An evaluation of the measurement properties of the *Mentor Self-Efficacy Scale* among participants in Big Brothers Big Sisters of Canada Community Mentoring Programs

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Abstract

The measurement properties of a newly developed instrument, *Mentor Self-Efficacy Scale*, were examined among 249 Big Brothers Big Sisters (BBBS) mentor, child, and parent triads. The unidimensional scale demonstrated acceptable reliability ($\alpha = 0.81$) and convergent validity, with mentor self-efficacy (MSE) correlating with mentor reported global ($r = 0.28$, $p<0.001$) and engagement ($r = 0.44$, $p<0.001$) mentoring relationship quality (MRQ). The scale also yielded acceptable predictive validity, with MSE predicting mentor reported engagement MRQ ($\beta = 0.28$, $p = 0.001$). Results will contribute to future research using the scale to augment BBBS policies.

Keywords: Mentor Self-Efficacy; Measurement; Reliability; Convergent Validity; Predictive Validity

Introduction

Big Brothers Big Sisters (BBBS) community mentoring programs establish and support mentoring relationships between adult mentors and children in the community setting. BBBS community mentoring relationships are associated with positive child outcomes including improved mental health and social well-being (DuBois, Portillo, Rhodes, Silverthorn, &Valentine, 2011; Sale, Bellamy, Springer, & Wang, 2008; De Wit et al, 2007). A key factor that may contribute to positive outcomes is mentor self-efficacy (MSE), defined as the mentor's level of confidence, knowledge and skill in establishing a positive relationship with a matched child (Parra, DuBois, Neville, Pugh-Lilly, & Povinelli, 2002). A few studies have found a positive association between MSE and mentoring relationship quality (MRQ) (Martin & Sifers, 2012; Askew, 2006; Karcher, Nakkula, & Harris, 2005; Parra, et al., 2002) which is characterized by global characteristics (e.g., trust, closeness) and engagement traits (e.g., listening, understanding)

(Rhodes, Spencer, Keller, Liang, & Noam, 2006; Rhodes, 2005; Rhodes, Reddy, Roffman, & Grossman, 2005). High MRQ, in turn, has been identified as a key predictor of positive developmental outcomes in children (Zand, et al., 2009; Rhodes, Reddy, Roffman, & Grossman, 2005; Langhout, Rhodes, & Osborne, 2004).

Although research has demonstrated that MSE and MRQ are positively associated, there is a scarcity of research dedicated to examining the measurement properties of instruments used to assess MSE. It is paramount that MSE instruments demonstrate acceptable reliability and validity in order for researchers to make inferences about relationships between MSE and other key mentoring constructs (Aneshensel, 2002). Futhermore, the development of a more comprehensive scale of MSE that includes goal setting, activity planning, and problem solving is necessary because of its relevance to mentors in community-based mentoring relationships. The purpose of this paper is to evaluate the measurement properties of a newly created scale, the *Mentor Self-efficacy Scale* (MSES), which is designed to capture mentors' levels of confidence in their knowledge and ability to provide support and guidance to children in BBBS community mentoring relationships (De Wit et al, 2006). With improved measurement of this construct, a better understanding of the relationship between MSE and other mentoring outcomes including MRQ will be obtained.

Review of Literature

Overall, research on MSE is slow to emerge. The challenging and highly individualized nature of mentoring relationships suggests that high levels of MSE should facilitate the development of high MRQ (Parra, et al., 2002). One study of 50 BBBS community mentoring relationships examined the association between MSE and MRQ (operationalized as mentoring relationship closeness, one facet of MRQ) and results demonstrated a positive association (β=0.26, p<0.05) (Parra et al., 2002). Similarly, Martin and Sifers (2012) found a positive association between mentor confidence, a characteristic of MSE, and mentoring relationship satisfaction (operationalized as having similar characteristics to MRQ including happiness) (β=0.26, p<0.05) among a sample of 81 mentors participating in a community-based mentoring program, Brother Sister Program (i.e., non-BBBS program). Karcher and colleagues (2005) also demonstrated a positive association between MSE and MRQ (β=0.41, p<0.05) among a sample of 63 highschool aged mentors participating in a non-BBBS program. Finally, Askew (2006) found a positive association between MSE and MRQ (r=0.50, p=0.02) as reported by 64 mentors participating in an academic mentoring program. Taken together, these results suggest that mentors who are self-efficacious cultivate higher quality mentoring relationships with their matched children.

An important prerequisite to engaging in future research examining the relationship between MSE and MRQ involves a rigorous examination of the measurement properties of measures used to capture MSE. Four measures of MSE are present in the mentoring literature (Martin & Sifers, 2012; Askew, 2006; Karcher, et al., 2005; Parra, et al., 2002), one of which is no longer available from the authors (i.e., Karcher et al.). The first measure developed by Martin and Sifers (2012) contains one item, "How comfortable do you feel about your abilities as a Big Brother/Sister". The second measure developed by Askew (2006) contains 18 items and examines MSE in the area of promoting student academic achievement and personal growth (e.g., personal awareness of learning style). This measure was adapted from the *Mentor Efficacy Scale* that captures mentoring teachers' beliefs in their self-efficacy to train novice teachers (Riggs, 2000). Askew (2006) demonstrated that this scale had acceptable internal consistency reliability ($\alpha = 0.83$). The final measure developed by Parra et al. (2002) contains 19 items derived from BBBS of America program materials and as such is geared towards MSE specifically within the context of BBBS programs. The scale examines mentors' confidence in their knowledge of BBBS

practices and ability to help children. Parra and colleagues (2002) demonstrated the scale had acceptable internal consistency reliability ($\alpha = 0.90$).

Despite some research demonstrating acceptable reliability of the above measures capturing MSE, they do suffer from important limitations that warrant further research and development. First, the measure developed by Martin and Sifers (2012) is limited to one item and therefore does not comprehensively capture mentors' confidence in their vast array of skills including goal setting, activity planning, and problem solving. Arguably, some of the items in the Askew (2006) and Parra et al. (2002) scales may also be considered too narrowly focused and redundant. In the Askew (2006) measure a substantial portion of items are solely relevant to academic learning or growth. As well, five of the 19 items in the Parra et al. (2002) measure are dedicated to whether mentors feel they have the ability to help mentored children 'feel good' about themselves. Due to these limitations, a more comprehensive scale of MSE is necessary to adequately capture the self-efficacy of mentors matched with children in the community setting with the inclusion of a broader range of unique mentoring attributes including goal setting, problem solving, and activity planning.

Theoretical Framework

The development of the MSES was based on Bandura's (1997, 1977) social cognitive theory which asserts that people's acquisition of knowledge is attained through the observation of others in social interactions and experiences. It focuses on the concept of self-efficacy which is defined as the belief in one's own capability to organize and carry out actions that are required to produce a given goal (Bandura, 1997). The development of this concept is based on the principle that effective functioning requires the acquisition of confidence, knowledge, and skills (Bandura, 1997). Bandura's theory has guided the understanding of teacher self-efficacy and is also relevant in this context because both teachers and mentors act as role models to children. For example, teachers with a high sense of efficacy operate on the belief that every student is teachable with the use of appropriate techniques (Bandura, 1997). These teachers also confidently approach problems encountered with challenging students and regard these problems as surmountable by ingenuity and additional effort (Bandura, 1997). In contrast, teachers with a low sense of efficacy believe that there is little that can be done to improve unmotivated students and the influence that they exert on these students' intellectual development is restricted (Bandura, 1997). Similarly, mentors with a high sense of self-efficacy may also believe that all children can be mentored with the use of appropriate skills (e.g., listening, understanding) while mentors with low self-efficacy may feel that their ability to mentor and influence unmotivated children is limited. Based on Bandura's theory, it is important that measures of self-efficacy incorporate mentor confidence in terms of goal setting, problem solving, and activity planning, as these aspects reflect the mentor's perceived ability to organize and carry out activities and address challenging situations. These factors, in turn, may affect mentor relationship quality.

Objectives

The overall aim of this study was to rigorously test the measurement properties of a newly created scale, MSES. Specifically, there were four study objectives regarding the MSES:

1) Explore dimensionality and confirm the factor structure;
2) Examine item and scale reliability;
3) Examine convergent validity by assessing the scale's association with global and engagement MRQ measured at the same time point; and,

4) Examine predictive validity by assessing the scale's ability to predict global and engagement MRQ six months later after adjusting for potential confounders.

Methodology

Study design and sample

This cohort study included data drawn from the 12- and 18-month follow-up assessments as part of a larger study of Canadian BBBS community mentoring relationships (De Wit et al, in submission). Participants were recruited from 20 BBBS agencies (out of a total of 128) across 8 provinces in Canada. The BBBS agencies invited to participate were chosen based on their long history of operation, large caseloads, well-defined policies and procedures, sufficient number of staff, and cultural diversity of clientele. Data were collected from mentors via self-administered questionnaires, from matched children via in-person interviews and from their parents via self-administered questionnaires. A total of 249 mentor, child, and parent triads contributed 12-month follow-up data and a reduced sample of 151 mentor, child, and parent triads contributed 18-month follow-up data. All participants were unique in the sample (i.e., mentors were not matched with multiple children and only one child per family was included). A reduced number of triads was present at the 18-month follow-up due to matches naturally terminating prior to this follow-up period and study attrition.

Measures

Due to the absence of 'gold standard' measures capturing MSE, MRQ, parent support of the mentoring relationship, and mentor training satisfaction, new measures were developed based on an in-depth review of the mentoring literature completed by an expert panel specializing in child and family health and mentoring relationships.

Mentor Self-efficacy Scale (MSES). This 11-item scale measured the mentor's level of confidence in his/her knowledge and ability to provide support to a child in a BBBS community mentoring relationship. Participants were asked to rate their confidence as a mentor to their matched child in a number of areas, including, for example: giving advice on how to deal with a problem that is important to the child; helping him/her achieve or set goals; and planning activities with him/her. This scale was scored using four response options: "not at all confident", "somewhat confident", "confident", and "very confident". Total scores range from zero to 33 with higher scores indicating greater levels of MSE. Data from the 12-month follow-up were used to examine the measurement properties of this scale.

Global Mentoring Relationship Quality Scale. This five-item scale measured the global traits of MRQ between the mentor and child as reported by mentors, children, and parents. Global MRQ traits refer to the relational characteristics that describe the 'bond' between the mentor and child in the BBBS mentoring relationship. Example items include, "Would you say that [the mentoring relationship] is…a) A trusting relationship? b) A warm and affectionate relationship? c) A close relationship? d) A happy relationship? e) A respectful relationship?" This scale was scored using three response options: "not very true", "sometimes true", and "very true". Total scores range from zero to 15 with higher scores indicating greater levels of global MRQ. Data from the 12-month follow-up were used in the convergent validity analyses and as baseline control variables in the predictive validity analyses. Data from the 18-month follow-up were used as an outcome in the predictive validity analyses. The measurement properties of this scale were rigorously tested and demonstrated acceptable reliability (mentor scale: $\alpha = 0.81$; child scale: $\alpha = 0.90$; and parent scale: $\alpha = 0.93$), internal validity, external validity among child demographic sub-groups, and weak-to-moderate reporter concordance (Ferro et al, in submission).

Quality of Mentoring Relationship Engagement Scale. This scale was designed to measure the engagement aspects of MRQ meaning the supportive characteristics of the mentoring relationship, as reported by both mentors and children. This measure was developed for both mentors and children. The mentor scale contains 12 items and the child scale contains 21 items. Example items include, "Please tell me what you think about [the mentor or child]: c) Asks to do things with me; h) Shows an interest in the things [we] do together; j) Asks for [my] opinion…". This scale was scored using three response options: "not very true", "sometimes true", and "very true". Total scores for the mentor scale range from zero to 36 and total scores for the child scale ranges from zero to 63 with higher scores indicating greater levels of engagement MRQ. Data from the 12-month follow-up were used in the convergent validity analyses and as a baseline control variable. Data from the 18-month follow-up were used as an outcome in the predictive validity analyses. The measurement properties were previously tested and established acceptable reliability (mentor scale: α = 0.85 and child scale: α = 0.88), internal validity, and external validity among child demographic sub-groups (Ferro et al, in submission).

Control variables. Based on guidance from the mentoring literature, parent support of the mentoring relationship (Karcher, et al., 2005; Keller, 2005), mentor training satisfaction (Askew, 2006; Keller, 2005; Parra, et al., 2002), mentoring relationship characteristics (Rhodes, et al., 2005), and participant characteristics (Parra, et al., 2002; Karcher, et al., 2005) were included as control variables in the convergent and predictive validity analyses (see below). Keller (2005) theorizes that parents play a key supportive role in the mentoring relationship and therefore increased parent support likely contributes to mentors feeling more confident in their abilities and enhances MRQ. Karcher and colleagues (2005) corroborate this claim by demonstating a positive association between parental involvement and MRQ. Keller (2005) further suggests that the mentoring agency also plays a key supportive role in the mentoring relationship by means of training and supervision. Research supports this theory demonstrating a positive association between mentor training satisfaction and MSE (Parra et al., 2002) as well as a positive association between mentor training satisfaction and MRQ (Askew, 2006). Mentoring relationship characteristics, such as frequency of contact between the mentor and child and duration of the match, are also potentially important covariates. Common sense dictates that mentors who feel confident in their roles are more likely to meet with their matched children on a frequent basis and remain in their mentoring relationships for longer durations compared to those who are less confident. Furthermore, duration was also included as a control variable because the present sample includes newly matched and more mature mentoring relationships. With respect to participant characteristics, age and gender are common demographic controls in mentoring research since they are theorized to be associated with various mentoring variables including MSE and MRQ (for example see Parra et al., 2002). Regarding child conduct, Karcher and colleagues (2005) demonstrated that children's conduct (operationalized as 'disposition' with a higher score indicating fewer conduct problems) is positively associated with both MSE and MRQ.

Parent Support of the Mentoring Relationship Scale. This 6-item scale measured level of parental support of the mentoring relationship provided by the primary legal guardian of the mentored child. Example items include, "Would you say that she/he: a) Suggests activities that me and my [matched child] might do together; c) Offers me advice or help to make the match relationship work better; and e) Ensures that there is enough time for me and my [matched child] to meet". The scale was scored using five response options: "strongly disagree", "disagree", "neither agree nor disagree", "agree", and "strongly agree". Using the present data, the internal consistency reliability of the scale was high (α = 0.80).

Mentor Training Satisfaction Scale. This 13-item scale measured the mentors' satisfaction with training provided by BBBS agencies. Example items include, "Please indicate your level of satisfaction with your [BBBS] training/orientation in the following areas: …a) clarity of rules and responsibilities as a [BBBS] volunteer; f) effectiveness and competency of trainers/orientation leaders; and, i) clarity of rules and responsibilities of the [BBBS] agency". This scale was scored using five response options: "not at all satisfied", "not very satisfied", "somewhat satisfied", "satisfied", and "very satisfied". Total scores range from zero to 52 with higher scores indicating a greater level of satisfaction with mentor training. With the present data, the internal consistency reliability was high ($\alpha = 0.92$).

Mentoring relationship characteristics. In the predictive validity analyses, frequency of contact (# hours/week mentor and child in contact) and duration (# months in mentoring relationship) were entered as control variables using 12-month follow-up data.

Participant characteristics. In the predictive validity analyses, demographic controls included mentors' age and gender, and children's age and conduct problems (e.g., temper, obedience) using 12-month follow-up data. Child conduct was measured as part of the *Strength and Difficulties Questionnaire* and has demonstrated satisfactory psychometric properties ($\alpha = 0.63$) (Goodman, 2001). Children's gender was not controlled for in the analyses due to it being highly correlated with mentor gender ($r = 0.92$; $p<0.01$).

Analysis

Statistical Package for the Social Sciences (SPSS 16, SPSS Inc., Chicago, IL) was used to conduct univariate analyses to describe the sample and mentoring relationship characteristics as well as conduct principal component analysis (PCA), correlation analyses, and regression analyses. M-Plus 6.1 (M-Plus Inc., Los Angeles, CA) was used for confirmatory factor analysis (CFA). All hypothesis tests were two-sided with $\alpha = 0.05$.

Objective 1: Explore dimensionality and confirm the factor structure
PCA was employed to examine scale dimensionality and reduce the number of items so that only those accounting for a substantial proportion of variance ($\geq10\%$) were retained (Hatcher, 1994). Four steps of PCA were implemented: (1) initial extraction of factors; (2) determination of number of retained factors; (3) rotation to a final solution (if necessary); and, (4) interpretation of rotated solution, if necessary (Hatcher, 1994).

CFA was implemented to confirm if the factor structure and respective loadings conform to what was found under PCA. Four standard steps of CFA model building were implemented: (1) identification (i.e., degrees of freedom>0), (2) estimation (e.g., standardized factor loadings), (3) testing (i.e., model fit), and (4) modification, if necessary (Kline, 2005). The CFA models were analyzed using maximum likelihood estimation with robust standard errors (MLR) under the COMPLEX function in M-Plus (Muthen & Muthen, 2010). The COMPLEX function was used to account for data being nested within BBS agencies. MLR produces estimates that are based on a corrected asymptotic covariance matrix that is not dependent on the assumptions of independence and normality (Muthen and Muthen, 2010).

Objective 2: Examine item and scale reliability
Based on the CFA results, the item reliabilities were assessed by examining the R^2 (i.e., squared standardized factor loadings), which denotes the percent of item variance that is accounted for by the

factor to which it is assigned (Brown, 2006). The scale's internal consistency reliability was examined using Cronbach's α with α ≥0.70 considered desirable (Hatcher, 1994).

Objective 3: Examine convergent validity

Convergent validity was first evaluated by assessing the unadjusted correlations between MSE and global MRQ (mentor, parent, and child scales), and MSE and engagement MRQ (mentor and child scales) using data from the 12-month follow-up. Convergent validity was initially demonstrated if the unadjusted correlations were statistically significant. Convergent validity was further evaluated by examining the partial correlations between MSE and global and engagement MRQ, respectively, after controlling for potentially important confounders of this relationship. Adequate convergent validity was demonstrated if the correlations remained statistically significant after adjusting for controls.

Objective 4: Examine predictive validity

Predictive validity was evaluated using logistic regression to examine if 12-month MSE predicted 18-month global MRQ. Due to heavy skewness, global MRQ was dichotomized as "low-to-moderate" (< 12) and "high" (12 – 15). Linear regression was used to examine whether MSE at 12-month s predicted engagement MRQ at 18-months. Predictive validity was initially demonstrated if the unadjusted regression models yielded MSE as a statistically significant predictor. Adequate predictive validity was demonstrated if the adjusted regression models demonstrated that MSE remained a significant predictor after adjusting for controls.

Results

Sample characteristics

The descriptive characteristics of participants and mentoring relationships and participants are shown in Tables 1 and 2, respectively. Briefly, mentors' mean age was 30 years with the majority being female (62%) and Caucasian (77%). Parents' mean age was 40 years with the vast majority being female (91%). Children had a mean age of 11 years, approximately half were female (51%), and less than half were Caucasian (41%). Of the mentoring relationships, the majority was between 7 and 12 months in duration (70%), in contact 2-3 hours per week (74%), and of the same mentor/child gender composition (95%).

Variable	Mentors	Parents	Children
Age, years (standard deviation)	30 (8)	40 (8)	11 (2)
Gender, %			
Male	37.8	8.8	49.0
Female	62.2	91.2	51.0
Ethnicity, %			
Caucasian	76.7		41.0
African Canadian	2.4		8.4
Aboriginal	1.2		11.6
Asian	7.2		7.6
Hispanic	2.0		8.4
Canadian	3.6		10.4
Other	6.8		12.4
Living Arrangements,%			
Two Parents			16.5
One Parent			63.9
One Parent and Partner			10.4

Other		9.2
Marital Status, %		
Married/Common- law	37.8	19.1
Divorced/Separated/Widowed	2.8	46.1
Never Married	59.4	34.8
Education, %		
Up to Secondary School Completed	10.0	32.1
Some College or University	21.7	31.7
Completed College or University	68.3	36.1
Annual Household Income, %		
< $10,000	6.3	13.3
$10,000 - $39,999	19.3	43.4
$40,000 - $59,999	26.1	20.5
≥$60,000	48.6	22.9

Table 1. Description of sample characteristics.[*†]

Note. [*]Including 12-month follow-up data for n = 249 mentor, parent, and child triads participating in continuous mentoring relationships; [†]Reported as a percentage, unless otherwise stated.

Variable	%
Duration, Months[*]	
≤ 3 months	9.2
3 to 6 months	20.5
7 to 12 months	70.3
Frequency of Contact, # Hours/Week[*]	
<2	10.0
2-3	73.5
4	10.4
≥ 5 hours	6.0
Mentoring Gender Composition[†]	
Same Gender	94.8
Mixed Gender (female mentor, male child)	5.2

Table 2. Description of mentoring relationships (n = 249).

Note. [*]As reported by mentors; [†]As reported by mentors and children.

Dimensionality and factor structure

When PCA was performed on the 11 items of the MSES, two factors emerged in the initial solution. The first factor (11 items; eigenvalue = 4.82) accounted for 43.78% of the variance. The second factor (3 items; eigenvalue = 0.98) accounted for 8.94% of the variance. Since the proportion of variance explained for the second factor was relatively low compared to the first factor and the eigenvalue was less than the recommended cutoff value of 1.0, a unidimensional solution was retained for subsequent analyses. Next, PCA was re-examined by extracting a one factor solution to evaluate which items had strong loadings (≥0.40). All items were found to have large loadings (0.55-0.78) and the inter-item correlation matrix suggested moderate associations ($r = 0.23-0.59$, $p<0.0001$) (Table 3). Therefore, all items were retained in subsequent analyses.

Items	A	B	C	D	E	F	G	H	I	J	K
A	0.49	0.22	0.13	0.12	0.24	0.12	0.16	0.17	0.10	0.17	0.12
B	0.47	0.43	0.24	0.14	0.29	0.17	0.27	0.15	0.23	0.19	0.20
C	0.27	0.53	0.50	0.19	0.24	0.19	0.30	0.23	0.20	0.17	0.21
D	0.25	0.33	0.42	0.43	0.16	0.17	0.17	0.15	0.15	0.12	0.16
E	0.41	0.53	0.40	0.30	0.70	0.15	0.33	0.14	0.25	0.21	0.17
F	0.24	0.35	0.36	0.36	0.24	0.54	0.20	0.18	0.15	0.17	0.22
G	0.31	0.56	0.59	0.36	0.54	0.38	0.52	0.19	0.21	0.23	0.22
H	0.34	0.34	0.48	0.33	0.24	0.36	0.38	0.48	0.15	0.21	0.12
I	0.23	0.52	0.44	0.36	0.46	0.32	0.45	0.34	0.43	0.19	0.21
J	0.36	0.43	0.36	0.27	0.38	0.36	0.47	0.46	0.44	0.44	0.19
K	0.26	0.44	0.43	0.37	0.30	0.43	0.44	0.26	0.47	0.42	0.46

Table 3. Inter-item correlation/covariance matrix (n = 249).

Note. Correlation matrix depicted below the diagonal and covariance matrix depicted in the shaded region. A, sharing personal experience; B, giving advice; C, help achieve goals; D, feel good about themselves; E, discuss issues in family; F, plan activities; G, provide guidance; H, teach skill; I, help get along; J, educate; K , convince importance of school; All parameters p<0.0001.

A confirmatory factor analysis (CFA) was run next on the 11 items and the factor loadings were found to be comparable to those found in the PCA (0.49-0.75). Model fit was satisfactory [χ^2 = 101.43(44), p<0.0001; CFI = 0.92 TLI = 0.90; RMSEA = 0.07, 90% CI (0.06, 0.09); SRMR = 0.05] and no modification indices were identified. As such, the CFA model was retained as the final model (Figure 1).

Reliability

Based on the CFA results, the item and scale reliabilities of the MSES were found to be moderate ranging from R^2 = 0.24-0.56 (Table 4). The internal consistency of the MSES was also found to be acceptable (α = 0.81).

Items	R^2
A	0.24
B	0.56
C	0.49
D	0.27
E	0.40
F	0.28
G	0.56
H	0.30
I	0.44
J	0.38
K	0.38

Table 4. Item reliabilities (n = 249).

Note. A, sharing personal experience; B, giving advice; C, help achieve goals; D, feel good about themselves; E, discuss issues in family; F, plan activities; G, provide guidance; H, teach skill; I, help get along; J, educate; K, convince importance of school; All parameters p<0.0001.

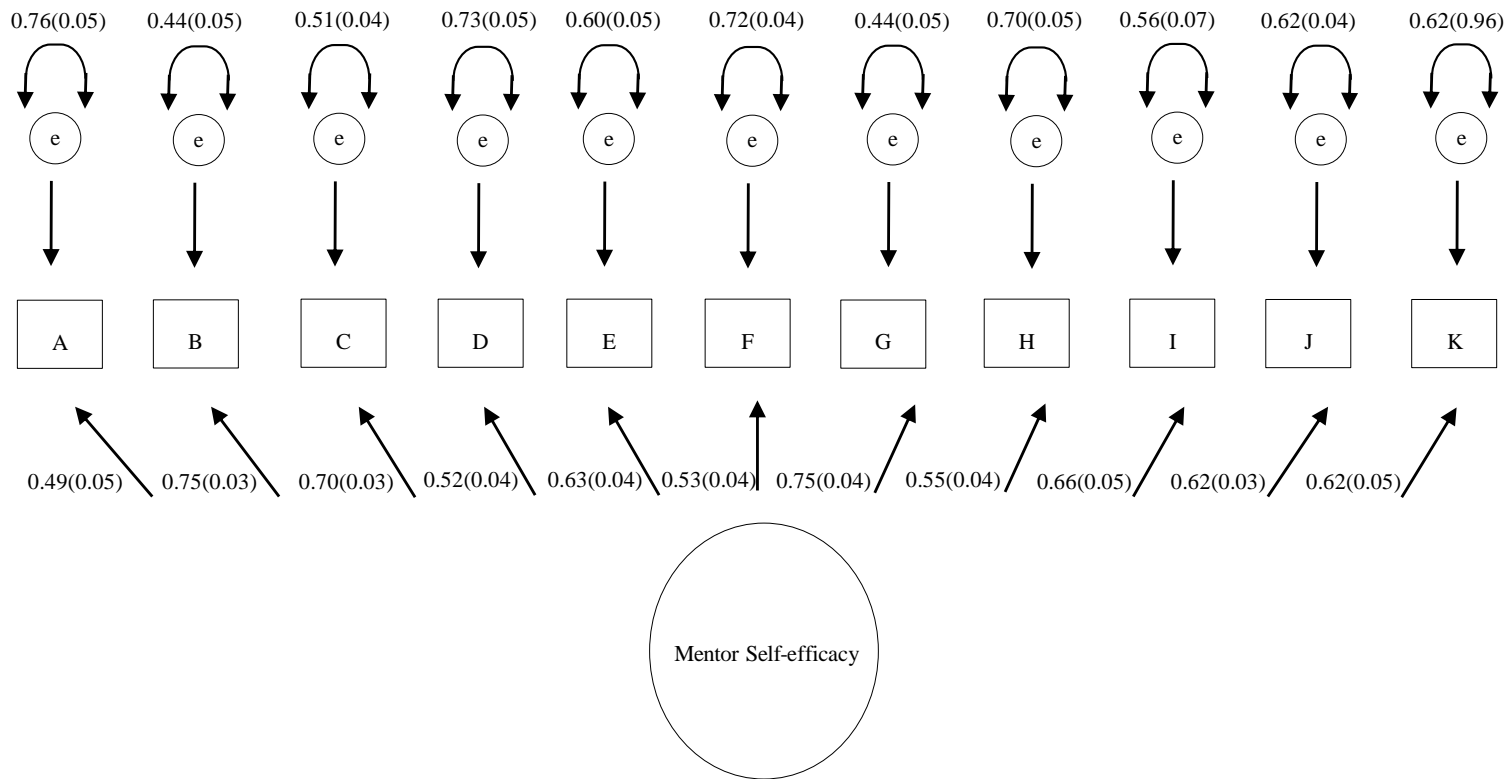**Figure 1. Confirmatory factor analysis model for the *Mentor Self-efficacy Scale* (n = 249).**

Note. Standardized estimate (standard error); A, sharing personal experience; B, giving advice; C, help achieve goals; D, feel good about themselves; E, discuss issues in family; F, plan activities; G, provide guidance; H, teach skill; I, help get along; J, educate; K, convince importance of school; e, error term; All parameters p<0.0001.

Convergent validity

The convergent validity of the MSES was evaluated by examining the correlations between MSE and global MRQ, and MSE and engagement MRQ, among a sample of 249 mentor, parent, and child triads contributing 12-month follow-up data. Among mentors, the unadjusted correlations between MSE and global MRQ ($r = 0.45$, $p<0.001$) and MSE and engagement MRQ ($r = 0.56$, $p<0.001$) suggested acceptable convergent validity. After adjusting for mentor gender and age, child age and conduct, parent support of the mentoring relationship, mentor training satisfaction, duration, and frequency of contact, the correlations remained statistically significant [MSE and global MRQ: $r = 0.28$, $p<0.001$; MSE and engagement MRQ: $r = 0.44$, $p<0.001$]. The unadjusted correlations between MSE and global MRQ as reported by children ($r = 0.09$, $p = 0.12$) and parents ($r = 0.12$, $p = 0.08$) did not suggest acceptable convergent validity. As well, the unadjusted correlation between MSE and engagement MRQ as reported by children ($r = 0.05$, $p = 0.55$) did not suggest acceptable convergent validity.

Predictive validity

The predictive validity of the MSES was evaluated by examining the relationship between MSE and global MRQ, and MSE and engagement MRQ, among a sample of 151 mentor, parent, and child triads contributing 12- and 18-month follow-up data. Table 5 summarizes the results of the unadjusted logistic regression models examining the ability of the MSES to predict global MRQ as reported by mentors, children and parents six months later. Overall, results demonstrated that MSE did not predict global MRQ among all informants six months later.

Table 6 illustrates the unadjusted and adjusted linear regression models examining the ability of the MSES to predict engagement MRQ as reported by children and mentors six months later. The unadjusted analysis demonstrated that MSE did not predict engagement MRQ as reported by children six months later. In contrast, MSE predicted engagement MRQ as reported by mentors six months later. However, after adjusting for controls, MSE was not found to predict engagement MRQ as reported by mentors. The only significant predictors of mentor perceived engagement MRQ were baseline engagement MRQ and frequency of contact.

Predictor	Mentors			Children			Parents		
	Odds Ratio	95% CI	P-value	Odds Ratio	95% CI	P-value	Odds Ratio	95% CI	P-value
MSE	1.06	0.98, 1.15	0.136	0.98	0.86, 1.13	0.879	1.05	0.94, 1.18	0.393

Table 5. Logistic regression analyses examining the ability of the *Mentor Self-efficacy Scale* to predict global mentoring relationship quality six months later among mentor, child, and parent reporters (n = 151).
Note. MSE, Mentor Self-efficacy; CI, confidence interval.

	Children			Mentors			Mentors		
	β	95% CI	P-value	β	95% CI	P-value	β	95% CI	P-value
MSE	0.12	-0.04, 0.28	0.131	0.28	0.11, 0.38	0.001	-0.03	-0.18, 0.10	0.708
Engagement MRQ (12-month)							0.60	0.43, 0.78	0.001
Parent Support							0.02	-0.17, 0.21	0.857
Mentor Training Satisfaction							0.00	-0.08, 0.08	0.988
Mentor Gender[*]							0.01	-1.33, 1.42	0.949
Mentor Age							0.03	-0.06, 0.10	0.682
Child Age							-0.02	-0.36, 0.27	0.763
Child Conduct							-0.07	-2.14, 0.78	0.360
Duration							-0.05	-1.39, 0.71	0.523
Frequency of Contact							0.17	0.12, 0.20	0.029

Table 6. Linear regression analyses examining the ability of the *Mentor Self-efficacy Scale* to predict engagement mentoring relationship quality six months later among child and mentor reporters (n = 151).
Note. MSE, Mentor Self-efficacy Scale; MRQ, mentoring relationship quality; CI, confidence interval; *Reference category coded as males.

Discussion

This study examined the measurement properties of a newly created scale, MSES, which is grounded in Bandura's social cognitive theory (1997, 1977) and captures mentors' confidence in their ability to provide support to children involved in BBBS community mentoring programs. The unidimensional solution provided empirical evidence that the scale is tapping into one underlying theoretical construct as demonstrated by the presence of strong factor loadings and moderate inter-item correlations. The MSES also demonstrated acceptable item and scale reliability providing support for its use in future research. The reliability of the MSES was found to be similar to but slightly lower than a previous measure of MSE (Parra, et al., 2002). However, it is important to note that the MSES contained substantially fewer items than the Parra et al. scale (i.e., 11 versus 19 items) which likely contributed to its lower reliability. In light of this difference, the acceptable reliability of the MSES highlights its good performance while measuring MSE more efficiently.

Our cross-sectional analyses indicated that MSE positively correlated with mentor reported global and engagement MRQ after controlling for potential confounders suggesting acceptable convergent validity of the MSES. These findings are consistent with a study conducted by Askew (2006) which found that MSE positively correlated with mentor reported relationship closeness, a characteristic of global MRQ. Inconsistent with previous research (Parra et al., 2002), however, was the finding that MSE was not correlated with child reported global MRQ. A possible explanation for this inconsistency is that the Parra and colleagues study included a relatively small sample (n=50) from one BBBS agency. Therefore, the results may not be generalizable to the greater BBBS population.

The positive association between MSE and mentor reported MRQ alongside an absence of evidence supporting an association between MSE and child and parent reported MRQ warrants discussion. Differences in results across informants may be partly explained by low-to-moderate concordance of the MRQ scales. In a previous study examining the measurement properties of the MRQ scales, reporter concordance was not found to be high (Ferro et al, in submission) suggesting that mentors, children, and parents may evaluate MRQ based on different criteria. In addition, child and parent perceptions of MRQ may simply not be influenced by how confident mentors feel in their mentoring abilities. It is possible that mentors' ratings of MRQ may be biased by their own levels of self-efficacy. In other words, mentors who are confident in their mentoring abilities may be naturally inclined to report positively on MRQ. Overall, it is difficult to determine whether the incongruent findings are due to poor convergent validity or other factors. A future cross-validation study examining the convergent validity of the MSES among a different sample of mentoring participants will help shed light on the present findings.

The predictive validity analyses revealed that 12-month MSE predicted 18-month mentor reported engagement MRQ. However, this association became non-significant when controlling for other variables. Additionally, 12-month MSE was not found to predict 18-month global and engagement MRQ among informants in the remaining predictive validity analyses. These findings are inconsistent with previous research (Karcher, et al., 2005). There are a few possible explanations for the differences in results. First, the present study used a generalizable sample of metropolitan-based BBBS community mentoring participants whereas Karcher and colleagues (2005) used a small sample of high school-aged mentors from a single school-based mentoring program. Therefore, results from the two studies are not directly comparable. Second, the inconsistency may be attributable to differences in the underlying theoretical constructs being measured. The Karcher et al. (2005) measure of MSE included items that may have captured mentor's perception of matched children's satisfaction with mentoring (e.g., *it is hard to*

tell whether my mentee is getting anything out of mentoring), rather than mentors' confidence in their ability as mentors.

There are several study strengths that contribute novel information on the measurement of MSE. First, the newly developed MSES includes a broader range of items compared to previous measures including mentors' confidence regarding goal setting, problem solving, and activity planning. Second, this is the only study to rigorously examine the measurement properties of a MSE scale including dimensionality, reliability, and internal validity. Third, the inclusion of a relatively large sample from numerous BBBS agencies across Canada contributed to results that can be generalized to metropolitan-based BBBS community mentoring participants.

There are also a few limitations to highlight. First, data were only collected from mentors in currently matched mentoring relationships. Therefore, results may not be generalizable to mentors in terminated relationships. The exclusion of terminated relationships may also have reduced variability and therefore the ability to detect potentially important relationships. Second, since 12-month follow-up data were primarily used, the measurement properties are unknown across additional follow-up periods (apart from the predictive validity analyses). The measurement properties may be different at subsequent follow-ups because the mentoring relationships would involve mentors with more experience (due to being in longer relationships) and thus may evaluate their abilities differently. Third, an underlying assumption of the predictive validity analyses is that there is a unidirectional pathway leading from MSE to MRQ. However, feedback loops may exist (e.g., MRQ may also predict MSE) necessitating future research further investigating the relationships examined herein.

Conclusions and Implications for Future Research and Practice

This study provided a comprehensive examination of the measurement properties of a newly created scale, MSES, informed by mentors, children, and parents participating in BBBS community mentoring programs across Canada. The results provided preliminary evidence demonstrating acceptable reliability and convergent validity of the MSES. Continued research further investigating the properties of the scale is warranted including the use of additional follow-up periods in order to more thoroughly examine its reliability and validity. In addition, a cross-validation study involving a different sample of BBBS mentoring participants including those in both current and terminated mentoring relationships will provide more conclusive evidence on its measurement properties. We believe the current evaluation should contribute to subsequent research utilizing the MSES in an effort to more comprehensively examine its measurement properties and better understand relationships between MSE and other key mentoring constructs including MRQ.

Assuming continued research demonstrates acceptable reliability and validity of the MSES, findings can assist BBBS agencies to develop a series of 'best practices' aimed to enhance MSE among mentors. For example, mentoring program administrators may be interested in monitoring MSE at match onset and throughout the course of the mentoring relationship. Regularly monitoring mentors' level of confidence may be helpful to identify when additional mentor support and training is most appropriate. Mentoring programs can then implement mentoring support and education initiatives (e.g., one-on-one support and training workshops) during these target periods to enhance MSE. Ultimately, providing adequate support and training to mentors may positively impact MSE which, in turn, may positively impact the quality of the mentoring relationship and optimize the mental health and social well-being of mentored children.

Author Note

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