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Measuring Differentiation of Self Within the Greek Culture: Theoretical and Psychometric Validation of a Greek Short Form of the Differentiation of Self Inventory-Revised

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ABSTRACT

Further to its US source culture, the systemic construct of differentiation of self (DoS) has been empirically validated in China, Cyprus, Iran, Italy, Spain, and Turkey. DoS has consistently correlated with various psychological adjustment indices, including marital and familial adjustment. The 46-item Differentiation of Self Inventory-Revised (DSI-R) is the global standard for assessing DoS, but only US-developed short forms (SF) exist. This study introduces a two-stage process to validate a 20-item SF of the Greek DSI-R. Initial stage involved shortening the Greek DSI-R based on EFA (Sample 1; N = 502), followed by iterative CFAs (Sample 2; N = 335). Final model maintained the original four-factor structure with good to very good internal consistencies, and a strong correlation with the original DSI-R ($r = 0.95$, $p < 0.001$). We relabeled the Fusion with Others subscale to Fusion with Parents to reflect potential cultural differences with the West and similarities with China. The Greek DSI-R SF offers a tool for systemic cross-cultural research, clinical assessment, treatment planning and progress, and therapeutic use.

1 | Introduction

Psychiatrist and polymath Murray Bowen and colleagues developed Bowen family systems theory (Bowen theory; Bowen 1985; Kerr and Bowen 1988), one of the most developed and comprehensive theories of human functioning from a systemic and multigenerational perspective (e.g., Cepukiene 2021; Neophytou and Rodríguez-González 2021). Bowen theory contributed to the fields of family therapy and psychopathology by providing a detailed account of how intergenerational (both intra- and interfamilial) relational systems may affect the development of family-level dysfunction as well as the emotional, behavioral, and physical functioning of individuals (e.g., Peleg and Arnon 2013; Plumed et al. 2023). Bowen (1985) introduced a unique set of interlocking theoretical constructs, namely, differentiation of self (DoS), triangles, nuclear family emotional system, family projection process, multigenerational transmission process, sibling position, emotional cut-off, and

societal regression to explain how both nuclear family functioning and individual functioning are shaped, and how dysfunction can develop within each.

Among these constructs, DoS has been considered a cornerstone of Bowen theory (1985; Kerr and Bowen 1988). Bowen and colleagues conceptualized DoS through their observations of hospitalized families with a member with schizophrenia (1985; Kerr and Bowen 1988). In these innovative studies, a powerful sharing of intellectual and emotional processes between mothers and their (adult) children with schizophrenia was consistently identified. Bowen termed this intensely interdependent relationship complete emotional fusion and positioned it at the lowest end on the clinical evaluation continuum of DoS, which he developed. In contrast, Bowen viewed the highest end of this clinical continuum as the optimal level of human functioning, one that he believed "... man has not yet achieved" (p. 200) and likely never will.

The bidimensional construct of DoS consists of an intrapsychic and an interpersonal component. Intrapsychic differentiation refers to an individual's ability to maintain a balance between affect and intellect by separating thoughts from emotions and thinking rationally amidst emotional turmoil. Individuals with poor intrapsychic differentiation tend to struggle with identifying and regulating their emotions and maintaining calmness in stressful situations. Therefore, they become emotionally reactive and potentially dependent on others, seeking acceptance and approval before making decisions. Those individuals may find social situations overwhelming, particularly within their families, due to their heightened emotional responsiveness (Bowen 1985; Haefner 2014; Kerr and Bowen 1988; Skowron and Schmitt 2003).

Regarding the interpersonal component, individuals with low DoS are likely to engage in two maladaptive mechanisms, namely emotional fusion or emotional cut-off, to cope with overwhelming emotions (Bowen 1985; Skowron and Friedlander 1998; Skowron and Schmitt 2003). Although these two mechanisms are based on the same relational fears, such as fear of rejection and criticism, they differ in how they manage anxiety (Skowron and Schmitt 2003). Emotionally fused individuals tend to adopt significant others' beliefs and values without question whereas those who use emotional cut-off tend to distance themselves emotionally and seek exaggerated independence under stress, such as isolating themselves or denying the importance of familial or social groups (Bowen 1985; Skowron and Schmitt 2003). In sum, individuals who are emotionally fused fear separation, while those who are emotionally cut-off fear intimacy (Bowen 1985).

Although several psychometric measures assessing different aspects of DoS have been developed such as the Differentiation in the Family Systems Scale (Anderson and Sabatelli 1992) and the Chabot Emotional Differentiation Scale (Licht and Chabot 2006), the Differentiation of Self Inventory (DSI; Skowron and Friedlander 1998) along with its updated version, the Differentiation of Self Inventory-Revised (DSI-R; Skowron and Schmitt 2003), are the first instruments to provide a comprehensive bidimensional operationalization of DoS. The DSI-R consists of 46 items and four subscales namely Emotional Reactivity, I Position, Emotional Cut-off, and Fusion with Others (Skowron and Schmitt 2003). The Emotional Reactivity subscale assesses emotional lability and relationship hypersensitivity, and the tendency to respond to outside stimuli with autonomic emotional responses. The I Position measures one's ability to adhere to personal convictions and values even when faced with pressure to do otherwise. The Emotional Cut-off and Fusion with Others subscales assess an individual's tendency to engage in behavioral defenses such as distancing and denial, or overinvolvement and overidentification with one's parents and/or significant others in response to relational fears (Skowron and Friedlander 1998; Skowron and Schmitt 2003).

The DSI (Skowron and Friedlander 1998) and its subsequent revision, the DSI-R (Skowron and Schmitt 2003), are considered the international gold standard for measuring DoS. This is evidenced by their diverse cross-cultural adaptations and validations in China (Lam and Chan-So 2015), Cyprus (Neophytou et al. 2021), Iran (Ghavibazou et al. 2022), Italy (Lampis et al. 2017), Japan (Kudo and Fujiu 2009), Portugal (Major et al. 2014), Russia (Glebova et al. 2011), Spain (Rodríguez-González et al. 2015), and Turkey (Işık and Bulduk 2015). However, the studies from Japan, Portugal, and Russia are not available in English.

In China (Lam and Chan-So 2015), the DSI-R (Cronbach's $\alpha = 0.87$) showed a positive correlation ($r = 0.62$, $p < 0.001$) with the General Contentment Scale (Hudson 1982), a widely used measure of nonpsychotic depression, confirming the expected finding. In Cyprus (Neophytou et al. 2021), the DSI-R ($\alpha = 0.90$) showed a negative correlation ($r = -0.75$, $p < 0.01$) with the Trait Anxiety subscale of the Greek validated version of the State-Trait Anxiety Inventory (Fountoulakis et al. 2006) supporting the expectation that higher DoS relates to lower participants' endorsement of relatively stable anxious traits.

In Italy (Lampis et al. 2017), according to expectations, the DSI-R ($\alpha = 0.84$), showed a negative correlation (r ranged from -0.41 to -0.73; all p values < 0.001) with all nine primary symptomatology dimensions of the Symptom Checklist-90-Revised (SCL-90-R; Derogatis 1994), that is, somatization, obsessive compulsion, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. Likewise, the DSI-R showed a negative correlation ($r = -0.75$, $p < 0.001$), with the Global Severity Index of the SCL-90-R, an index of participants' overall symptomatology. Additionally, the DSI-R showed a positive correlation ($r = 0.37$, $p < 0.001$) with the Dyadic Adjustment Scale (Spanier 1976; Gentili et al. 2002), a measure of relationship quality, and a negative correlation ($r = -0.78$, $p < 0.001$) with the Trait Anxiety subscale of the State-Trait Anxiety Inventory (Spielberger et al. 1983; Pedrabissi and Santinello 1989).

In Iran (Ghavibazou et al. 2022) the DSI ($\alpha = 0.84$) showed a negative correlation ($r = -0.43$, $p < 0.01$) with the Trait Anxiety subscale of the State-Trait Anxiety Inventory (Spielberger et al. 1983), supporting the expected inverse relationship. In Spain (Rodríguez-González et al. 2015), the DSI-R showed strong internal consistency ($\alpha = 0.85$) although specific measures of construct validity were not reported. Finally, in Turkey (Işık and Bulduk 2015), the DSI-R ($\alpha = 0.81$) was negatively

correlated ($r = -0.64$, $p < 0.001$) with the Trait Anxiety subscale of the State-Trait Anxiety Inventory (Spielberger et al. 1983) further confirming that greater DoS is linked with lower anxiety.

Further to the cross-cultural adaptation and validation studies, research has found that the level of DoS is negatively associated with perceived stress (Krycak et al. 2012), trait anxiety (Xue et al. 2018), depression (Elieson and Rubin 2001), eating disorders (Buser and Gibson 2014), parentification (Jankowski and Hooper 2012), and avoidant or anxious attachment styles (Xue et al. 2018). These findings consistently support the hypothesis that greater DoS, reflected in higher scores on the DSI and DSI-R, is associated with better emotional regulation, mental health, relationship quality, and familial adjustment across cultures. This growing body of international research underscores the DSI-R's robustness in assessing DoS across various cultural settings, contributing to our understanding of how DoS may influence psychological functioning.

However, the substantial length of the 46-item DSI-R (Skowron and Schmitt 2003) sparked debate among researchers. Drake et al. (2015) proposed that a shorter measure would be more beneficial to both researchers and clinicians and introduced the Differentiation of Self Inventory-Short Form (DSI-SF). This version comprises 20 items, maintains the same factorial structure as the original DSI-R, and demonstrates psychometric properties comparable to those of the DSI-R. However, based on criticisms of the DSI-SF, Sloan and Van Dierendonck (2016) developed a subsequent shortened version of the DSI-R, namely the Brief Differentiation of Self Inventory-Revised (Brief DSI-R). The authors argued that the Brief DSI-R provided a useful measure of DoS by capturing the complexity of each original subscale.

Due to the need for concise, reliable, valid, and culturally adjusted measures of DoS that can benefit both clinical and research settings, this study aims to develop a short form of the published DSI-R's adaptation and validation to Greek culture, namely the Greek DSI-R (Neophytou et al. 2021). Such a short form could contribute to the expanding body of research on DoS in cultures beyond the United States as well as assist Greek researchers and clinicians in examining and gaining a better understanding of the theoretically postulated cross-cultural universality of this cornerstone systemic construct (Bowen 1985; Kerr and Bowen 1988).

2 | Methods and Results

Data from Neophytou et al.'s (2021) study were analyzed using IBM SPSS AMOS Version 27 software. The main data analysis plan consisted of two steps: an initial exploratory factor analysis (EFA) of the Greek DSI-R in Sample 1, followed by iterative step-by-step confirmatory factor analyses (CFAs) of EFA's resulting model in Sample 2. The decision to use EFA and CFAs was guided by the study's primary goal of ensuring continuity with the methodology used in the original validation of the Greek DSI-R (Neophytou et al. 2021). This approach ensured methodological coherence, direct comparability, and interpretability between the full-scale Greek DSI-R and its derived short form. The shortening procedure of the Greek DSI-R spanned both steps as follows.

2.1 | Pre-Analyses and Data Checks

The sample of 837 participants was randomly divided into two subsamples: Sample 1 ($N = 502$) and Sample 2 ($N = 335$). To match at least 10 participants per DSI-R item for carrying out the EFA, 60% of the total sample was used. Levene's test for equality of variances confirmed that the two subsamples were homogeneous (all $ps > 0.05$). Additionally, t-tests were used to compare the means of the original DSI-R (Skowron and Schmitt 2003) full and subscales scores between Sample 1 and Sample 2; Cohen's d effect-size measures were all insignificant (see Table 1). The Kaiser-Meyer-Olkin (0.82) and Bartlett's test of sphericity (χ^2 (406) = 4341.81, $p < 0.001$) indicated significant intercorrelations among items, supporting the suitability of the data for factor analysis. Finally, reliability coefficients for the DSI-R (Skowron and Schmitt 2003) full scale and subscales per gender on Sample 1 were high to excellent (see Table 2).

2.2 | Step 1: Exploratory Factor Analysis and Initial Shortening Procedure

A principal component analysis extraction method with varimax and Kaiser normalization rotation was used to conduct an EFA. Results showed a significant drop in the proportion of variance explained after the fourth factor, as additionally evidenced by the first four factors' eigenvalues being higher than 2 (rest were lower). Based on these findings and, in line with the four-factor structure of the original DSI-R (Skowron and

TABLE 1 | Description and sample comparison of DSI-R full and subscales mean scores.

	Sample 1 N = 502 Mean (SD)	Sample 2 N = 335 Mean (SD)	Sample 1 versus Sample 2		
			t	P	d
DSI-R full scale	3.77 (0.6)	3.76 (0.62)	0.149	0.88	0.61
Emotional Cut-off	4.22 (0.82)	4.17 (0.82)	0.762	0.44	0.82
Emotional Reactivity	3.25 (0.9)	3.28 (0.95)	−0.402	0.68	0.92
Fusion with Others	3.52 (0.73)	3.5 (0.77)	−0.232	0.77	0.75
I Position	4.08 (0.72)	4.09 (0.75)	0.289	0.81	0.74

Note: d = Cohen's d as the effect size measure.

TABLE 2 | Reliability coefficients for the DSI-R full scale and factors per gender in sample 1.

	Full sample (N = 502)	Women (n = 356)	Men (n = 146)
DSI-R full scale	0.893	0.891	0.901
Emotional cut-off	0.780	0.757	0.812
Emotional Reactivity	0.830	0.816	0.853
I Position	0.747	0.760	0.712
Fusion with Others	0.736	0.740	0.726

TABLE 3 | Fit indices of the Greek DSI-R Short Form in sample 2.

	x^2	df	x^2/df	GFI	CFI	TLI	SRMR	RMSEA
Greek DSI-R SF	271.926*	164	1.658	0.926	0.936	0.926	0.0566	0.044 (90% CI [0.035, 0.054])

Note: Structural equation modeling was used for the analysis.
Abbreviations: CFI = comparative fit index, GFI = goodness of fit index, RMSEA = root-mean-square error of approximation, SRMR = standardized root mean square residual, TLI = Tucker-Lewis coefficient.
*$p < 0.001$.

Schmitt 2003), we imposed the extraction of four factors, which accounted for 43.61% of the variance.

Factor analysis revealed the following structure for the Greek DSI-R: First factor included items 21, 34, 40, 44, 1, 26, 30, 10, 29, and 13 explaining 19.85% of the variance. Second factor included items 8, 36, 20, 16, 28, 42, 12, and 2 explaining 9.29% of the variance. Third factor included items 43, 23, 7, 41, 37, 4, 19, and 27 explaining 8.12% of the variance. Fourth factor included items 9, 22, and 45 explaining 6.34% of the variance. Following the EFA, further theoretical and methodological criteria were applied to shorten the Greek DSI-R, excluding the use of arbitrary item loading cutoff values for item deletion. Additionally, we did not aim to create equal-item subfactors, as has been the case with Drake et al.'s (2015) shortened form.

Content analysis of individual factors revealed that Factor 1 represented Emotional Reactivity except for items 44, 29, and 13, which originally loaded on the Fusion with Others factor. Factor 2 represented Emotional Cut-off with all items loading according to the original DSI-R structure. Factor 3 represented I Position except for item 37, which originally loaded on the Fusion with Others factor. Factor 4 represented Fusion with Others with all items loading according to the original DSI-R structure. Given the content analysis per subscale, items that did not load on their original DSI-R factor were removed. A further review of the item intercorrelations within each factor showed that items 8 and 16 were highly correlated ($r = 0.69$, $p < 0.001$) and in fact, with the highest intercorrelation among all Emotional Cut-off items. Given the similarity in wording between item 8 ("I tend to distance myself when people get too close to me") and item 16 ("I'm often uncomfortable when people get too close to me"), and item 16 loading lower than item 8, item 16 was deleted. The remaining 24 items loaded on their original factors, consistent with the factor and item structure of the original DSI-R (Skowron and Schmitt 2003) and the Greek DSI-R full version (Neophytou et al. 2021), with the following distribution: Emotional Reactivity subscale items: 21, 34, 40, 1, 26, 30, and 10; Emotional Cut-off subscale: 8, 36, 20, 28, 42, 12, and 2; I Position subscale: 43, 23, 7, 41, 4, 19, and 27; Fusion with Others subscale: 9, 22, and 45.

2.3 | Step 2: Confirmatory Factor Analysis and Final Shortening Procedure

After conducting a CFA of the 24-item, four-factor model on Sample 2 (N = 335), the following step-by-step process was applied. First, we inspected the item factor loadings and deleted item 2 from the Emotional Cut-off factor, as it had the lowest loading (0.27) both within the factor and across the scale. We then reran the CFA and observed that items 4 and 19 had the lowest factor loading (0.42) across the scale with both items belonging to the I Position factor. After considering the content similarity between item 4 ("I tend to remain pretty calm even under stress") and item 43 ("I tend to feel pretty stable under stress"), and the robust loading of item 43 (0.60) on the I Position factor, we deleted item 4.

We then reran the CFA and inspected the Covariance table observing that the errors associated with items 8 and 28 had the highest covariance (16.297; 0.356). Given the lower loading of item 8 (0.46) compared with that of item 28 (0.57) and the similar wording of item 8 ("I tend to distance myself when people get too close to me") with item 28 ("When one of my relationships becomes very intense, I feel the urge to run away from it"), we deleted item 8. We reran the CFA and then deleted item 1 from the Emotional Reactivity factor, given that Emotional Reactivity appeared to be a prominent factor within the data and items 1 and 10 had content similarity (item 1: "People have remarked that I'm overly emotional"; item 10: "I wish that I weren't so emotional"). It is noted that item 1 had a lower loading (0.62) than item 10 (0.64). After rerunning the CFA, the resulting fit indices were acceptable as presented in Table 3. Finally, a content analysis of Factor 4 indicated that the existing items represented specifically relationships with parents, so we renamed Factor 4 from its original name "Fusion with Others" to "Fusion with Parents". The graphical representation of the CFA of the four-factor solution of the Greek DSI-R Short Form consisting 20 items, with standardized factor loadings and correlations among factors, is presented in Figure 1.

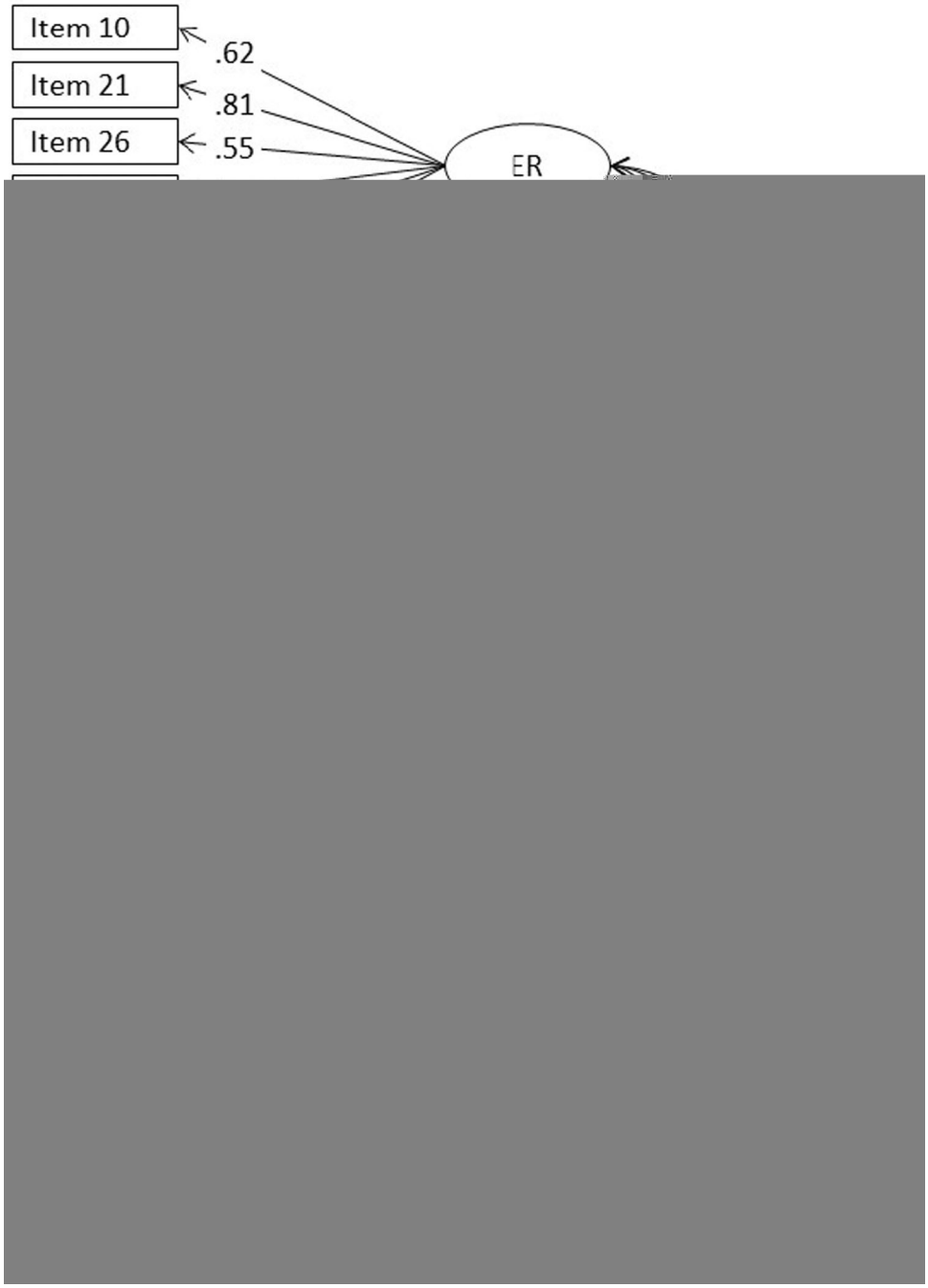

FIGURE 1 | Standardized factor loadings and correlations among latent variables for a four-factor model of the Greek DSI-R Short Form. Note. EC = Emotional Cut-off, ER = Emotional Reactivity, FP = Fusion with Parents, IP = I Position. $p < 0.001$ for all loading factors.

2.4 | Reliability and Validity of the Greek DSI-R Short Form

The Greek DSI-R Short Form and its four subscales showed good internal consistencies, as shown in Table 4. Cronbach's α values of the full scale and subscales were universally lower for men than women, particularly on the I Position and Fusion with Parents factors.

A comparison table of the Greek DSI-R Short Form, introduced in the current study, with the DSI-R Short Form (Drake et al. 2015) and Brief DSI-R (Sloan and Van Dierendonck 2016) in relation to item—factor distribution and internal consistencies follows (Table 5).

Finally, the total scores of the original DSI-R (Skowron and Schmitt 2003) and the Greek DSI-R Short Form were significantly correlated ($r = 0.95$, $p < 0.001$). Significant correlation coefficients were also found for the four subscales of the original DSI-R and the Greek DSI-R Short Form (Emotional Cut-off subscales: $r = 0.86$, Emotional Reactivity: $r = 0.95$, I Position: $r = 0.92$, and Fusion with Others/Parents: $r = 0.72$; all $ps < 0.01$).