scales available for measuring sense of belonging, more research is needed to determine the optimal method for capturing sense of belonging among adolescents.

The purpose of this study was to develop and describe the psychometric features of SoBS in a sample of adolescents. There were three stages to this research. The first study involves developing items to assess adolescents' sense of belonging and determining content validity. The objectives of study 2 were to (1) Investigate the items and factor structure of SoBS (exploratory factor analysis) and (2) Assess internal consistency. The goals of study 3 were to (1) Confirm the component structure found in study 2 and (2) Evaluate the convergent validity of SoBS.

Materials and Methods

Scale development

The researcher looked for scales that measured "sense of belonging," "belonging," and "belongingness" in the literature and created the Sense of Belonging Scale (SoBS) using items from one or more existing scales. She specifically looked for items that corresponded to the five dimensions of belonging that had been previously defined: school connectedness, family belongingness, religious connectedness, national affiliation, and cultural connectedness. The researcher chose items from current scales to

boost her chances of creating a valid and reliable scale with appropriate, answered items by drawing on known wordings.

Although the majority of existing scales that address belonging beyond a national or ethnic group or beyond general notions of "feeling at home" were developed for very specific contexts mostly in educational institutions the researcher identified three scales from the psychological literature that include some items that are relevant to our approach: The Family Connectedness Scale the Social Connectedness Scale (SCS) and the Sense of Belonging Instrument (SOBI). Importantly, these scales were created to capture a sense of belonging as a psychological feature or method of interacting. The researcher chose questions from these scales that function as situationally sensitive items rather than dispositional measures, particularly when coupled with other items. The current scale has the benefit of being able to be utilized in big, multi-purpose surveys like the one employed in this study.

Study 1: Generation of item pool and content validity

Methods

The purpose of study 1 was to generate and test content validity of sense of belonging measures for adolescents. The steps of scale development outlined by DeVellis and Lynn were used to create the item pool. The scope of the construct was defined and the operationalized construct was defined first [96,97]. Then, extensive literature reviews were conducted throughout the creation of SoBS. The first step was intended at developing a theoretical basis for sense of belonging, while the second was focused at determining the scale's components and items.

The following research questions guided the first and second literature reviews:

- What theoretical base is most suitable for measuring sense of belonging?
- What components of the theoretical base are the most crucial for forming the scale's dimensions?

- What items are the most crucial for symbolizing/measuring the scale's dimensions?

The definitions and models of sense of belonging, social connectedness, family connectedness, school belonging (unidimensional and multidimensional sense of belonging), developmental psychology, positive psychology, and its concepts were investigated during the literature review process. As a result, it was determined that sense of belonging is a concept that is a component of overall citizenship or connectedness. A sense of belonging and personal involvement in a social system and physical or cultural surroundings develops [98]. According to the literature, sense of belonging is a complex term with components in personal involvement, perceived acceptance, sense of similarity, and feeling at home. The researcher first reviewed the objects in the item pool for clarity, redundancy, and unexpected resemblance to other things. Each item was reviewed at the start of the procedure, and any that was too similar to each other and had nearly the same content and structure was eliminated. Then, a five-point Likert type response form (ranging from 0=strongly disagree to 4=strongly agree) was chosen. As a result, the item pool was made up of five components totaling 50 items.

Results

The suitability of each item for the scale's purpose, comprehensibility, clarity, comprehensiveness, and meaningfulness were all scaled. The technique proposed by Davis was used to assess expert opinion. Experts must evaluate each item using an expert opinion form with four alternatives (a="acceptable," b="item should be mildly amended," c="item should be slightly revised"). If applicable, experts are to make suggestions ("seriously revised", d="not appropriate") and experts are to provide recommendations ("seriously revised", d="not appropriate"). The Content Validity Index (CVI) for individual items (i-CVI) and the entire scale (s-CVI) was then calculated. The i-CVI was calculated by adding the item's "a" and "b"

ratings and dividing the result by the total number of experts.

The s-CVI was calculated by averaging the values of the i-CVI. According to Davis, the criteria value for CVI was 0.80. Items having an i-CVI value more than or equal to .80 were admitted into SoBS, whereas those with a value less than .80 were deleted. After six (6) items were removed from the SoBS, the pool included fifty (50) items. Following that, SoBS's s-CVI was 0.96. Version 2 of the scale was created as a result of the expert panel's findings.

Study 2: Construct validity and reliability

Methods

Participants: Participants Sample 1 consisted of 244 (59.2%) females and 168 (40.8%) males, a total of 412 adolescents. Seven cases were excluded from the data after the examination of infrequent responses to control items such as "Please respond to this item with 0="Strongly disagree" as well as univariate and multivariate outliers detection and 2 cases were excluded because they did not meet the age criterion (>13 years old) of the present study.

The ages of participants ranged between 14 and 18 (M=16.74 years; Med=17 years; SD=11.64). Regarding type of school, 242 (58.7%) of the participants were studying in governmental mainstream schools whereas 170 (41.3%) were registered in private language schools. The participants' education levels included first year university students (53.4%), second year secondary (22.1%), first year secondary (19.4%), and third year secondary (5.1%).

In Hurghada (Egypt), data was collected through a printed survey (March to April 2019). Participants who took part in one of the studies were not allowed to take part in any of the others. South Valley University Human Research Ethics Committee gave their clearance for the study. Participants were provided a printed form of the survey. The class teacher provided students details about the study, what they might expect, and how to give informed consent. If the

study was optional, the individuals opted to participate. The next page comprised self-report surveys for each study, and the last page was dedicated to thanking the participants.

Measures

In addition to the second version of SoBS, a socio-demographic form was implemented. Socio-demographic form included. Personal information inquiries, such as age, gender, and education level.

Sense of Belonging Scale (SoBS): The SoBS is a general sense of belonging scale designed to measure sense of belonging among an adolescent sample. The questionnaire contains 50 items on a 5-point Likert scale, with 0 indicating "strongly disagree", 1 indicating "somewhat agree", 2 indicating "agree", 3 indicating "mostly agree", and 4 indicating "strongly agree". The higher the score, the higher sense of belonging the participant has.

Data analysis

There were no missing data when the data was reviewed. Item analysis was used on the data in Study 2 before Exploratory Factor Analysis (EFA). Then, to find the latent factors or constructs explaining shared variation among items, the primary axis extraction method with a fixed number of factors of five was used. If (a) Extracted factors are considered to be aspects of a higher-order factor, (b) Meeting a simple structure is intended, (c) Factor replicability is intended, (d) It cannot be assumed that variables are truly uncorrelated, and (e) An estimation of factor correlations is intended in order to provide more valuable information, Reise et al. and Osborne recommended choosing oblique rotation (Promax) over orthogonal rotation. Because the scale fits all of these requirements, it was decided to use oblique rotation (Promax). The following criteria were used to identify the initial factorial structure: a) factor loadings more than .50, and b) all factors with an eigenvalue greater than 1. SPSS 22.0 for Windows was used to conduct the analyses, and the significance threshold was set at p.05.

As stated by Tabachnick et al. skewness (range: -0.385 to -3.274) and kurtosis (range: -1.220 to 10.768) values were found to be within critical ranges. Eight people were eliminated from the data after calculating Mahalanobis distance (values range between 10.52-168.90 p.003). A minimum of 0.40 was chosen as the threshold value for the corrected item-total correlation (Tabachnick et al.). Because their corrected item-total correlations were below, items 14, 15, 17, and 20 were eliminated from the 50-item scale. Prior to completing EFA, Bartlett's test of sphericity ($\chi^2(1225) = 8248.989, p.00$) and Kaiser-Meyer-Olkin (KMO) measure of sample adequacy test (KMO=0.901) were used to confirm the appropriateness of factor analysis. These figures indicate that the data was eligible for EFA (Field, 2005). The following were the primary criteria used to determine the number of elements to be extracted: (1) Eigenvalue larger than 1; and (2) Contained a minimum of three. Items that did not meet the following criteria were deleted during the EFA procedure: (1) Factor loading was less than 0.50, (2) Commonality was less than 0.50, and (3) The difference in factor loading between two factors was less than 0.20.

Following the EFA technique, 6 items were removed since they did not meet the aforementioned requirements, leaving a 22-item measure with five components that were meaningfully interpretable. The presence of five unique components was confirmed by the scree plot test. The commonality for all 23 items ranged from .51 to .70. The five components' preliminary eigenvalues were 11.960, 3.645, 2.467, 1.797, and 1.663, with a cumulative total variance of 21.532%.

After rotation, the traces were 23.920, 7.290, 4.933, 3.594, and 3.327. After promax rotation, the distribution of the variance for five factors explained a total of 43.064% of the variance, with factor 1 to 5 accounting for 23.920% (school belonging), 7.290% (home country connectedness), 4.933% (religious affiliation), 3.594% (culture connectedness), and 3.327% (family belonging).

Factor loadings for the items range from 0.58 to 0.66 in the school belonging, from 0.64 to 0.69 in the home country connectedness domain, and from 0.53 to 0.71 in the religious affiliation.

Culture connectedness domain scores range from 58 to 66. Family belonging scores range from 51 to 66. The range is from 51 to 0.71.

Table 1. Sense of belonging scale items, factor loadings, mean and standard deviation (N=412).

Questionnaire item		Factor loadings						
		1	2	3	4	5	M	SD
School belonging								
2	I feel proud when my school receives the Academic Excellence Awards.	0.61					3.25	0.95
4	I keep my school clean and in its best shape.	0.66					2.84	1.12
6	I usually abide by the laws enacted by the school.	0.62					2.83	1.12
7	I use of the technological possibilities offered by the school.	0.66					2.68	1.16
8	I have a good communication skills with the others that increase effective relationships.	0.58					2.73	1.16
Home country connectedness								
1.	I feel proud when the national anthem is played.		0.69				2.91	1.19
5	I participate in charitable and voluntary works to enhance the positive image of the school.		0.64				3.13	1..07
11	I feel proud to be a citizen of my country and to belong to it.		0.64				3.32	1.07
12	I am so proud to visit the monuments of my country.		0.64				3.23	1.07
Religious affiliation								
22	I am keen on preserving religious teachings and defending them.			0.66			3.62	0.72
23	I stay away from violence and extremism.			0.71			3.33	0.92
27	I treat people well and be kind to them stemming from religious teachings.			0.57			3.62	0.74
29	I encourage peers to respect religious beliefs.			0.60			3.30	0.89
30	I respect women, who have empowered and valued in all religions.			0.53			3.44	0.92
Culture connectedness								
31	I help my colleagues and friends to get to know our own culture.				0.58		2.80	1.13
32	I preserve the prevailing customs and traditions in my own				0.66		2.86	1.11

	society.							
33	I encourage my friends to learn about the mechanisms of cultural awareness with others.				0.63		3.72	1.10
39	I consider that educational and community institutions should play an important role to help teens to be aware of others cultures.				0.62		3.62	1.21
Family belonging								
43	I usually help to maintain family stability.					0.58	3.24	0.91
44	I enhance the value of interpersonal dialogue in keeping social responsibility among family members.					0.51	3.28	0.95
47	I view that teens should adhere to social etiquette.					0.65	3.36	0.89
49	I participate with family members in different family occasions.					0.66	3.45	0.92
After rotation total variance explained		43.064%						

Factor loadings below 0.50 are not visible Cronbach's alpha, McDonald's omega, and composite reliability were calculated on data taken from a general (community) adolescents' sample to assess the reliability of SoBS and its

subscales. Cronbach's alpha and McDonald's omega were both found to be 0.916, and the composite reliability for the entire scale was 0.922. All subscales have satisfactory reliability ratings (Table 2).

Table 2. Self-Satisfaction total and subscales' reliability (N=362).

Sense of belonging subscales	Cronbach's Alpha	McDonald's Omega	Composite Reliability
School belonging	0.830	0.836	0.842
Home country connectedness	0.694	0.721	0.748
Religious affiliation	0.804	0.807	0.810
Culture connectedness	0.745	0.754	0.763
Family belonging	0.734	0.742	0.750
Total scale	0.902	0.906	0.910

Study 3: Structural Validity with Confirmatory Factor

Analysis and criterion validity

In scale development studies, it is common practice to use Confirmatory Factor Analysis (CFA) on a separate sample to examine the factorial structure obtained by EFA. As a result, the objectives of Study 3 were to (1) Confirm the factorial structure discovered in study 2 and (2) Assess the convergent validity of SoBS.

Methods

Participants: After eliminating fifty cases due to the examination of infrequent responses to bogus (control) items such as "Please respond to this item with 0="Strongly disagree" and being univariate and/or multivariate outliers sample 3 consisted of 237 (65.5%) females and 125 (34.5%) males, for a total of 362.

Three secondary schools in Hurghada have been selected to participate in the study 3, students registered in governmental mainstream schools (67.1%) and students in the language schools (32.9%). Participants in the first-year college (59.9%), second-year secondary school graders (18.8%), first-year secondary school graders (15.7%), and third-year secondary school graders (5.5%).

Participants' ages ranged from 13 to 19 (M=17.43 years; Med=17 years; SD=1.72). To reach participants, convenience sampling was utilized.

From May to July 2019, data were collected through printed form of the questionnaire in these three schools (e.g., Hurghada secondary schools for girls, Saint Joseph secondary school, and Hurghada language school).

Students were given a printed form of the sense of belonging scale, which includes information about the study, participant expectations, and an informed consent form. If the study was voluntary, the participants had to opt in to participate. The questionnaire took roughly 25 minutes to complete on average [96-100].

Measures

As stated in the introduction, empirical findings support a significant positive relationship between sense of belonging and psycho-social well-being, social domain and self-esteem. Thus, a positive association between general sense of belonging and its domains and measures of psycho-social well-being, self-esteem, and positive affect has been hypothesized, as has a negative correlation between sense of belonging and its domains and measures of depression and negative affect.

Socio-demographic form: A questionnaire designed to collect personal information such as age, gender, type of school, and grade level.

Sense of Belonging Scale (SoBS): In Study 2, general sense of belonging scale was examined using the SoBS, which comprises 23 items divided into five domains (school belonging, home country connectedness, religious affiliation, culture connectedness, and family belonging).

Positive and Negative Affect Schedule (PANAS): Designed by Watson et al., the scale assesses how a person feels at a specific point in time, such as the previous week. It includes 20 self-report items that assess happy and negative affect. The things are assessed on a 5-point Likert scale, with 1 being "very slightly or not at all" and 5 being "extremely". The Positive Affect (PA) and Negative Affect (NA) scales each have ten items. Gencoz translated the scale into Turkish (2000). The scale had an internal consistency reliability of .88 for the PA and 0.82 for the NA in the current study.

Rosenberg self-esteem scale (Rosenberg): The Rosenberg self-esteem scale had ten items, six of which were favorable (items 1, 2, 4, 6, 7, and 8) and four of which were negative (Items 3, 5, 9, and 10). "I feel that I'm a person of worth, at least on an equal plane with others," as an example of a positive thing. "Overall, I am likely to believe that I am a failure," as an example of a negative item. Prior to analysis, negative items

were reverse-scored. The Rosenberg Self-Esteem Scale has a four-point scale (1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree). In this study, Cronbach's alpha was 0.79.

Psychological wellbeing (18 items) (Ryff et al.): Well-being is assessed with a modified 18 item version of Ryff's Scales of Psychological Well Being. The scale includes 3 items for each of 6 aspects of well-being: self-acceptance, autonomy, environmental mastery, purpose in life, positive relations with others, and personal growth. Participants are asked to rate how each item applies to themselves using a 7-point Likert rating scale (1=strongly agree, 2=agree, 3=slightly agree, 4=neither agree nor disagree, 5=slightly disagree, 6=disagree, 7=strongly disagree, and vice versa). Items that are positively worded are flipped so that higher ratings on all individual items indicate greater well-being.

The total score is the mean of the ratings, with a higher score relating to greater well-being. The Beck Depression Inventory (BDI) is a 21-item self-report scale designed to assess the behavioral, motivational, cognitive, and physical symptoms of depression. The score for each item varies from 0 to 3, and the overall score ranges from 0 to 63. In the current investigation, the scale's Cronbach's alpha coefficient was 0.82.

Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis was performed using weighted least squares to test model fit for a one factor ($\chi^2=800.741$, CFI=0.81, RMSEA (95% CI)=0.090 (0.084-0.097). Notably, when compared to conventional cut-points, the model showed relatively high RMSEA values (95% CI for RMSEA 0.08). Figures 1 provide diagram for the CFA of the model fit.

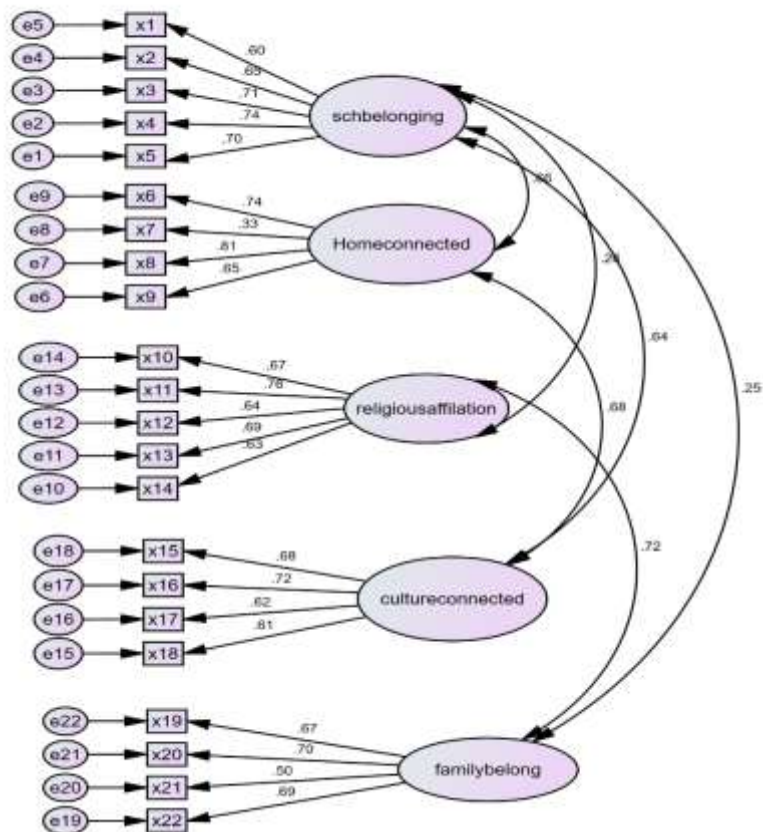


Figure 2. Self-satisfaction scale confirmatory factor analysis results (N=362).

As a result, the one-factor model was approved. CFA findings confirmed the construct validity of the SoBS subscales by identifying seven distinct content components in the domains of school belonging, home country connectedness, religious affiliation, culture connectedness, and family belonging.

Standardized factor loadings for the one-factor model ranged from 0.60 to 0.74 in the school belonging, 0.65 to .81 in the home country connectedness domain, 0.63 to 0.76 in the religious affiliation, 0.61 to 0.72 in the culture connectedness, and 0.50 to 0.70 in the family belonging. All of the subscale factor loadings were greater than 0.50.

Inter-correlations between Subscales and Convergent and Divergent Validity

The SOBS and its subscales' convergent validity were investigated using Spearman's rho correlations with measures of sense of belonging, psych-social well-being, positive and negative affect, self-esteem, and depression (Table 3).

Table 3 Inter-correlations of the SoBS and its subscales and measures of sense of belonging, psycho-social wellbeing positive and negative affect, self-esteem and depression (N=362).

Table 3. Inter-correlations of the SoBS and its subscales and measures of sense of belonging.

	M.	SD	1	2	3	4	5	6	7	8	9	10	11	12
School belonging	10.49	4.26	-											
Home country connectedness	16.79	3.10	.66*	-										
Religious affiliation	22.50	3.13	.46*	.41*	-									
Culture connectedness	15.12	3.41	.58*	.55*	.49*	-								
Family belonging	17.51	2.66	.39*	.37*	.57*	.36*	-							
Psycho-social wellbeing	89.02	19.32	.38*	.42*	.34*	.42*	.48*	-						
Positive affect	26.15	7.49	.29*	.24*	.27	.36*	.34*	.45*	.38*	-				
Negative affect	20.16	7.15	-.24	-.25	-.22	-.42	-.27	-.11	-.42	-.34	-			
Self-esteem	28.65	8.89	.45	.56	.62	.42	.72	.41	.49	-.51	.48	-		
Beck depression scale	10.98	9.12	-.45	-.42	-.38	-.51	-.32	-.13	-.43	-.47	-.52	-.41	-	
Total score	82.41	21.28	.56*	.62*	.47*	.82*	.71*	.64*	.80*	.70*	.82*	.47*	.67*	-

As expected, the inter-correlations between the SoBS total score and its subdomains were rather strong and significant (p.001). The strongest

associations were seen between total sense of belonging scores and personality traits (p.001). Furthermore, from a theoretical standpoint, the

SoBS total score and all sub-domains were expected to correlate favorably with psycho-social well-being, positive affect, and self-esteem and adversely with negative affect and depression. Table 3 shows that the total score of

Test-Retest Reliability

A sample of 55 (66.3%) female, 28 (33.7%), secondary school students (N=83) was used to measure test-retest reliability for a 3-week interval. The test-retest reliability of the SoBS subscales was found to be 0.81 for school belonging, 0.75 for home country connectedness, 0.82 for religious affiliation, 0.70 for culture connectedness, and 0.90 for family belonging subscales and for SoBS total score.

Discussion

The purpose of this three-stage study was to investigate the reliability and validity of the Sense of Belonging Scale (SoBS), which was established for adolescents to present a multidimensional profile of their sense of belonging ratings. Such distinct evaluations may allow for more focused diagnostic, preventative, and therapeutic efforts. The initial research topic was the determination of the SoBS factor structure (construct validity) among adolescents. An EFA was performed to determine the factorial structure of the SoBS, and a five-factor structure accounting for initial 43.06 after promax rotation of the total variance emerged. The dimensionality of the SoBS has been determined from the results of EFAs. Following that, a CFA was performed using data from a second study group (adolescents) to corroborate the SoBS structure discovered in study one. A model containing 22 items, five first-order elements demonstrated excellent fit statistics and conceptual coherence.

The CFA results confirmed the construct validity of the SoBS subscales by identifying five distinct content components in the domains of school belonging, home country connectedness, religious affiliation, culture connectedness, family belonging. Furthermore, the sum of the five domains was highly linked with the overall sense of belonging score, indicating that these subscales. The third research issue was whether

SoBS and its subscales have significant positive moderate correlations with psycho-social well-being, positive affect, and self-esteem, and significant negative correlations with negative affect and depression scores.

the SoBS's convergent validity was sufficient. In keeping with the theoretical predictions, the SoBS total scores and all subdomains were positively connected to sense of belonging, psych-social wellbeing, positive affect, and self-esteem, and negatively related to negative affect and depression scores. All of these findings supported the validity of SoBS. According to the pattern of relationships, SoBS and psycho-social are linked but distinct phenomena. The stronger connections between emotional/psychological factors, and physical appearance items, in particular, offered support for the discriminant validity of SoBS.

According to the theory, the SoBS total scores and all subcategories were rather robust and favorably associated with psycho-social wellbeing, positive affect, and self-esteem. This finding was consistent with prior study, which found that sense of belonging is closely associated with students' wellbeing. Some studies contend that once created, trait self-esteem functions as a perceptual filter through which people perceive the outer world as a reflection of one's inner world. Because self-esteem determines the filter through which people view acceptance, the two are inextricably linked. People with low self-esteem see the world through a more negative lens, feeling less like they belong even when approval is present. According to some correlational studies, those with higher trait self-esteem express a greater sense of belonging in their continuing relationships and daily interactions with others than those with lower trait self-esteem.

A study conducted by Massey et al. found that there are correlations between life satisfaction and positive affect, negative affect, and feeling of belonging. These findings indicate that interventions aimed to increase quality of life among older adults can improve life satisfaction, while still providing secondary benefits in decreasing negative affect and increasing

feelings of belonging. The findings of Lambert et al. revealed that a relatively strong sense of belonging predicted and, in some cases, caused people to perceive high levels of meaning in their lives. Furthermore, the findings revealed a strong link between a sense of belonging and self-reported life meaning [100-105].

According to Dabchick et al., the results of the test-retest reliability assessment indicate that the SoBS and its subscales have excellent temporal stability. The scale created in this study can assist practitioners and researchers in determining needs as well as establishing, implementing, and evaluating implementations. All of SoBS's validity and reliability results demonstrate that it has adequate psychometric qualities for measuring sense of belonging among adolescents. Domains are important components of overall sense of belonging. As a result, the theoretical premise that sense of belonging is a higher-order construct with five unique elements was supported. All of the factor loadings were 0.50 or greater. Intercorrelations among the five components reinforce the notion of belonging; connectedness and affiliation share a common core but remain distinct entities.

The second research topic addressed in this study was if the SoBS's internal consistency was sufficient. Cronbach alpha, McDonald's omega, and composite dependability ranges for the overall scale were 0.90 to 0.91, whereas SoBS subscale ranges were 0.72 to 0.84. The internal consistency of SoBS indicated a high level of dependability for the entire scale and its components.

Limitations

There are certain limitations to the current study, and future directions must be addressed. Even though the preliminary psychometric results of the SoBS are positive and encouraging, further research is required to completely examine and refine the SoBS, as with any new scale. Examining predictive validity and further criterion-related validity studies, for example, are required to explain the meaningfulness of scores, as well as examining the probable moderating

effect of gender, age, and other demographic variables on some of the investigated domains. This study's findings are restricted to Egyptian adolescent-students sample. The scale's translation into multiple languages will help us better comprehend the meaning and measurement of sense of belonging.

Future research should look into the validity and reliability of the SoBS across diverse ages, populations, time, genders, and data collection methods (web-based, qualitative). Finally, testing the scale's validity within clinical populations would allow for an evaluation of the scale's efficacy for psychological interventions. As a result, our findings give preliminary evidence that SoBS is theoretically and empirically sound, and that it is appropriate for application in samples of adolescents. In this way, SoBS is thought to contribute to future studies of positive psychology.

Ethics Approval

This study was approved by South Valley University Human Research Ethical Board.

Informed Consent

Informed consent has been obtained from all participants in this study.

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Corresponding author: *Manal Ahmed Ali Ammar, PhD Mental Health-Hurghada Faculty of Education, South Valley University, Egypt*

Email: manaltaha55@gmail.com

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