The Revised Assessment of Sadistic Personality (ASP-8): Evidence for Validity across Four Countries

Abstract

Subclinical sadism, characterized by infliction of cruelty, aggression, or humiliation on another for subjugation or pleasure, provides important information in the prediction of aversive behaviors that have implications for individuals' and society's well-being worldwide. Given sadism's universal relevance, it is imperative that researchers ensure valid and reliable trait measurement not only among English-speaking individuals, but also cross-nationally among countries in which sadism remains relatively understudied. The objective of the current research was to validate the revised version of the Assessment of Sadistic Personality (ASP-8) (Plouffe et al., 2017) across samples of Russian (n = 1087, M age = 37.36, SD = 10.36), Greek (n = 1195, M age = 35.64, SD age = 13.08), Serbian (n = 443, M age = 28.10, SD age = 6.60), and British (n = 511, M age = 28.50, SD age = 11.62) adults. Overall, results supported the reliability, dimensionality, and scalar/partial scalar measurement invariance of the ASP-8 across cross-national samples. Convergent and discriminant validity were mostly supported through correlations with general personality traits, the Dark Triad, emotional intelligence, mental toughness, depression, anxiety, stress, satisfaction with life, aggression, and attitudes toward social groups. Based on our findings, we recommend the use of the ASP-8 in future investigations of aversive traits.

Introduction

Historical accounts of sadism outline cruel, humiliating, and torturous acts committed by individuals for pleasure, such as the 15th century child murders committed by Gilles de Rais, or the more recent abuse that took place at Abu Ghraib, an American-run prison located in Iraq. In the late 19th century, Richard von Krafft-Ebing (1886) used the term sadism in a medical context to refer to those who derive pleasure from the suffering of others. Clinically, Sadistic Personality Disorder and sexual sadism were recognized in both the *Diagnostic and Statistical Manual of Mental Disorders – 3rd ed.* (*DSM-III-R;* American Psychiatric Association, 1987), and the *DSM-V* (American Psychiatric Association, 2013). Although, the construct (in its non-sexual form) was not accepted as a personality trait, existing on a continuum in the general population, until the early 2000s (Chabrol et al., 2009; O'Meara et al., 2004). This paper, using Greek, Russian, Serbian, and British adults, validated new translations of a revised trait-level sadism measure, the Assessment of Sadistic Personality-8 (ASP-8; Plouffe et al., 2017, 2021).

Sadism as a Personality Trait

Subclinical sadism, defined by infliction of cruelty, aggression, or humiliation on another for subjugation or pleasure (O'Meara et al., 2011; Plouffe et al., 2017, 2019), has become the focus of much research. Several studies, conducted across nations, have reported relationships between aversive behaviors and levels of subclinical sadism. These include pleasure-driven vandalism (Pfattheicher et al., 2018), online "trolling" (Buckels et al., 2014, 2018), intimate partner violence (Pineda et al., 2021; Plouffe et al., 2020[a,b]; Tetreault et al., 2018), sexual violence (Russell et al., 2017; Russell & King, 2016), emotion manipulation (Schmitt et al., 2020), and counterproductive work behaviour (Fernández-del-Río et al., 2020; Li et al., 2020). Other academic work has indicated that sadism can also provide adaptive psychological benefits. Explicitly, serving as a

protective factor against negative outcomes. For example, individuals high in sadism tend to engage in advantageous (i.e., social, recreational) risk-taking (Stanwix & Walker, 2021), and experience positive affect in response to the COVID-19 pandemic (Hardin et al., 2021).

Subclinical sadism is also related to and often studied in tandem with the Dark Triad of personality (i.e., subclinical psychopathy, narcissism, and Machiavellianism). Collectively, these form a constellation of traits labelled the Dark Tetrad of personality (Buckels et al., 2013; Johnson et al., 2019), which exhibit common features (i.e., lack of honesty-humility and empathy) (Book et al., 2016; Kirsch & Becker, 2007).

Consideration of previous literature indicates that sadism as a personality trait potentially predicts behaviours that have important implications for individual and collective well-being worldwide. Given the universal relevance of sadism, it is imperative that investigators ensure valid and reliable measurement of the trait. This applies not only to English-speaking individuals, but also cross-nationally. This is especially important in countries where sadism remains relatively understudied.

Measurement of Sadism: The Assessment of Sadistic Personality

Researchers have created several measures to study levels of sadism among community populations. Instruments include the 10-item Short Sadistic Impulse Scale (O'Meara et al., 2011), the Varieties of Sadistic Tendencies (VAST; Paulhus & Jones, 2015), the Comprehensive Assessment of Sadistic Tendencies (CAST; Buckels & Paulhus, 2014), and the sadism subscale of the Short Dark Tetrad (SD4; Paulhus et al., 2020). Recently, the 9-item ASP (Plouffe et al., 2017) was developed to concisely evaluate levels of subclinical sadism whilst ensuring breadth of the content domain. Accordingly, items represent high-sadism characteristics and behaviours (i.e., antagonism, subjugation, pleasure-seeking cruelty, and low empathy) (Hagger-Johnson & Egan,

2010; O'Meara et al., 2011). In preliminary studies, the ASP demonstrated strong internal consistency reliability and a unidimensional structure representing subclinical sadism (Plouffe et al., 2017, 2019). Convergent validity evidence was also shown, ASP sadism significantly positively correlated with Dark Triad traits, CAST subscales, antagonism, disinhibition, psychoticism, and detachment, and significantly negatively correlated with trait emotional intelligence, agreeableness, extraversion, emotionality, and conscientiousness (Plouffe et al., 2017, 2019).

Subsequent studies supported the reliability and validity of the ASP and its non-English translations (Dinić et al., 2020; Kowalski et al., 2020; Pineda et al., 2021; Plouffe et al., 2021). When the scale was assessed among non-clinical samples of Serbian (Dinić et al., 2020) and Spanish (Pineda et al., 2021) adults, the ASP demonstrated a unidimensional structure, and showed correlations with HEXACO personality traits consistent with past studies (i.e., Plouffe et al., 2019; Kowalski et al., 2020). The Serbian ASP also significantly predicted positive attitudes towards dangerous groups incrementally beyond effects of sex, age, and the Dark Triad. In their study using Polish, Italian, and English-speaking adults, Kowalski et al. (2020) revealed that the ASP translations possessed cross-national invariance, such that configural and partial metric invariance were satisfied, and when alignment optimization was applied, latent mean differences could be reliably calculated. In addition, like Plouffe et al. (2019), significant positive correlations between the ASP and the Dark Triad, antagonism, disinhibition, psychoticism, and detachment were reported (Kowalski et al., 2020). Negative associations were observed between the ASP and conscientiousness, agreeableness, empathic concern, and perspective taking (Kowalski et al., 2020).

Recent studies using item response theory (IRT) have established the item properties of English, Polish, and Italian versions of the ASP (Plouffe et al., 2021). ASP items discriminated adequately between individuals of varying levels of latent sadism, and category thresholds were well-dispersed. However, Item 9 performed poorly across samples (Plouffe et al., 2021), such that it did not distinguish between individuals at different sadism levels, and category thresholds were not equally distributed. Specifically, individuals were more likely to endorse higher levels on Item 9 even when they were low on latent sadism. The authors concluded that this item was less representative of the sadism construct; those low on sadism were still likely to endorse the statement "I would not purposely hurt anybody, even if I didn't like them."

Examination of this item, indicates that it does not reflect the predominant characteristics of sadism, including pleasure-seeking cruelty, low empathy, or subjugation. In addition, previous studies implementing the ASP have also shown weaker factor loadings for ASP Item 9, ranging from .15 to .50 (Kowalski et al., 2020; Pineda et al., 2021; Plouffe et al., 2017, 2019). Based on these validation studies, Plouffe et al. (2021) suggested that item 9 should be. Hence, the subsequent version was named the ASP-8.

As outlined above, worldwide attention has been drawn to the study of subclinical sadism, resulting in many cross-national research studies, which have found associations between sadism and important outcome variables, such as emotion manipulation, counterproductive work behaviour, and cyber intimate partner violence (e.g., Li et al., 2020; Pineda et al., 2021; Schmitt et al., 2020). However, the original English ASP has only been translated for and validated with Italian, Polish, Serbian, and Spanish samples (Dinić et al., 2020; Kowalski et al., 2020; Pineda et al., 2021; Plouffe et al., 2021). This limits research using the ASP in other countries with

individuals who are not fluent in these languages. In addition, despite the suggestion to remove Item 9 (Plouffe et al., 2021), no studies have evaluated the psychometric properties of the ASP-8.

The Current Research

Acknowledging these issues, the present paper produced and validated Russian, Greek, and Serbian language versions of the ASP-8. Researchers had previously developed a Serbian translation of the ASP (Dinić et al., 2020). However, the ASP-8 has not been formally evaluated in terms of its psychometric properties in a Serbian sample. Additionally, the psychometric properties of the English version of the ASP have not been assessed in non-Canadian samples. Thus, this study validated the Serbian ASP-8, as well as the English ASP-8 in a sample of adults from the United Kingdom (UK). The authors hypothesized that the ASP-8 would demonstrate strong internal consistency/reliability, a unidimensional structure representing subclinical sadism, and strong convergent and discriminant validity. Based on past findings (e.g., Kowalski et al., 2020; Plouffe et al., 2017, 2019), it was predicted that sadism would correlate negatively with trait emotional intelligence, conscientiousness, agreeableness, and honesty-humility.

Although sadism has not been investigated in the context of mental toughness or depression, past findings have shown that traits with similar characteristic features (e.g., psychopathy) demonstrate negative associations with mental toughness (e.g., Onley et al., 2013; Vaughan et al., 2018) and positive relationships with depression (Bonfá-Araujo et al., 2021). Thus, the authors expected that sadism would be negatively related to mental toughness and positively related to depression. Moreover, they anticipated positive associations between sadism and psychopathy, narcissism, Machiavellianism, physical aggression, verbal aggression, anger, and hostility (Plouffe et al., 2017, 2019).

Based on meta-analytic findings (Kowalski et al., 2020), it was not possible to make robust predictions regarding correlations between sadism and emotionality, openness, or extraversion. Additionally, the authors did not anticipate a significant correlation between sadism and life satisfaction (e.g., Womick et al., 2019), this provided support for discriminant validity. Anxiety and stress have not previously been evaluated in the context of subclinical sadism or the Dark Triad. Thus, consideration of these relations was exploratory. Past investigations in Serbian samples have shown that individuals high in sadism tend to feel positively toward dangerous groups, and negatively toward derogated and dissident groups (Dinić et al., 2020; Međedović & Bulut, 2017). Therefore, within the Serbian sample it was expected that the ASP-8 would correlate positively with favourable attitudes toward dangerous groups (e.g., criminals) and negatively with favourable attitudes toward derogated (e.g., immigrants) and dissident groups (e.g., feminists, protestors).

Lastly, this study investigated the cross-national invariance of the ASP-8. Explicitly, configural, metric, and scalar invariance between an English-speaking Canadian sample and samples from Russia, Greece, Serbia, and UK. Demonstrating cross-national invariance was essential to the establishment of reliable mean differences. Based on past findings reflecting cultural orientations (Schwartz, 2006), no differences in mean latent sadism levels were predicted between Greece, the UK, and Canada, as these cultures emphasize affective autonomy (i.e., encourage individuals to pursue positive affective personal experiences). Regarding Russia and Serbia, it was hypothesized that because these cultures tend to value self-assertion, mastery, and daringness in the interest of achieving personal goals and successes (Schwartz, 2006, 2008), they would exhibit higher levels of mean latent sadism than Canada.

Method

Participants

Participants in this study included adults recruited from general populations in Russia, Greece, UK, and Serbia. Concurrently, a Canadian sample of undergraduate students were recruited to confirm the factor structure of the ASP-8 and to serve as a reference group for invariance testing.

The Russian sample comprised 736 women and 350 men (1 "prefer not to answer") (M_{age} = 37.36, *SD* = 10.36). Most participants lived in a big city in Russia (67.8%), followed by a small city (28.4%), village (2.4%), and town (1.4%). The majority completed postgraduate education (66.8%), followed by high school (16.9%) and undergraduate studies (15.3%), and few had completed a PhD (1.0%).

In Greece, a total of 829 women and 363 men (3 "other") participated in this study (M_{age} = 35.64, *SD* = 13.08). The majority completed a university education (39.0%), followed by postgraduate education (20.6%). Most also reported an annual income between 0 to €10,000 (55.6%), followed by an annual income between €10,000 and €30,000 (37.8%).

The Serbian sample included 222 men and 221 women (M_{age} = 28.10, *SD* = 6.60). Of the total sample, 34.1% were students and 29.2% had completed a master's degree. This sample was drawn from a larger personality study (Dinić et al., 2020).

In the UK, a total of 365 women and 146 men participated (M_{age} = 28.50, *SD* = 11.62). The majority completed an undergraduate degree (23.9%), followed by "A levels" (19.6%) and GCSE (12.1%). Most participants also reported an annual income between £0 and £10,000 (51.9%), followed by £10,000 to £30,000 (32.1%).

Finally, the Canadian sample comprised 124 men and 139 women (1 "other") enrolled in an introductory undergraduate psychology course (M_{age} = 18.84, SD = 1.84). Most students were in their first year of undergraduate studies (76.5%), followed by their second year (11.4%). The majority of participants reported their ethnicity as Caucasian (37.5%) or Asian (36.0%).

Procedure

Relevant ethical review boards approved this project prior to commencement. Data from Greece, Russia, UK, and Canada were collected online between 2019 and 2020 as part of a large cross-cultural project. Participants in Greece, Russia, and UK were recruited online through advertisements on social networks and via word of mouth. These participants did not receive compensation for taking part in studies. Canadian participants were recruited through an introductory undergraduate psychology course and received course credit for participating. After providing informed consent, each participant received a link to the online questionnaires hosted via Qualtrics Experience Management Platform. The duration of the survey ranged between 30 and 40 minutes.

In Serbia, data were collected online as a part of a group of undergraduate university students' pre-examination activities. Students were required to send a link with the study measures to six individuals within given sex (3 men, 3 women) and age quotas (18-25, 26-30, 31-40).

Greek and Russian Translations. Standard Greek and Russian translations of the Depression, Anxiety, and Stress Scale (Pezirkianidis et al., 2018), Satisfaction with Life Scale (Galanakis et al., 2017), the Trait Emotional Intelligence Questionnaire – Short Form (Stamatopoulou et al., 2016), and the Buss-Perry Aggression Questionnaire (citation) were used. Forward translations of the ASP-8, Short Dark Triad (SD3), Mental Toughness Questionnaire, and Big Five Inventory-2 Extra-Short Form were performed by an English Teacher whose mother

tongue is Greek for the Greek translation, and an external collaborator whose mother tongue is Russian for the Russian translation. Then, co-authors whose mother tongues are Greek or Russian, and who are proficient in English, identified inadequate expressions/concepts of the translation and performed the back-translation. The English versions of the questionnaires were then compared by all co-authors; no major discrepancies between the original versions and the versions resulted from the back translation were identified.

Serbian Translations. Standard Serbian translations of the HEXACO-60 (Međedović et al., 2017), Short Dark Triad (Dinić et al., 2018), and the AVDH Aggressiveness Questionnaire (Dinić et al., 2014) were used. For the ASP-8, Dinić et al. (2020) implemented standard back-translation procedures. Specifically, translations back to English were executed by the authors along with external collaborators. These English translations were then compared by Dinić et al. (2020) and translated back to Serbian.

Measures

Sadism

Sadism was assessed across countries using the 8-item version of the Assessment of Sadistic Personality (ASP-8; Plouffe et al., 2017, 2021). Participants responded to items on a 5-point scale ranging from 1 = *strongly disagree* to 5 = *strongly agree.* Mean scores were calculated, such that higher scores represent higher levels of sadism. Past research supports the reliability and validity of the new ASP-8 (Plouffe et al., 2021).

Dark Triad

Psychopathy, Machiavellianism, and narcissism were measured across all countries using the 27-item Short Dark Triad (SD3; Jones & Paulhus, 2014). Participants endorsed items on a 5-

point scale (1=*strongly disagree*, 5=*strongly agree*). Empirical studies support the reliability and validity of the SD3 (Jones & Paulhus, 2014).

Trait Emotional Intelligence

Trait emotional intelligence (EI) was evaluated in the Greek and UK samples with the 30-item Trait Emotional Intelligence Questionnaire – Short Form (TEIQue-SF; Petrides, 2009). Response options were endorsed on a 7-point scale ranging from 1 = *completely disagree* to 7 = *completely agree.* Mean scores were calculated, such that higher scores represent higher trait EI. Past studies support the reliability and validity of the TEIQue-SF (Cooper & Petrides, 2010).

Mental Toughness

We assessed levels of mental toughness in the Russian, Greek, and UK samples using the 10-item Mental Toughness Questionnaire (MTQ-10; Dagnall et al., 2019; Papageorgiou et al., 2018) with responses ranging from 1 = *strongly disagree* to 5 = *strongly agree*. Responses were summed to create a total mental toughness score. The reliability and validity of the MTQ-10 is strong (Dagnall et al., 2019).

Depression, Anxiety, and Stress

The 21-item Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995) measured levels of these constructs across the Russian, Greek, and UK samples. Items were endorsed on a 4-point scale (0 = *did not apply to me at all,* 3 = *applied to me very much or most of the time*). Scores on the DASS-21 were summed to create total scores on Depression, Anxiety, and Stress subscales. Past findings demonstrated that the DASS-21 has strong reliability and validity (Henry & Crawford, 2005).

Satisfaction with Life

The 5-item Satisfaction with Life Scale (SWLS; Diener et al., 1985) evaluated global life fulfilment satisfaction in Russian, Greek, and UK samples. Participants responded to items on a 7-point scale (1 = *strongly disagree,* 7 = *strongly agree*). Responses were summed to create a total SWLS score. Empirical research supports the reliability and validity of the SWLS (Pavot et al., 1991).

Aggression

The Russian, Greek, and UK samples completed the 29-item Buss-Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1992). Responses ranged from 1 = *extremely uncharacteristic of me* to 5 = *extremely characteristic of me.* Scores were summed to create subscales representing Physical Aggression, Verbal Aggression, Anger, and Hostility, in addition to a total aggression score. The BPAQ demonstrated strong reliability and validity in past research (Gerevich et al., 2007).

The Serbian sample filled in the 23-item AVDH Aggressiveness Questionnaire (AVDH-AQ; Dinić et al., 2014) measured on a 5-point scale (1 = *strongly disagree,* 5 = *strongly agree*). The AVDH-AQ measures four facets of aggression, including anger, vengefulness, dominance, and hostility. Empirical research supports the reliability and validity of the AVDH-AQ (Sokolovska et al., 2018).

General Personality

The Russian, Greek, and UK samples completed the 15-item Big Five Inventory-2 Extra-Short Form (BFI-2-XS; Soto & John, 2017) to measure levels of openness, conscientiousness, extraversion, agreeableness, and neuroticism. Items were endorsed on a 5-point scale (1= *disagree*

strongly, 5 = *agree strongly*), and mean scores were derived across each construct. The BFI-2-XS is a reliable and valid measure of the Big Five model of personality (Soto & John, 2017).

The Serbian sample filled in the HEXACO-60 Personality Inventory (Ashton & Lee, 2009) to measure honesty-humility, extraversion, emotionality, agreeableness, conscientiousness, and openness on a 5-point scale (1 = *strongly disagree,* 5 = *strongly agree*). Responses were totalled for each construct to create overall scores. Empirical research supports the reliability and validity of the HEXACO-60 (Sokolovska et al., 2018).

Attitudes Toward Social Groups

The Serbian sample completed a measure of attitudes toward derogated groups (e.g., immigrants, individuals with disabilities), dangerous groups (e.g., criminals, drug dealers), and dissident groups (e.g., protestors). Participants were requested to indicate their feelings toward these groups ranging from 0 = *least warm* to 100 = *most warm or favourable* on an affective thermometer (Duckitt & Sibley, 2007). Past research supports the use of this measure to evaluate attitudes toward social groups (Duckitt & Sibley, 2007).

Data Analytic Strategy

Means, standard deviations, Cronbach's alphas, skewness and kurtosis values, and bivariate correlations were computed for all study variables using SPSS Version 26 (IBM Corp., 2019). Effect sizes for bivariate correlations were interpreted using Cohen's (1992) guidelines. Skewness and kurtosis values were considered acceptable if they were between ±3 for skewness and ±10 for kurtosis (Kline, 2011).

Analysis evaluated the unidimensionality of the ASP-8 across each country using confirmatory factor analysis (CFA) in MPlus Version 8.3 (Muthén & Muthén, 1998-2019). Explicitly, the mean- and variance-adjusted weighted least squares estimator (WLSMV) for

ordinal data. Missing data were estimated using the default full-information maximum likelihood. Sample sizes of at least 200 are recommended for CFA; thus, each of sample reached the minimum required size (Kline, 2011).

CFA model fit was assessed using the chi-square index, root-mean-square error of approximation (RMSEA), Tucker-Lewis Index (TLI), and comparative fit index (CFI). Chi-square tests were interpreted with caution, as they are strongly influenced by large sample sizes (Jöreskog, 1969). Based on recommendations by Hu and Bentler (1998), RMSEA indices close to .06 reflect good model fit, between .07 and .08 indicate acceptable model fit, between .08 and .10 represent marginal fit, and greater than .10 reflect poor fit. CFI and TLI indices between .90 and .95 indicated acceptable fit, and .95 or larger excellent fit (Hu & Bentler, 1998).

A series of multi-group confirmatory factor analytic (MGCFA) models assessed measurement invariance of the ASP-8 structure, such that the Russian, Greek, Serbian, and UK samples were compared separately to the Canadian sample. Invariance was evaluated in three steps comprising configural, metric, and scalar invariance models using the maximum likelihood robust estimator. Configural models test whether the number of factors is consistent across samples. Metric models test that the factor loadings are equal across samples.

Scalar models test whether the intercepts are equal across groups. When the intercepts are not equivalent, intercepts can be freed sequentially until partial scalar invariance is satisfied (Cheung & Rensvold, 2002), and latent sadism means can be compared between countries. Analysis compared MGCFA models using chi-square, CFI, and RMSEA difference tests. When CFI and RMSEA difference values are less than or equal to .01 and chi-square difference tests are non-significant, then differences between the models are non-significant (Cheung & Rensvold, 2002; Chen, 2007).

Results

Descriptive Statistics, Convergent Validity, and Discriminant Validity

Means, standard deviations, Cronbach's alphas, and skewness and kurtosis values are displayed in Table 1 for study variables across all samples. Skewness and kurtosis values fell within the recommended cut-offs (Kline, 2011). Across samples, Cronbach's alpha values for the ASP-8 were high, indicating strong internal consistency (α = .84 - .91). Cronbach's alpha values were high across all additional measures except for the BFI-2-XS subscales. Although these values were low across samples, they are consistent with past research using the BFI-2-XS (Rammstedt et al., 2018). The BFI-2-XS comprises a series of 3-item subscales that were designed to maximize content coverage of the Big Five traits. Mathematically, short scales will demonstrate weaker internal consistency reliability coefficients if they measure a broad domain (Ziegler et al., 2014). As a result, short scales are often designed to enhance content validity at the expense of internal consistency. However, this is not necessarily indicative of a scale with poor psychometric properties, and it is important to focus more on content representation of the items (Rammstedt & Beierlein, 2014; Ziegler et al., 2014). Based on these interpretations, we proceeded to use the BFI-2-XS subscales for our analyses.

Consistent with convergent validity hypotheses, across samples, sadism was significantly and negatively associated with agreeableness, conscientiousness, and honesty-humility, and was positively associated with Machiavellianism, narcissism, and psychopathy, with effect sizes ranging from small (e.g., conscientiousness) to medium (e.g., psychopathy). As expected, robust correlations between sadism and emotionality, openness, or extraversion were not found, providing evidence for discriminant validity. However, there was a small significant positive correlation between sadism and extraversion in the Greek sample, and a small negative correlation

between sadism and extraversion in the Serbian sample. Similarly, we found a small positive association between sadism and emotionality in the Russian sample, and a small negative association between sadism and emotionality in the Serbian sample. These distinctions were likely due to the different measurement tools applied in Serbia and the remaining countries. Lastly, there was a small negative correlation between sadism and open mindedness in the Greek sample.

As expected, sadism was significantly and negatively associated with trait EI in the Greek sample with a small effect size. However, contrary to expectation, trait EI was not significantly related to sadism in the UK sample.

As anticipated, sadism was significantly and positively related to all types of aggression (i.e., physical, verbal, hostility, anger, dominance, and vengefulness) across samples with effect sizes ranging from small (e.g., hostility) to medium (e.g., physical aggression). Interestingly, mental toughness was not significantly correlated with sadism in the Greek and UK samples, but there was a small, significant negative correlation between mental toughness and sadism in the Russian sample.

Although a significant association between sadism and life satisfaction was not anticipated, small negative correlations emerged between these variables in Greek and Russian samples. However, consistent with expectation, this association was non-significant in the UK. Depression, anxiety, and stress were also significantly and positively related to sadism across Greek and Russian samples with small-to-medium effect sizes. Sadism was unrelated to depression, anxiety, and stress in the UK. Lastly, as hypothesized, sadism was positively correlated with positive attitudes toward dangerous groups, and negatively correlated with positive attitudes toward derogated and dissident groups in the Serbian sample.

Confirmatory Factor Analyses

Measurement models reflecting the unidimensional structure of the ASP-8 were tested across Greek, Russian, UK, Serbian, and Canadian samples. In the Greek sample, model fit was strong according to CFI and TLI, but the RMSEA value indicated marginal fit[1]: $\chi^2_{(20)} = 238.54$, $p<.001$, RMSEA = .097 (90% confidence interval[CI] = .097, .108), CFI = .973, TLI = .962. Standardized factor loadings were strong, ranging from .625 to .882.

Similar findings emerged in the Russian sample: $\chi^2_{(20)} = 393.00$, $p<.001$, RMSEA = .131 (90% CI = .120, .142), CFI = .982, TLI = .974. Again, factor loadings were strong, ranging from .719 to .917.

Next, in the UK sample, model fit was again strong according to CFI and TLI, but poor according to RMSEA: $\chi^2_{(20)} = 153.55$, $p<.001$, RMSEA = .114 (90% CI = .098, .132), CFI = .970, TLI = .958. Factor loadings were again strong, ranging from .695 to .879.

Similar findings emerged in the Canadian sample, $\chi^2_{(20)} = 113.13$, $p<.001$, RMSEA = .133 (90% CI = .110, .157), CFI = .972, TLI = .961. Factor loadings ranged from .675 to .881.

Finally, the Serbian sample showed strong model fit across all indices: $\chi^2_{(20)} = 63.17$, $p<.001$, RMSEA = .070 (90% CI = .051, .090), CFI = .983, TLI = .976, with factor loadings ranging from .745 to .867.

Cross-National Measurement Invariance

A series of MGCFA models were tested to determine whether the ASP-8 exhibited cross-national invariance (see Table 3). The first model compared the ASP-8 across Greek and Canadian samples. The configural model showed strong fit, indicating that the ASP-8 exhibited a unidimensional structure across countries: $\chi^2_{(40)} = 191.50$, $p<.001$, RMSEA = .072 (90% CI =

[1] It is common for RMSEA to indicate poor fit in models with small *df* (Kenny et al., 2015). See Discussion section for more information.

.062, .082), CFI = .937. The chi-square difference test indicated that the metric model with constrained factor loadings fit significantly worse than the configural model: $\Delta\chi^2_{(7)} = 35.19$, $p<.01$. However, as indicated previously, the chi-square difference test influenced by large sample sizes, and the CFI and RMSEA change tests reflected non-significant differences between the models: ΔCFI = .012, ΔRMSEA = .000. Thus, factor loadings were invariant across samples. Next, according to the chi-square and CFI difference tests, the scalar invariance model with constrained loadings and intercepts fit significantly worse than the metric model, $\Delta\chi^2_{(7)} = 91.11$, $p<.01$, ΔCFI = .035, ΔRMSEA = .010. Therefore, based on modification indices, we sequentially freed the intercepts for items 5 and 7. The final model indicated that partial scalar invariance was achieved: $\Delta\chi^2_{(5)} = 38.66$, $p<.01$, ΔCFI = .014, ΔRMSEA = .003. We then calculated latent mean differences and found that the Canadian sample scored significantly higher on latent sadism than the Greek sample ($\Delta m = .23$, $p<.001$).

Next, we tested measurement invariance in the Russian sample compared to the Canadian sample. The configural model showed adequate fit: $\chi^2_{(40)} = 238.61$, $p<.001$, RMSEA = .086 (90% CI = .075, .096), CFI = .933. The chi-square difference test indicated that the metric model with constrained factor loadings fit significantly worse than the configural model: $\Delta\chi^2_{(7)} = 26.72$, $p<.01$. However, the ASP-8 demonstrated metric invariance as indicated by the CFI and RMSEA difference tests, indicating that factor loadings were invariant across groups: ΔCFI = .007, ΔRMSEA = .003. The RMSEA difference test showed no significant differences between the metric and scalar invariance model: ΔRMSEA = .006. However, both the chi-square and CFI difference tests showed significant model differences: $\Delta\chi^2_{(7)} = 77.80$, $p<.01$, ΔCFI = .024. Thus, we freed the intercept for item 3 to achieve partial scalar invariance: $\Delta\chi^2_{(6)} = 44.12$, $p<.01$, ΔCFI

= .013, ΔRMSEA = .002. When latent mean differences were compared, Canada scored significantly higher than Russia on sadism (Δ*m* = .27, *p*<.001).

Next, we tested measurement invariance across the UK and Canadian samples. The configural model showed acceptable fit: $\chi^2_{(40)} = 138.51$, *p*<.001, RMSEA = .080 (90% CI = .065, .094), CFI = .927. The metric model did not significantly differ from the configural model according to CFI and RMSEA difference tests, indicating that metric invariance was satisfied: $\Delta\chi^2_{(7)} = 18.80$, *p*<.01, ΔCFI = .009, ΔRMSEA = .002. Finally, the scalar model did not differ significantly from the metric model, indicating that factor loadings and intercepts did not differ significantly across samples: $\Delta\chi^2_{(7)} = 18.26$, *p*<.05, ΔCFI = .008, ΔRMSEA = .002. Therefore, we compared latent mean differences on sadism across the UK and Canada. Canada scored significantly higher than the UK on latent sadism (Δ*m* = .41, *p*<.001).

Lastly, measurement invariance was evaluated across the Serbian and Canadian samples. The configural model with no constraints showed strong fit: $\chi^2_{(40)} = 119.34$, *p*<.001, RMSEA = .075 (90% CI = .060, .091), CFI = .924. The metric model was also not significantly different from the configural model, indicating that factor loadings were invariant across groups: $\Delta\chi^2_{(7)} = 12.15$, *p*>.05, ΔCFI = .005, ΔRMSEA = .004. However, significant differences between the scalar and metric invariance models indicated that intercepts were not invariant across groups: $\Delta\chi^2_{(7)} = 58.92$, *p*<.01, ΔCFI = .050, ΔRMSEA = .014. Therefore, we sequentially freed intercepts for items 4 and 1 to test for partial scalar invariance. Although the RMSEA difference test provided evidence for partial scalar invariance (ΔRMSEA = .003), the chi-square and CFI difference tests surpassed their cut-off values: $\Delta\chi^2_{(5)} = 20.81$, *p*<.01, ΔCFI = .015. Therefore, we freed the intercepts for items 4, 1, and 7, and partial scalar invariance was achieved: $\Delta\chi^2_{(4)} = 11.14$, *p*<.05, ΔCFI = .007, ΔRMSEA = .000. When latent mean differences were assessed, the

Canadian sample scored significantly higher than the Serbian sample on latent sadism, (Δm = .52, p<.001). It should be noted that because only partial scalar invariance was found across Greek, Russian, and Serbian samples, latent mean differences should be interpreted with caution.

Discussion

The present study, using Greek, Russian, Serbian, and UK samples, validated the ASP-8. Given that interpersonal malevolence exists internationally, it is important to develop and validate tools that allow researchers to investigate individual differences in these dispositions across cultures. Such investigations contribute to both the understanding of malevolence, as well as the mitigation of harm caused by the destructive behaviour endemic with such dispositions through individual interventions, policy considerations, as well as preventative and protective action.

Results supported the validity of the ASP-8 across Canadian, Greek, Russian, English, and Serbian samples. Specifically, the internal reliabilities for the ASP-8 were good-to-excellent, ranging from α = .84 (in the UK sample) to α = .91 (for the Russian translation). Reliabilities were higher than the coefficient alpha reported by Pineda et al. (2021; α = .75 for the Spanish nine-item ASP), and comparable to the coefficient alphas reported by Plouffe et al. (2017; α = .83 for the original nine-item ASP), Plouffe et al. (2019; α = .85 for the original nine-item ASP), Kowalski et al. (2020; α = .83 and .86 for the nine-item Polish and Italian translations, respectively), and Dinić et al. (2020; α = .82 for the Serbian nine-item ASP).

Moreover, findings generally supported the convergent validity of the ASP-8. As predicted, sadism was significantly negatively correlated with conscientiousness and agreeableness across all four translations. As anticipated, sadism negatively correlated with honesty-humility (only measured in the Serbian sample). These results were consistent with Kowalski et al.'s (2020) meta-analytic and self-report findings, which found similar negative correlations between sadism and

conscientiousness, as well as agreeableness. Moreover, the relationship between the ASP and honesty-humility was consistent with previous findings (e.g., Dinić et al, 2020; Pineda et al., 2021; Plouffe et al., 2017, 2019). Psychopathy, narcissism, and Machiavellianism were all similarly positively correlated with sadism across samples. This supported the research hypotheses and was consistent with previous outcomes (e.g., meta-analysis by Kowalski et al., 2020).

Sadism was also positively and significantly correlated with physical aggression, verbal aggression, anger, hostility, and total aggression across samples (except for the Serbian sample where the BPAQ was not employed), supporting research hypotheses. This was consistent with the results of Chester et al. (2019), who found similar positive correlations between sadism (measured by the SSIS) and the physical, verbal, anger, and hostility facets of aggression. Favourable attitudes towards dangerous, derogated, and dissident groups were assessed in the Serbian sample. As predicted, sadism was positively correlated with favourable attitudes towards dangerous groups and negatively correlated with favourable attitudes towards derogated and dissident groups. It should be noted that these variables were drawn from Dinić et al. (2020), with the distinction being measurement of sadism (ASP vs. ASP-8), so consistency in direction and magnitude of these correlations aligned with previous work.

Not all convergent validity hypotheses were supported. The authors predicted that sadism would be significantly negatively correlated with trait emotional intelligence. However, this was only the case in the Greek sample, which was comparable to Plouffe et al.'s (2017) findings (the Russian and Serbian samples did not complete measures of trait EI). However, sadism in the UK sample was not significantly correlated with trait EI. Although unforeseen, this outcome was consistent with some studies evaluating associations between ASP sadism and trait EI (Schreyer et al., 2021), as well as investigations evaluating associations between primary psychopathy, which

shares similarities with sadism, and trait EI (Ali et al., 2009; Szabó & Bereczkei, 2017). Although unexpected, it is plausible that although those high in sadism are deficient in emotion recognition (Pajevic et al., 2018), they may not necessarily lack (nor endorse) facets of trait EI, including well-being or emotionality. Moreover, the expected significant negative correlations between sadism and mental toughness, was only supported in the Russian sample, and not the Greek or UK samples (Serbian participants did not complete measures of mental toughness). To the knowledge of the authors, the relationship between sadism and mental toughness has not been explored in previous research, but similar traits, such as psychopathy, have been considered in this context and shown negative relationships (Onley et al., 2013; Vaughan et al., 2018). Since mental toughness is a multifaceted construct, it is possible that sadism may have shown differential associations between specific facets of mental toughness. For example, Papageorgiou et al. (2018) found that psychopathy was negatively associated with tendencies to regulate anxieties and commitment to goal pursuits but was not associated with viewing challenges as growth opportunities or confidence in abilities and interpersonal relationships. It is possible that similar associations would emerge for between sadism and mental toughness facets.

The predicted positive correlation between sadism and depression was only supported in the Greek and Russian samples, and not the UK sample (depression was not assessed in the Serbian sample). As with mental toughness, sadism has not been previously investigated in this context, but psychopathy, which overlaps substantially with sadism, has been found to be positively correlated with depression (Bonfá-Araujo et al., 2021). Gómez-Leal et al. (2019) posited that the positive association between psychopathy and depression may be due to externalization of negative moods (i.e., depression), which can lead to the development of antisocial behaviour.

Findings also supported the discriminant validity of the ASP-8. Consistent with hypotheses, sadism was only weakly correlated with emotionality, openness, and extraversion. Similar results were found in previous research (e.g., Dinić et al, 2020; Kowalski et al., 2020; Pineda et al., 2021). Moreover, consistent with previous research (Womick et al., 2019), low correlations were observed between sadism and satisfaction with life.

Predictions were not made regarding the relationship between sadism and stress and anxiety. Results showed that these correlations differed across samples. Sadism was positively correlated with anxiety and stress in the Greek and Russian samples, but there was no meaningful relationship in the UK sample (the Serbian sample did not assess anxiety or stress). The positive correlations were consistent with outcomes showing that the Dark Triad traits, namely Machiavellianism and psychopathy, are positively (albeit weakly) associated with anxiety sensitivity (Sabouri et al., 2016). Furthermore, meta-analysis has revealed that although individuals high in dark traits such as psychopathy generally exhibit behaviours consistent with disinhibition, they do not reliably demonstrate low negative affect and anxiety (Derefinko, 2014). Given similarities between these traits, this may also apply to sadism. Associations between sadism, stress, and anxiety require extension in subsequent studies to better understand the nature of these relationships.

Confirmatory factor analytic results indicated that ASP-8 was unidimensional structure across nations. However, despite high CFI values and strong factor loadings, the RMSEA value was high within models, reflecting poor model fit, except for the Serbian sample. Although unexpected, several simulation studies have indicated that structural equation models with fewer degrees of freedom tend to inaccurately result in poor model fit when the RMSEA value is

considered (Chen et al., 2008; Kenny et al., 2015; Taasoobshirazi & Wang, 2016), and that RMSEA values in these cases should be interpreted with caution.

When measurement invariance was tested across countries, full scalar invariance (UK) and partial scalar invariance (Greece, Russia, Serbia), indicating that the unidimensional structure was achieved. Factor loadings, and intercepts (except where unconstrained) were equivalent across Canada and the other countries and providing additional support for the validity of the ASP-8. When evaluating latent mean differences across countries, the Canadian sample scored significantly higher on latent sadism than other samples. Although these findings were unanticipated, past research has found relationships between aggression and cultural individualism/collectivism. Noting that aggression ratings were higher among individualist countries, in which conflict and confrontation is considered normal, compared to collectivist countries, where group harmony is emphasized (Bergmüller, 2013). Since, Serbia, Greece, and Russia are more collectivistic than Canada, and sadism is strongly correlated with aggression, this may provide insight into cross-cultural differences in sadism. The finding that Canada scored higher than the UK on latent sadism, however, is difficult to reconcile. To further delineate the nature of this association, future research should replicate this cross-national investigation.

Limitations and Future Directions

Despite strengths, several limitations of the present study need addressing. First, because data were self-report in nature, there is risk for socially desirable responding, such that participants present themselves in a favourable way ( ). Future studies should compare self-report measures of the ASP-8 with both peer reports and behavioural indices to further support its validity. Subsequent studies should also control for social desirability while evaluating relationships between the ASP-8 and relevant personality variables or behaviours.

Next, the reliability coefficients for the BFI-2-XS scales were weak across samples. Although short scales tend to exhibit weaker internal consistency values when they measure a broad content domain (Ziegler et al., 2014), it is possible that the weaker reliability coefficients indicate a psychometric issue with subscales. Future research should evaluate correlations between the ASP-8 and the Five-Factor model using measures with stronger reliability across nations.

The Canadian sample scored higher than all other samples on latent sadism. Although, the authors have speculated on potential reasons for these differences, the significant difference between Canada and the United Kingdom on latent sadism was difficult to rationalise. Hence, ensuing investigate should replicate cross-national comparisons on the ASP-8 to clarify differences between countries.

Finally, age range across samples was not consistent, which indicates that findings may have been impacted by age. Specifically, individuals in the Canadian sample were, on average, younger than those in the other samples, whereas individuals in the Russian and Greek samples were the oldest. Future research should cross-nationally investigate the utility of the ASP-8 using more balanced age groups.

Concluding Remarks

Results demonstrated the psychometric validity of the ASP-8 across multiple nations and translations. Based on these outcomes and the findings of previous psychometric investigations (Dinić et al, 2020; Kowalski et al., 2020; Pineda et al., 2021; Plouffe et al., 2017, 2019, 2021), the use of the ASP-8 in forthcoming investigations of dark traits is recommended. Following work should further assess the predictive validity of the ASP-8 using behavioural criteria, as well as assess the distinctiveness of sadism and psychopathy, using theoretically relevant external variables.

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Table 1

Descriptive Statistics for All Samples

Variable	*M*	*SD*	α	Skewness	Kurtosis
Canada					
ASP-8	1.91	0.80	.89	0.85	0.13
Greece					
ASP-8	1.60	0.61	.85	1.38	2.23
Extraversion	3.11	0.78	.36	0.07	-0.29
Agreeableness	4.02	0.72	.39	-0.58	-0.24
Conscientiousness	3.87	0.85	.55	-0.34	-0.83
Emotionality	3.12	0.93	.57	-0.05	-0.64
Open mindedness	3.82	0.73	.41	-0.50	0.15
Machiavellianism	3.01	0.58	.70	0.29	0.07
Narcissism	2.96	0.49	.61	0.16	0.23
Psychopathy	1.99	0.56	.74	0.55	0.33
Depression	9.40	9.15	.89	1.39	1.55
Anxiety	7.60	7.93	.85	1.36	1.54
Stress	13.37	8.56	.85	0.70	0.22
Mental toughness	32.86	5.89	.80	-0.32	0.30
Trait EI	4.89	0.73	.87	-0.36	0.12
Physical aggression	16.97	6.68	.82	1.12	1.33
Verbal aggression	14.60	3.61	.61	0.10	-0.20
Anger	19.61	5.71	.79	0.18	-0.56
Hostility	22.23	6.25	.76	-0.01	-0.39
Total aggression	73.34	17.23	.89	0.37	0.22
Satisfaction with life	23.17	6.41	.87	-0.50	-0.30
Russia					
ASP-8	1.61	0.67	.91	1.31	1.72
Extraversion	2.98	0.85	.50	0.17	-0.35
Agreeableness	3.61	0.70	.28	-0.24	-0.04
Conscientiousness	3.64	0.79	.44	-0.11	-0.68
Emotionality	2.84	0.97	.66	0.12	-0.65
Open mindedness	3.25	0.80	.36	-0.16	-0.14
Machiavellianism	3.32	0.55	.70	-0.14	0.43
Narcissism	2.88	0.52	.69	-0.04	0.85
Psychopathy	2.28	0.54	.71	0.25	0.13
Depression	12.01	9.23	.84	0.84	0.23
Anxiety	10.84	9.52	.87	0.95	0.50
Stress	15.89	10.24	.90	0.46	-0.36
Mental toughness	33.18	5.15	.74	-0.25	0.63
Physical aggression	20.43	7.11	.83	0.53	-0.21
Verbal aggression	15.19	3.57	.61	0.05	-0.03
Anger	19.29	5.97	.81	0.17	-0.35
Hostility	23.75	5.81	.74	0.04	-0.05
Total aggression	78.65	17.54	.89	0.40	0.29
Satisfaction with life	17.85	7.00	.88	0.16	-0.81

United Kingdom					
ASP-8	1.52	0.63	.84	1.53	2.28
Extraversion	3.12	0.96	.59	-0.05	-0.75
Agreeableness	3.95	0.81	.55	-0.72	0.07
Conscientiousness	3.49	0.85	.52	-0.23	-0.40
Emotionality	3.42	1.09	.77	-0.52	-0.66
Open mindedness	3.56	0.76	.37	-0.34	-0.40
Machiavellianism	3.09	0.57	.69	0.04	-0.02
Narcissism	2.56	0.60	.74	0.45	0.46
Psychopathy	2.03	0.58	.73	0.52	0.15
Depression	11.25	10.58	.92	1.03	0.32
Anxiety	10.64	9.49	.87	0.96	0.13
Stress	14.97	9.23	.85	0.44	-0.57
Mental toughness	31.74	7.05	.85	-0.04	0.11
Trait EI	4.68	0.86	.90	-0.41	0.26
Physical aggression	18.07	7.56	.86	0.85	0.01
Verbal aggression	14.61	4.47	.78	0.05	-0.63
Anger	17.18	5.77	.79	0.28	-0.56
Hostility	23.66	6.37	.78	-0.06	-0.39
Total aggression	73.51	18.46	.90	0.23	-0.31
Satisfaction with life	22.66	7.27	.89	-0.40	-0.73
Serbia					
ASP-8	1.63	0.50	.87	2.11	5.89
Extraversion	33.45	6.81	.78	-0.11	-0.26
Agreeableness	29.61	6.42	.71	0.01	-0.24
Conscientiousness	36.67	7.39	.83	-0.37	-0.30
Emotionality	30.97	7.24	.77	-0.02	-0.25
Openness	36.55	7.90	.81	-0.65	0.06
Honesty-humility	36.15	7.59	.79	-0.55	-0.01
Machiavellianism	3.09	0.74	.80	0.07	-0.15
Narcissism	2.70	0.75	.74	0.15	-0.16
Psychopathy	1.94	0.68	.77	0.92	0.74
Anger	10.85	4.99	.88	0.81	-0.13
Vengefulness	10.39	5.02	.88	1.27	1.15
Dominance	14.76	6.08	.84	0.83	0.29
Hostility	15.60	4.52	.76	0.01	-0.39
Derogated groups	30.80	7.93	.89	0.10	0.16
Dangerous groups	19.31	7.40	.83	1.12	2.71
Dissident groups	37.47	9.39	.82	-0.11	0.15

Note. EI = emotional intelligence. Derogated, dangerous, dissident groups = attitudes toward social groups.

Table 2

Bivariate Correlations Between ASP-8 and Study Variables

	Country			
Variable	Greece	Russia	United Kingdom	Serbia
Extraversion	.15**	.07	.09	-.16**
Agreeableness	-.40**	-.39**	-.46**	-.24**
Conscientiousness	-.19**	-.21**	-.21**	-.32**
Emotionality	.05	.15**	-.10	-.16**
Open mindedness/Openness	-.15**	-.09	.04	-.11
Honesty-humility	N/A	N/A	N/A	-.43**
Machiavellianism	.41**	.27**	.41**	.38**
Narcissism	.29**	.17**	.28**	.32**
Psychopathy	.64**	.57**	.62**	.62**
Depression	.16**	.30**	.03	N/A
Anxiety	.14**	.32**	.01	N/A
Stress	.20**	.22**	.10	N/A
Mental toughness	-.07	-.15**	.04	N/A
Trait EI	-.18**	N/A	-.08	N/A
BPAQ Physical aggression	.48**	.46**	.57**	N/A
BPAQ Verbal aggression	.33**	.27**	.41**	N/A
BPAQ Anger	.27**	.30**	.37**	N/A
BPAQ Hostility	.29**	.27**	.18**	N/A
BPAQ Total aggression	.45**	.43**	.51**	N/A
Satisfaction with life	-.16**	-.10**	-.11	N/A
AVDH Anger	N/A	N/A	N/A	.42**
AVDH Vengefulness	N/A	N/A	N/A	.57**
AVDH Dominance	N/A	N/A	N/A	.50**
AVDH Hostility	N/A	N/A	N/A	.30**
Derogated groups	N/A	N/A	N/A	-.18**
Dangerous groups	N/A	N/A	N/A	.37**
Dissident groups	N/A	N/A	N/A	-.20**

Note. $**p < .001$, $*p < .003$. Bonferroni correction applied. EI = emotional intelligence. BPAQ = Buss-Perry Aggression Questionnaire. AVDH = AVDH Aggressiveness Questionnaire. Derogated, dangerous, dissident groups = attitudes toward social groups.

Table 3

Cross-National Invariance Fit Indices

Model	χ^2(df)	CFI	RMSEA	RMSEA 90% CI
Greece and Canada				
Configural model	191.50(40)**	.937	.072**	.062, .082
Metric model	226.69(47)**	.925	.072**	.063, .082
Scalar model	317.79(54)**	.890	.082**	.073, .091
Partial scalar model (intercepts 5 and 7 freed)	265.35(52)**	.911	.075**	.066, .084
Russia and Canada				
Configural model	238.61(40)**	.933	.086**	.075, .096
Metric model	265.33(47)**	.926	.083**	.073, .093
Scalar model	343.13(54)**	.902	.089**	.080, .098
Partial scalar model (intercept 3 freed)	309.54(53)**	.913	.085**	.076, .094
UK and Canada				
Configural model	138.51(40)**	.927	.080**	.065, .094
Metric model	157.31(47)**	.918	.078**	.065, .091
Scalar model	175.57(54)**	.910	.076**	.064, .089
Serbia and Canada				
Configural model	119.34(40)**	.924	.075*	.060, .091
Metric model	131.49(47)**	.919	.071*	.057, .086
Scalar model	190.41(54)**	.869	.085**	.072, .098
Partial scalar model (intercepts 1, 4, and 7 freed)	142.63(51)**	.912	.071*	.058, .085

Note. **p<.001, *p<.01. CFI = comparative fit index. RMSEA = Root mean square error of approximation. CI = confidence interval.