

Social-Emotional Fluency (SEF):
Scale Development and Initial Validation

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TABLE OF CONTENTS

	Page
LIST OF TABLES.....	iii
Chapter	
I. Introduction.....	1
II. Study 1: SEF Scale Development.....	3
Method.....	3
Results.....	4
III. Study 2: Exploratory Factor Analysis and Convergent and Discriminant Validity.....	6
Method.....	6
Results.....	7
IV. Study 3: Test-Retest Reliability and Convergent and Discriminant Validity.....	17
Method.....	17
Results.....	18
V. Discussion.....	21
Appendix	
A. SEF Scale.....	24
REFERENCES.....	26

LIST OF TABLES

Table	Page
1. SEF Scale Mean Rating, Factor Loading, and Item-Total Scale Correlations	10
2. SEF Scale Mean Scores and Sex Differences.....	12
3. Associations Among the SEF Scale and Measures of Convergent and Discriminant Validity.....	14
4. Factor Analysis of the SEF Scale and EI Measure	15
5. Test-Retest Validity and Correlations with Convergent and Discriminant Validity Measures	20

CHAPTER I

INTRODUCTION

In daily life, it is clear that the ease with which people interact with others is subject to individual differences: Some people naturally handle social situations with ease, while others are more socially awkward. In order to account for some of these differences, we propose the construct of “Social-Emotional Fluency” (SEF). SEF is currently construed as a possible subcomponent of emotional intelligence and related to interpersonal sensitivity. SEF involves the coordination of affect-related gestures and vocalizations with an emphasis on the quality and dynamics of these signals.

Emotional Intelligence

Due to the social and emotional nature of the proposed construct, we expect there to be some associations among SEF and related constructs. In particular, SEF is theorized to have considerable conceptual overlap with some characterizations of both emotional intelligence and interpersonal sensitivity. Emotional intelligence (EI) is itself an umbrella concept that encompasses many terms, such as “people skills” (Goldenberg, Matheson, & Mantler, 2006), and is most consistently described as being comprised of perception and understanding of emotions and emotional signals in others (Mayer, Salovey, Caruso & Sitarenios, 2003). There is debate as to whether EI is best conceptualized as an ability that can be measured similarly to IQ or is instead better understood as a combination of several positive character traits (Mayer, Salovey, & Caruso, 2008). The original emotional intelligence model consists of four branches: a)

understanding emotions, emotional language and emotion-related signals, b) accurate perception of emotions in self and others, c) management of emotions for goal attainment, and d) use of emotions to facilitate thinking (Mayer & Salovey, 1997; Mayer, Salovey, & Caruso, 2008). The first two branches might be related to SEF in that perceptive ability and variety of emotionally expressive behaviors affect the quality of interactions; those who are higher in EI in these domains may also be higher in SEF.

Interpersonal Sensitivity

Interpersonal sensitivity (IS) is a second construct for which we expect some associations with SEF. IS most typically refers to “the ability to accurately assess other people’s abilities, states, and traits from nonverbal cues” (Montepare, 2004; Snodgrass, Hecht, & Ploutz-Snyder, 1998, Kenny, 2004). To date, the majority of research on IS has been primarily concerned with the accuracy of judgments concerning character attributes and emotional states of others (Kenny, 1994); these judgments presumably affect how those making these judgments react to others (Gore, 2009). The ability to make accurate inferences about others’ emotional states, characteristics, and overall awareness of social situations could be related to SEF in that these judgments could be helpful in informing responses in a wide range of emotional climates with a variety of individuals.

SEF as a separate construct

The skills included in the constructs of both EI and IS are critical to our conceptualization of SEF. However, measures of EI and IS, including both self-report measures and tests of ability, rely heavily on both the accuracy of judgments and ability to correctly name emotions

(Ambady, LaPlante, & Johnson, 2001; Hall, DiMatteo, Rogers, & Archer, 1979; Mayer, Salovey, Caruso, & Sitarenios, 2003). Although SEF is conceptualized to partially overlap with the constructs of EI and IS, our current conceptualization of SEF is less focused on accuracy and is instead more concerned with the quality and temporal dynamics of nonverbal behaviors during social interactions. Essentially, SEF is thought to include a social-emotional “toolkit” of affect-related behaviors. Relative to those lower in SEF, individuals high in SEF are thought to have more flexibility. This flexibility affords the ability to adapt to a variety of social interactions, make ongoing adjustments throughout the duration of an interaction, and excel in ambiguous or awkward social situations.

The studies reported here focus on analyses of self-report data in order to develop a questionnaire for quantifying SEF. This questionnaire will measure individuals’ self-assessments of SEF skills. In these studies, we drew from classic construct-validation recommendations of Cronbach and Meehl (1955) to investigate a) the internal structure of the scale; b) establish test-retest reliability; and c) use other relevant self-report measures to evaluate convergent and discriminant validity of the SEF construct.

CHAPTER II

STUDY 1: SEF SCALE DEVELOPMENT

Method

Participants

Two separate groups of psychology undergraduate students participated in exchange for extra credit. The first group ($n = 55$) ranged in age from 18-22 ($M = 19.62$, $SD = .99$, data on sex not collected). One participant was excluded because their questionnaire was incomplete. Participants in the second group ($n = 57$) were between the ages of 18-26 ($M = 19.82$, $SD = 1.50$); 30% male ($n = 17$) and 70% female ($n = 39$), race and ethnicity were not measured. Signed consent forms were returned alongside the completed questionnaires.

Procedure

Participants in the first group were asked to complete an initial pool of 76 items. These items were written based on our conceptualization concerning the characteristics and features of the SEF construct. The pool of items covered all aspects of SEF, including perceived quality and timing of emotion-related signals (e.g., facial expressions, hand gestures, head movements, and vocal intonations), ease of interaction in a variety of situations and emotional climates, and how others may perceive one's social skills. Items were judged on a 7-point Likert scale with anchors of *Never*, *Neutral*, and *Always*. The instructions were "Please answer each of the following

items by circling the response that best describes what's typical of you." These data were in preliminary analyses that led to a second, reduced version of the SEF Scale (32 items).

Participants in the second group completed a shortened (32 item) version of the SEF Scale. Because response distributions for many of the questions on the first version of the SEF Scale were negatively skewed, responses for the second version of the SEF Scale were on a 5-point Likert scale in order to increase normality. Participants also completed the 13-item Marlowe-Crowne Social Desirability Scale (MCSDS; Reynolds, 1982). The MCSDS was included in order to assess the extent to which SEF Scale responses were associated with social desirability.

Results

First iteration of the SEF Scale

Data analyses (i.e., Cronbach's alpha, means, item-total correlations and inter-item correlations) were used to statistically determine which items should be removed from the SEF Scale according to the recommendations made by Clark and Watson (1995).

Due at least in part to the large number of items, this first version of the scale was overdetermined as indexed by its very high internal consistency (76 items; $\alpha = .98$). Ten items were eliminated because they had high means (> 5.5) and therefore low response variability. However, one item with a mean over 5.5 was retained for conceptual reasons. Of the 10 eliminated items, 3 also had low item-total correlations (i.e., $< .30$). Following the removal of these 10 items, Cronbach's alpha on this shorter version (66 items) was .98. Based on inter-item and item-total correlations that were either very low ($< .15$) or very high ($> .70$) as well as on

conceptual content, 26 additional items were eliminated. The remaining 40 items had a Cronbach's alpha of .97. In order to shorten the list further, some items were re-worded and others were eliminated. One additional item regarding laughter was also added. The second version of the SEF Scale therefore consisted of 32 items.

Second iteration of the SEF Scale

Cronbach's alpha for this version of the SEF Scale (32 items) was .91. Based on inter-item and item-total correlations as well as item content, 6 items were removed, leaving 26 remaining items ($\alpha = .90$). Total SEF Scale scores were unrelated to age ($r(54) = .11, p > .20$) and gender ($t(54) = -.86, p > .20$).

Importantly, total scores on the SEF Scale and total MCSDS scores had a Pearson correlation of .17 ($p > .20$), indicating that SEF responses are largely independent of social desirability.

Following analyses in Study 2 and consultation with colleagues, one additional item was removed from the SEF Scale due to its ambiguous nature and poor fit with the factor structure of the scale. Though the SEF Scale that was used in Studies 2 and 3 included this item, responses to this item were not used in any statistical analyses. The final version of the SEF Scale (see Appendix) therefore consists of 25 items.

CHAPTER III

STUDY 2: EXPLORATORY FACTOR ANALYSIS AND CONVERGENT AND DISCRIMINANT VALIDITY

Method

Participants

Participants were recruited through Amazon's online "Mechanical Turk" marketplace, in which workers can complete tasks in exchange for small amounts of monetary compensation. For this stage of SEF Scale development, participants were limited to United States residents to avoid introduction of culture- or language-related confounds. Participants' (total $n = 1000$) data were therefore excluded if they resided outside of the United States ($n = 121$), were non-native English speakers ($n = 44$), returned invalid responses (i.e., the same choice was selected for every question) or left the majority of the questionnaires incomplete ($n = 62$). The data from the remaining participants ($n = 885$) were used for exploratory factor analysis. All participants were compensated with \$0.25 for completion of the surveys and provided an electronic signature to consent to participation in the study. Participants were 37.9% male ($n = 335$), 61.5% were female ($n = 544$), and 0.6% identified as other or preferred not to answer ($n = 6$). Participants ranged in age from 18-76 years ($M = 33.99$, $SD = 12.13$). 13.1% ($n = 116$) had graduate degrees, 41.7% ($n = 369$) were college graduates, 33.2% ($n = 294$) had some college, 11.1% ($n = 98$) completed 11-12 years of school, and 0.8% ($n = 8$) completed 10 or fewer years of school. 77.9% ($n = 689$) of participants identified as white, 9.5% ($n = 84$) were black/African-American, 6.2%

($n = 55$) were Asian, 3.1% ($n = 27$) were Hispanic or Latino, and 3.4% ($n = 30$) identified as other or preferred not to answer.

Procedure

A link to a secure online version of self-report measures that participants were asked to complete was made available on Amazon's Mechanical Turk. Participants completed the SEF Scale and measures of convergent and discriminant validity. The MCSDS (Reynolds, 1982), the Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998), the Interpersonal Sensitivity Measure (IPSM; Boyce & Parker, 1989), and the Self-Monitoring Scale (SMS; Snyder, 1974) were hypothesized to be measures of discriminant validity and therefore be unrelated to or negatively correlated with the SEF Scale. The Emotional Intelligence Scale (EI; Schutte et al., 1998), on the other hand, was hypothesized to be a measure of convergent validity and positively correlate with the SEF Scale.

Results

Exploratory Factor Analysis

Internal structure of the final version of the SEF Scale was examined using exploratory factor analysis (EFA) to statistically discover underlying latent factors. Rather than principal component analysis, true EFA was used in order to identify factors based solely on common variance rather than linear combinations variables to find optimal item groupings for subscales. EFA is the ideal approach in this situation in order to identify underlying structures and latent factors (Fabrigar, Wegener, MacCallum, & Strahan, 1999). The technique of principal-axis

factoring was used to identify latent factors in the data using oblique (Promax) rotation to allow for the factors to be intercorrelated. To determine the number of statistically meaningful factors from the analysis, the following metrics were considered: the interpretability of each solution, the factors with eigenvalues greater than 1, and factor loadings greater than or equal to .30. Additionally, because the criterion of using eigenvalues greater than 1 can yield spurious factors (Velicer & Jackson, 1990), a parallel analysis (Horn, 1965) was conducted to determine which factors are suitable to retain.

The principal-axis factor analysis revealed 4 factors with eigenvalues greater than 1.00. The eigenvalue of the first factor (9.35) clearly met that goal, though the remaining factors had much lower eigenvalues (1.72, 1.33, and 1.13). The parallel analyses, both with random data and with permutations on the raw data, indicated the possibility of 9 factors, two of which had eigenvalues greater than 1 (8.81 and 1.15). However, it is worth noting that parallel analyses of this kind tend to include more factors than are statistically warranted and many of the resultant factors should be disregarded despite their statistical significance (Buja & Eyuboglu, 1992). All items were highly correlated (i.e., $>.40$) with the SEF Scale total (see Table 1). We took all of the statistical information into account, and combined with our theoretical conceptualization of the scale and arrived at a solution in which the SEF Scale consists of two factors: a) Factor I, which we have titled *Adaptability* (eigenvalue = 9.35, 37.38% of variance explained), consists of 16 items that are largely characterized by the ability to easily conform to a variety of social and emotional interpersonal situations (e.g., “I know just the right things to say and do when someone I know is upset”), and b) Factor II, titled *Expressivity* (eigenvalue = 1.72, 6.87% of variance explained), consists of 9 items (e.g., “I’m animated when I speak”) that each reflect ability to express emotion to others. The two factors were also correlated with each other ($r(883)$

= .67, $p < .001$). Cronbach's alpha for the SEF Scale total score was .92, .91 for the Adaptability subscale, and .82 for the Expressivity subscale. Differences between Adaptability and Expressivity in correlations with measures of convergent and discriminant measures of validity would further support the presence of these two factors.

There were significant gender differences for total SEF Scale scores ($t(877) = -2.83, p < .01$) as well as the Expressivity subscale ($t(877) = -5.62, p < .001$), with females yielding somewhat higher self-report ratings than males (female SEF total $M = 61.98, SD = 15.71$; female Expressivity $M = 24.50, SD = 5.66$; (male SEF total $M = 58.96, SD = 14.84$; male Expressivity $M = 22.29, SD = 5.65$). The Adaptability subscale, however, showed no gender differences ($t(877) = -1.06, p > .05$). Though these gender effects were significant, the associated effect sizes were small to medium (see Table 2). Moreover, these gender differences were not unexpected, as measures of many social and affective constructs to show higher scores for females than for males (Baron-Cohen & Wheelwright, 2004; Friedman, Prince, Riggio, & DiMatteo, 1980; Schutte et al., 1998).

Table 1. SEF Scale mean rating (SD), factor loading, and item-total scale correlation for each scale item (item numbers are given between parentheses).

Factor	SEF Scale items	Mean (SD) rating (0 – 4)	Factor loading	Item, total scale correlation
<i>Factor I</i>	I'm good at making eye contact (1)	2.63 (1.13)	.56	.55
	I can talk easily with people of any level (kids, peers, professors, etc.) (2)	2.65 (1.07)	.67	.65
	In social interactions, my facial expressions are perfectly timed (4)	2.24 (.98)	.59	.62
	I'm good at confronting people about sensitive situations without making them feel awkward or disrespected (5)	2.21 (1.14)	.79	.64
	I can express annoyance without putting people off (6)	2.17 (1.02)	.74	.53
	I use just the right amount and kind of touch in my social interactions (7)	2.36 (1.02)	.67	.66
	In conversations, my hand gestures are helpful, not distracting (8)	2.56 (.92)	.31	.50
	I can easily draw on my various social skills as situations warrant (9)	2.47 (1.03)	.57	.70
	At social events like parties, people often introduce themselves to me (12)	2.03 (1.08)	.63	.64
	I know just the right things to say and do when someone I know is upset (13)	2.17 (1.07)	.53	.61
	I can make awkward social interactions feel more comfortable (15)	2.19 (1.10)	.62	.71
	I produce the right sorts of smiles at just the right times (16)	2.37 (1.00)	.41	.68
	If people observed me in a group, they would say I'm the most socially gifted (17)	1.52 (1.16)	.73	.68
	I'm a natural at knowing how to coordinate my emotional responses to others' emotions (18)	2.22 (1.03)	.47	.71
	I have a relaxed, open body posture when I talk with people (19)	2.34 (1.08)	.60	.66
	I know how to calm a heated conversation (24)	2.39 (1.05)	.43	.64
<i>Factor II</i>	I use people's body language to help me know how to respond to them (3)	2.91 (.88)	.47	.53
	I'm animated when I speak (10)	2.37 (1.12)	.52	.44

I'm good at reading facial expressions (11)	2.91 (.90)	.40	.50
I use the qualities of my voice to influence others (14)	2.27 (1.04)	.56	.65
Others would say I have an expressive face (20)	2.49 (1.10)	.70	.59
People are swayed or influenced by my emotional signals (21)	2.10 (.99)	.51	.65
I use my voice to convey my emotions (22)	2.56 (1.00)	.77	.58
I nod my head the right amount to let others know that I'm listening (23)	2.89 (.84)	.69	.45
I'm good at using laughter to make other people feel good (25)	2.82 (1.02)	.46	.61

Table 2. SEF Scale mean scores (SD) and sex differences.

	Total Sample (<i>N</i> = 879)	Males (<i>n</i> = 335)	Females (<i>n</i> = 544)	<i>t</i> (877)	<i>d</i>
SEF Scale total score	60.79 (15.42)	58.96 (14.84)	61.98 (15.71)	-2.83**	.20
Adaptability	37.14 (10.97)	36.66 (10.40)	37.48 (11.35)	-1.06	.08
Expressivity	23.65 (5.75)	22.29 (5.65)	24.50 (5.66)	-5.62***	.39

Note. ***p* < .01 ****p* < .001.

Convergent and Discriminant Validity

To evaluate convergent and discriminant validity, correlations among the SEF Scale and self-report measures of other constructs were calculated (see Table 3). Social desirability (MCSDS) had a small correlation with total SEF ($r(883) = .19, p < .01$), a relationship accounted for by the Adaptability factor ($r(883) = .28, p < .01$). SEF was also correlated with self-monitoring (SMS; $r(883) = .28, p < .01$). SEF had a strong negative correlation with social anxiety (SIAS; $r(883) = -.59, p < .01$) and interpersonal sensitivity (IPSM; $r(883) = -.23, p < .01$). These correlations were expected because both of the SIAS and IPSM measures were created to evaluate distress due to hypersensitivity to negative aspects of social interactions.

Also as expected, SEF was strongly correlated with the emotional intelligence measure (EI; $r(883) = .62, p < .01$). Because of the strong correlation with EI, an exploratory factor analysis was conducted on the items from both the SEF Scale and the EI measure. Items from both scales were comparable because they were both scored on a 5-point Likert scale. Based on the scree plot, five factors were extracted (see Table 4) using principal axis factoring with Promax rotation. With few exceptions, the items from the two scales loaded on separate factors, suggesting the SEF Scale and EI measure items are reflecting different latent factors and therefore that SEF and EI are separate constructs. However, due to the high correlation between the two scales, it is possible that there could be a common higher-level factor upstream of the factors in this analysis.

Table 3. Associations among the SEF Scale and measures of convergent and discriminant validity.

Measure	SEF Scale total	Adaptability Factor	Expressivity Factor	<i>M</i>	<i>SD</i>
MCSDS	.19**	.28**	-.01	6.13	3.04
SMS	.28**	.23**	.31**	11.70	4.22
IPSM	-.23**	-.31**	-.03	53.74	16.69
Interpersonal Awareness	-.34**	-.43**	-.10**	10.90	4.96
Need for Approval	.30**	.23**	.37**	16.43	3.77
Separation Anxiety	-.34**	-.41**	-.12**	10.11	5.10
Timidity	-.06	-.08*	-.01	11.36	4.46
Fragile Inner Self	-.35**	-.39**	.21**	4.93	3.51
EI	.62**	.57**	.58**	87.84	16.69
SIAS	-.59**	-.65**	-.35**	33.54	15.89
<i>M</i>	60.79	37.14	23.65		
<i>SD</i>	15.42	10.97	5.75		

Note. MCSDS = Marlowe-Crowne Social Desirability Scale; SMS = Self-Monitoring Scale; IPSM = Interpersonal Sensitivity Measure (including subscales); EI = Emotional Intelligence self-report measure; SIAS = Social Interaction Anxiety Scale. The SMS and EI measures were expected to be convergent measures, and the MCSDS, IPSM and SIAS were expected to be discriminant measures. $N = 885$ ** $p < .01$, * $p < .05$.

Table 4. Factor analysis of the SEF Scale and EI measure.

Factor	Item (Scale number)	Factor Loading
Factor 1 (SEF)	I'm good at making eye contact (SEF 1)	.50
	I can talk easily with people of any level (kids, peers, professors, etc.) (SEF 2)	.59
	In social interactions, my facial expressions are perfectly timed (SEF 4)	.54
	I'm good at confronting people about sensitive situations without making them feel awkward or disrespected (SEF 5)	.62
	I can express annoyance without putting people off (SEF 6)	.57
	I use just the right amount and kind of touch in my social interactions (SEF 7)	.57
	In conversations, my hand gestures are helpful, not distracting (SEF 8)	.33
	I can easily draw on my various social skills as situations warrant (SEF 9)	.63
	At social events like parties, people often introduce themselves to me (SEF 12)	.58
	I know just the right things to say and do when someone I know is upset (SEF 13)	.51
	I use the qualities of my voice to influence others (SEF 14)	.39
	I can make awkward social interactions feel more comfortable (SEF 15)	.63
	I produce the right sorts of smiles at just the right times (SEF 16)	.53
	If people observed me in a group, they would say I'm the most socially gifted (SEF 17)	.74
	I'm a natural at knowing how to coordinate my emotional responses to others' emotions (SEF 18)	.63
	I have a relaxed, open body posture when I talk with people (SEF 19)	.64
	I know how to calm a heated conversation (SEF 24)	.46
<i>I present myself in a way that makes a good impression on others (EI 16)</i>	.30	
Factor 2 (EI)	I expect that I will do well on most things I try (EI 3)	.39
	When my mood changes, I see new possibilities (EI 7)	.39
	Emotions are one of the things that make my life worth living (EI 8)	.64
	I am aware of my emotions as I experience them (EI 9)	.43
	I expect good things to happen (EI 10)	.65
	I like to share my emotions with others (EI 11)	.57
	When I experience a positive emotion, I know how to make it last (EI 12)	.77
	I arrange events others enjoy (EI 13)	.47
	I seek out activities that make me happy (EI 14)	.47
	I know why my emotions change (EI 19)	.37
	I have control over my emotions (EI 21)	.39
	I easily recognize my emotions as I experience them (EI 22)	.44
	I motivate myself by imagining a good outcome to tasks I take on (EI 23)	.69
When another person tells me about an important event in his or her life, I almost feel as though I have experienced this event myself (EI 26)	.37	
When I feel a change in my emotions, I tend to come up with new ideas (EI 27)	.53	

	I use good moods to help myself keep trying in face of obstacles (EI 31)	.58
Factor 3 (EI)	<i>I use people's body language to help me know how to respond to them (SEF 3)</i>	.39
	<i>I'm good at reading facial expressions (SEF 11)</i>	.50
	I am aware of the non-verbal messages I send to others (EI 15)	.45
	By looking at their facial expressions, I recognize the emotions people are experiencing (EI 18)	.70
	I am aware of the non-verbal messages other people send (EI 25)	.70
	I know what other people are feeling just by looking at them (EI 29)	.76
	I can tell how people are feeling by listening to the tone of their voice (EI 32)	.56
Factor 4 (EI)	<i>I nod my head the right amount to let others know that I'm listening (SEF 23)</i>	.33
	I know when to speak about my personal problems to others (EI 1)	.23
	When I am faced with obstacles, I remember times I faced similar obstacles and overcame them (EI 2)	.43
	Other people find it easy to confide in me (EI 4)	.40
	I find it hard to understand the non-verbal messages of other people (EI 5)	-.39
	Some of the major events of my life have led me to re-evaluate what is important and not important (EI 6)	.45
	When I am in a positive mood, solving problems is easy for me (EI 17)	.57
	When I am in a positive mood, I am able to come up with new ideas (EI 20)	.47
	I compliment others when they have done something well (EI 24)	.34
	When I am faced with a challenge, I give up because I believe I will fail (EI 28)	-.46
	I help other people feel better when they are down (EI 30)	.29
	It is difficult for me to understand why people feel the way they do (EI 33)	-.33
Factor 5 (SEF)	I'm animated when I speak (SEF 10)	.47
	Others would say I have an expressive face (SEF 20)	.54
	People are swayed or influenced by my emotional signals (SEF 21)	.50
	I use my voice to convey my emotions (SEF 22)	.44
	<u>I'm good at using laughter to make other people feel good (SEF 25)</u>	<u>.28</u>

Note. Items listed in italics are from the scale that is non-dominant for that factor. Numbers in parentheses indicate the item number on each scale.

CHAPTER IV

STUDY 3: TEST-RETEST RELIABILITY ANALYSIS AND CONVERGENT AND DISCRIMINANT VALIDITY

Method

Participants

Undergraduate students ($n = 82$) participated for extra credit. Participants ranged in age from 18-29; 32.9% male ($n = 27$) and 67.1% female ($n = 55$) and were 52.4% white, 25.6% Asian/Pacific Islander, 11.0% Hispanic/Latino, 2.4% African American, and 8.5% other.

Procedure

Participants completed the final version of the SEF Scale on two separate occasions, approximately 4 weeks apart. There was a 70.7% retention rate of participants who completed all questionnaires on both occasions. Across the two collections of questionnaires, participants also completed several measures of convergent validity: the Basic Empathy Scale (BES-A; Carré, Stefaniak, D'Ambrosio, Bensalah, & Besche-Richard, 2013), Emotional Intelligence Scale (EI), Affective Communication Test (ACT; Friedman, Prince, Riggio, & DiMatteo, 1980), personality (NEO-FFI-3; McCrere & Costa, 2010), Berkeley Expressivity Questionnaire (BEQ; Gross & John, 1995), Empathy Quotient (EQ; Baron-Cohen & Wheelwright, 2004), and the Self Monitoring Scale (SMS). Discriminant validity measures were also completed: the Emotional Intensity Scale (EIS; Bachorowski & Braaten, 1994), Interpersonal Sensitivity Measure (IPSM),

Social Desirability (MCSDS), social anxiety (SIAS), Subjective Happiness Scale (SHS), Satisfaction with Life Scale (SLS), and the Interpersonal Reactivity Index (IRI, empathy and perspective-taking subscales only; Davis, 1980).

Results

The SEF Scale exhibited good test-retest validity, with a correlation of $r(80) = .82, p < .001$. As expected, the SEF Scale had positive correlations with many of the measures we hypothesized would show convergent validity (see Table 5). Most notably, the SEF Scale scores were strongly correlated with EI (total SEF $r(80) = .60, p < .001$; Adaptability $r(80) = .56, p < .001$; Expressivity $r(80) = .47, p < .001$) and extraversion (total SEF $r(80) = .60, p < .001$; Adaptability $r(80) = .55, p < .001$; Expressivity $r(80) = .49, p < .001$). The SEF Scale also had correlations of moderate strength with the EQ (a measure of empathy; total SEF $r(80) = .43, p < .001$; Adaptability $r(80) = .40, p < .001$; Expressivity $r(80) = .33, p < .001$) and the SHS (subjective happiness; total SEF $r(80) = .42, p < .001$; Adaptability $r(80) = .41, p < .001$; Expressivity $r(80) = .33, p < .001$).

Interestingly, the SEF Scale had a strong negative correlation with the SIAS (social anxiety; $r(80) = -.56, p < .001$). This correlation was driven to a larger degree by the Adaptability factor ($r(80) = -.59, p < .001$) than the Expressivity factor ($r(80) = -.39, p < .001$).

Even though the two factors of the SEF Scale, Adaptability and Expressivity, are highly correlated ($r(80) = .57, p < .001$), there are some instances in which convergent or discriminant measures support the presence of separate factors (see Table 5). For example, the SMS has a stronger negative correlation with the Expressivity factor (self monitoring; $r(80) = -.40, p < .001$)

than the Adaptability factor ($r(80) = -.24, p < .01$). Neuroticism was not significantly correlated with either the Expressivity factor or the SEF Scale total, though it was correlated with Adaptability ($r(80) = -.31, p < .001$). Similarly, the personality trait of openness is correlated only with the Expressivity factor ($r(80) = .30, p < .001$) and not related to the Adaptability factor or the SEF Scale total score.

Table 5. Test-retest validity and correlations with convergent and discriminant validity measures.

Measure	SEF Scale total (test)	Adaptability Factor	Expressivity Factor	SEF Scale total (retest)
SEF Scale total (test)	--	.94**	.81**	.82**
Adaptability factor	.94**	--	.57**	.79**
Expressivity factor	.81**	.57**	--	.60**
SEF Scale total (retest)	.82**	.79**	.60**	--
Interpersonal sensitivity	-.13	-.19	.00	-.16
Social anxiety measure	-.56**	-.59**	-.39**	-.67**
Self monitoring scale	-.33**	-.24*	-.40**	-.30*
Satisfaction with life scale	.24*	.26*	.15	.29*
Affective communication test	.62**	.54**	.61**	.65**
Empathy questionnaire	.43**	.40**	.33**	.41**
Emotional intensity scale	-.04	-.08	.02	-.09
Basic empathy scale	.08	.04	.15	.23
Emotional intelligence	.60**	.56**	.47**	.78**
Interpersonal reactivity index- empathy	.03	.03	.03	.19
Interpersonal reactivity index- perspective taking	.10	.07	.09	.17
Berkeley expressivity questionnaire	.14	.00	.34*	.16
Social desirability scale	-.15	-.13	-.14	-.16
Neuroticism	-.25	-.31*	-.07	-.30*
Extraversion	.60**	.55**	.49**	.61**
Openness	.16	.04	.30*	.16
Agreeableness	-.10	-.07	-.17	.00
Conscientiousness	.02	.09	-.08	.05
Subjective happiness scale	.42**	.41**	.33*	.55**

CHAPTER V

DISCUSSION

The results from the studies described here are the beginning of the process of construct validation of SEF and, more specifically, the development of the SEF Scale self-report measure. Through three iterations and four studies, the SEF Scale has been refined to a 25-item scale with high internal consistency. Factor analysis revealed that the SEF Scale consists of two factors, adaptability and expressivity. This two-factor solution is further supported by correlations with measures of other constructs that differ greatly between the two factors.

The SEF Scale was also shown to have convergent and discriminant validity as expected. Though the SEF Scale is strongly correlated with EI, this correlation is reasonable in that SEF is thought to build upon the construct of EI, particularly the EI branches of perceiving and expressing emotions (Salovey & Mayer, 1990). An exploratory factor analysis of the SEF and EI measures showed that, for the most part, items from the two scales loaded on different factors. This suggests that, though the constructs are related, they are also separate; SEF is not merely a subcomponent of EI. Also as expected, social anxiety was negatively correlated with SEF scores, though more strongly correlated specifically with the Adaptability factor.

Future directions

Continuing with the process of construct validation as outlined by Cronbach and Meehl (1955), further studies should include measuring SEF in different groups, particularly in clinical populations in which social behaviors may be affected (e.g., social anxiety, depression, and

autism spectrum disorders). Because of the high negative correlation between SEF and social anxiety, particular patterns of SEF behaviors could be expressed or notably absent in anxious individuals. For example, the Adaptability factor had a stronger negative correlation with the SIAS than the Expressivity factor. This indicates that people with social anxiety may be less flexible in the way they are able to interact with others. Further investigation in a population with social anxiety could further elucidate the contribution SEF may make to the development or presentation of social anxiety.

Further studies will investigate the relationship between self-report and behavioral measures of SEF through the development and use of behavioral coding schemes for video and audio data. Ecological validity of the SEF construct will also be partially addressed by behavioral coding among peer dyads, though further studies of SEF in real-world situations will also be necessary.

APPENDIX

SEF Scale

Please answer each of the following items by circling the response that best describes what's typical of you

	Never		Neutral		Always
1. I'm good at making eye contact.	1	2	3	4	5
2. I can talk easily with people of any level (kids, peers, professors, etc.).	1	2	3	4	5
3. I use people's body language to help me know how to respond to them.	1	2	3	4	5
4. In social interactions, my facial expressions are perfectly timed.	1	2	3	4	5
5. I'm good at confronting people about sensitive situations without making them feel awkward or disrespected.	1	2	3	4	5
6. I can express annoyance without putting people off.	1	2	3	4	5
7. I use just the right amount and kind of touch in my social interactions.	1	2	3	4	5
8. In conversations, my hand gestures are helpful, not distracting.	1	2	3	4	5
9. I can easily draw on my various social skills as situations warrant.	1	2	3	4	5
10. I'm animated when I speak.	1	2	3	4	5
11. I'm good at reading facial expressions.	1	2	3	4	5
12. At social events like parties, people often introduce themselves to me.	1	2	3	4	5
13. I know just the right things to say and do when someone I know is upset.	1	2	3	4	5
14. I use the qualities of my voice to influence others.	1	2	3	4	5
15. I can make awkward social interactions feel more comfortable.	1	2	3	4	5
16. I produce the "right" sorts of smiles at just the right times.	1	2	3	4	5
17. If people observed me in a group, they would say I'm the most socially gifted.	1	2	3	4	5
18. I'm a natural at knowing how to coordinate my emotional responses to others' emotions.	1	2	3	4	5

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|---|---|---|---|---|---|
| 19. I have a relaxed, open body posture when I talk with people. | 1 | 2 | 3 | 4 | 5 |
| 20. Others would say I have an expressive face. | 1 | 2 | 3 | 4 | 5 |
| 21. People are swayed or influenced by my emotional signals. | 1 | 2 | 3 | 4 | 5 |
| 22. I use my voice to convey my emotions. | 1 | 2 | 3 | 4 | 5 |
| 23. I nod my head the right amount to let others know that I'm listening. | 1 | 2 | 3 | 4 | 5 |
| 24. I know how to calm a heated conversation. | 1 | 2 | 3 | 4 | 5 |
| 25. I'm good at using laughter to make other people feel good. | 1 | 2 | 3 | 4 | 5 |

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