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## Abstract

The Elemental Psychopathy Assessment (EPA) is a 178-item self-report measure designed to assess the basic elements of psychopathy from a Five-Factor Model perspective: Anger, Arrogance, Callousness, Coldness, Disobliged, Distrust, Dominance, Impersistence, Invulnerable, Manipulation, Opposition, Rashness, Self-Assurance, Self-Centered, Self-Contentment, Thrill-Seeking, Unconcern, and Urgency. The present article reports on the development of a short-form version of the EPA in two large undergraduate samples using item response theory. The validity of the resultant, 72-item, item response theory–derived short form is compared against the validity for the full scale in the undergraduate samples and smaller forensic sample. Results indicate that the 18 subscales of the EPA short form remain relatively reliable, possess an internal structure virtually identical to the full version, and manifest highly similar correlational profiles to a variety of criterion measures. The EPA short form is offered as a viable assessment of psychopathy when assessment time is limited. Implications of these findings are discussed.

## Keywords

psychopathy, five-factor model, Elemental Psychopathy Assessment, personality

Psychopathy is a form of personality disorder (PD) characterized by traits such as egocentricity, manipulateness, lack of remorse or concern for others, and impulsivity. It is related to important outcomes, such as frequent and violent criminal activity, substance abuse disorders, and aggression (e.g., Porter & Woodworth, 2006; Taylor & Lang, 2006). For the past 30 years, psychopathy has been most commonly assessed using the Psychopathy Checklist (PCL) and its revision (PCL-R; Hare, 2003), which require both a clinical interview and a file review. The required file review (e.g., comprehensive review of arrest records, history of disciplinary infractions, etc.) makes it difficult if not impossible to use the PCL/PCL-R in noninstitutionalized settings. This is unfortunate as there is growing interest in the study of psychopathy in noninstitutionalized samples driven, in part, by the recognition that psychopathy is distributed dimensionally (e.g., Guay, Ruscio, Knight, & Hare, 2007) and has predictive utility at all levels of the scale.

To make the assessment of psychopathy more practical in noninstitutionalized samples, a number of self-report measures of psychopathy have been created. Some of these measures, such as the Levenson Self-Report Psychopathy Scale (LSRP; Levenson, Kiehl, & Fitzpatrick, 1995) and the Self-Report Psychopathy Scale (SRP-III; Williams, Paulhus, & Hare, 2007), were explicitly modeled after the PCL/PCL-R content. Two additional self-report measures,

the Psychopathic Personality Inventory–Revised (PPI-R; Lilienfeld & Widows, 2005) and the Triarchic Psychopathy Measure (TPM; Patrick, 2010), began with clinical and theoretical descriptions of the psychopathy construct and sought to measure the core features present in these descriptions. Each of the latter two measures includes traits that are not explicitly or strongly included within the PCL-R assessment (e.g., fearlessness and boldness, respectively).

Another recently developed self-report inventory, the Elemental Psychopathy Assessment (EPA; Lynam et al., 2011), started not with global descriptions of psychopathy, but with the basic building blocks of personality—the 30 traits present in the Five-Factor Model (FFM) of personality (McCrae & Costa, 2003), whose relations to psychopathy have been widely studied. Lynam et al. began with a consensus profile of psychopathy provided by Lynam and Widiger (2007) that identified 18 facets from the Revised NEO Personality Inventory (NEO PI-R; Costa & McCrae,

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1992) that reliably emerged across different methods (e.g., meta-analyses; expert ratings) as robust descriptors of psychopathy. To address concerns about using an assessment instrument designed to assess normal range personality for the assessment of disordered personality, the authors developed items for new scales that described more maladaptive, extreme, and/or psychopathy-specific manifestations of the 18 FFM traits identified by Lynam and Widiger (e.g., “I have more important things to worry about than other people’s feelings” as a more extreme variant of low FFM altruism and “My stubbornness has frequently gotten me into trouble” as an oppositional variant of low FFM compliance). The initial 299-item pool was administered to over 900 participants. Based on corrected item–total correlations, interitem correlations, and reliability analyses, nine-item scales were generated for each of the 18 elements of psychopathy, along with two eight-item scales (*Infrequency* and *Too Good to Be True*) serving as validity checks. All scales were reliable and homogeneous, and the content remained consistent with the FFM facets from which they were derived.

Lynam et al. (2011) also reported initial validity data for the EPA in both the derivation sample and a smaller sample of incarcerated men. Within the derivation sample, scores on the EPA were strongly correlated with the total and subscale scores of other psychopathy inventories. As hypothesized, EPA scales provided incremental predictive utility beyond the NEO PI-R facet scales in predicting other psychopathy measures. In a small prison sample, Lynam et al. replicated the relations between the EPA scales and SRP-III psychopathy and found EPA total scores were moderately significantly positively correlated with lifetime counts of alcohol use, antisocial behavior, and disciplinary infractions.

Several recent articles provide support for the construct validity of the EPA. Wilson, Miller, Zeichner, Lynam, and Widiger (2011) examined the relations among the EPA, three validated self-report psychopathy instruments, aggression, substance use, and antisocial behavior. The EPA Total score converged highly with the total and subscale scores of the three extant psychopathy inventories and was robustly correlated with measures of reactive and proactive aggression, lifetime antisocial behavior, alcohol use, and other substance use. Miller et al. (2011) examined the construct validity of the EPA in relation to self-report questionnaires and “thin slice” ratings of personality and related constructs made by graduate students who observed 60 seconds of videotaped answers to the question “what do you enjoy doing.” The EPA total and subscale scores manifested expected correlations with both self and “thin slice” ratings of the FFM; for example, the EPA total score was significantly negatively correlated with Agreeableness (self,  $r = -.73$ ; “thin slice,”  $r = -.27$ ) and Conscientiousness (self,  $r = -.26$ ; “thin slice,”  $r = -.32$ ). EPA scales were also related as expected to various forms of PD, anger-related social cognitions, and

romantic love styles indicative of game playing and infidelity. For example, paranoid PD was strongly related (i.e.,  $r > .5$ ) to the EPA subscales of Distrust and Anger, borderline PD was strongly related to Urgency, and narcissistic PD was strongly related to Self-centeredness and Arrogance. The strongest correlates of angry and aggressive social information processing were the EPA subscales of Anger, Callousness, and Self-centeredness. Thus, the extant results demonstrate that the EPA displays a nomological network that would be expected for a measure of psychopathy. Finally, Few, Miller, and Lynam (2013) factor-analyzed the EPA and reported a robust factor structure across two samples consisting of Callousness, Disinhibition, Emotional Stability, and Narcissism. These factors converged as expected with FFM traits, factors from other self-report psychopathy inventories, and externalizing behaviors.

Although the self-reported nature of the EPA allows for its use in nonforensic settings and group-administered studies, its length (i.e., 178 items) may be somewhat prohibitive when assessment time is limited. The present study reports on the iterative development, using item response theory (IRT) analyses, of a short form of the EPA that will reduce the administration time. In addition, analyses based on IRT provide rich information about an item’s functioning in relation to the latent trait that underlies it (Embretson & Reise, 2000). Item information curves are particularly useful in the selection of items as they allow one to select items that provide the maximum information at various levels of the underlying trait referenced as theta in IRT. In the current study, we use these procedures to refine the EPA subscales to create short forms for each of the 18 subscales.

We then compare the resulting short form to the full-length EPA in terms of internal structure and relations with external criteria (Smith, McCarthy, & Anderson, 2000). Importantly, the latter analyses are carried out at both the total score and subscale levels. To be maximally useful, the short form should continue to provide a well-articulated description of the psychopathic personality at the subscale level.

## Method

### Participants

Three separate samples were used in the present study. The first sample, referenced as derivation sample throughout, consisted of undergraduates from three large research universities across the United States. The number of participants from each university was 354, 210, and 343 for a total of 907 individuals. The derivation sample was 55% female and 87% Caucasian, with a mean age of 19.14 years. This sample was used in the original derivation of the EPA described in Lynam et al. (2011). A second student sample consisted of 787 undergraduates recruited from the research pool at a large Southern state university. This sample

consisted of 53% men (mean age = 19.34 years;  $SD = 2.19$ ) and was 83% Caucasian, 7% Asian, and 6% African American (see Few et al, 2013). Last, the prison sample consisted of 77 male inmates ranging in age from 19 to 63 years ( $M = 37.0$ ,  $SD = 11.27$ ) recruited from a closed security state prison in central Georgia that housed both general population and mental health inmates. The data for seven inmates were excluded from the analyses because of invalid responding, resulting in a final sample of 70 inmates. The racial composition of the prison sample consisted of 44% Caucasian, 41% African American, and 14% multiracial individuals. Data from the prison sample were also used in Lynam et al. (2011).

### Procedures

In all undergraduates samples, participants either gave written or electronic informed consent, completed the battery of self-report questionnaires in moderately sized groups or individually, and received research credit for participating. In the derivation sample, participants completed a demographics questionnaire followed by the EPA (Lynam et al., 2011), the NEO PI-R (Costa & McCrae, 1992), and one of the following self-reported psychopathy scales: the SRP-III (Williams et al., 2007), the LSRP (Levenson et al., 1995), or the revised PPI (PPI-R; Lilienfeld & Widows, 2005). In the second student sample, participants completed a battery of self-report questionnaires, including the EPA, NEO-Five-Factor Inventory (Costa & McCrae, 1992; NEO-FFI), SRP-III, PPI-R, LSRP, and the Crime and Analogous Behavior Scale (CAB; Miller & Lynam 2003).

Recruitment of the prison sample involved placing advertisement flyers in each of the inmate dorms. The researchers met with interested individuals to review the consent form and administer a literacy screen; individuals with a diagnosis of a psychotic disorder or mental retardation were excluded from participating. After providing informed consent, eligible inmates completed the study protocol, including the EPA, SRP-III, and the CAB (for details, see Lynam et al., 2011). Following completion of the battery, the researchers debriefed the inmates and provided soda and cookies for their participation. In addition, the facility's staff assisted the researchers in the collection of information from the institution's computer database, including inmate disciplinary reports (DRs) and length of current incarceration.

All institutional review board requirements were followed in all three samples.

### Measures

There was some variability of measures completed by the three samples, but all batteries included some portion of the following assessments.

**Elemental Psychopathy Assessment.** The EPA (Lynam et al., 2011) is a 178-item self-report measure of psychopathy that provides a total score as well as scores on 18 subscales measuring psychopathy. For the derivation sample, coefficient alphas for the subscales ranged from .63 to .88 with a median of .81; in the second sample, coefficient alphas ranged from .64 to .87 with a median of .82; in the prison sample they ranged from .44 to .87 with a median of .76.

**Revised NEO Personality Inventory.** The NEO PI-R (Costa & McCrae, 1992) is a 240-item self-report measure of the FFM of personality. It assesses the five broad personality domains of the FFM (i.e., Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness) as well as the six lower order facets underlying each domain. The NEO PI-R was solely used in the derivation sample and had coefficient alphas for the facet scale scores ranging from .51 to .82 ( $Mdn = .75$ ) and from .87 to .92 for the domain scores.

**NEO-Five-Factor Inventory.** The NEO-FFI (Costa & McCrae, 1992) is a short-form version of the NEO PI-R that consists of 60 self-report items. Like the full form, the NEO-FFI assesses the five broad personality domains of the FFM as well as the six lower order facets underlying each domain. The NEO-FFI was used in the second student sample and was found to be reliable with coefficient alphas ranging from .72 for Openness to .86 for Neuroticism and Conscientiousness.

**Self-Report Psychopathy-III.** The SRP-III (Williams et al., 2007) is a 64-item self-report measure of psychopathy that results in a total psychopathy score as well as scores for four subscales: Interpersonal Manipulation (IM), Callous Affect (CA), Erratic Lifestyle (EL), and Antisocial Behavior (ASB). For those participants in the derivation sample that completed it, the coefficient alphas for the total score and IM, CA, EL, and ASB were .92, .86, .81, .84, and .73, respectively. Similarly, in the second student sample, IM, CA, EL, and ASB were found to be reliable with coefficient alphas of .85, .83, .83, and .88, respectively. Last, in the prison sample, coefficient alphas for the total score, IM, CA, EL, and ASB scale scores were .94, .85, .83, .82, and .74, respectively.

**Psychopathic Personality Inventory-Revised.** The PPI-R (Lilienfeld & Widows, 2005) is a 154-item self-report measure of psychopathy that provides scores for eight subscales as well as a global psychopathy score (PPI-total) and two psychopathy factor scores (PPI-R Fearless Dominance [PPI FD] and PPI-R Self-centered Impulsivity [PPI ScI]). The eight subscales possessed adequate reliability in the subsample of the derivation sample that completed it and in the second student sample with coefficient alphas ranging from .82 to .88.

**Levenson Self-Report Psychopathy Scale.** The LSRP (Levenson et al., 1995) is a 26-item self-report measure of psychopathy designed specifically for noninstitutionalized samples. Responses on the LSRP result in a total psychopathy score (LSRP total) and two factor scores (LSRP 1 and LSRP 2). For the portion of the derivation sample that completed it and the second student sample, coefficient alphas for the total score, LSRP 1, and LSRP 2 ranged from .70 to .88.

**Crime and Analogous Behavior Scale.** The CAB (Miller & Lynam 2003) is a self-report questionnaire that assesses a variety of externalizing behaviors, including substance abuse, antisocial behavior, intimate partner violence, and gambling. For the second student sample, a substance-use variety count was created by giving participants a “1” for every substance they endorsed (6 items;  $M = 1.96$ ;  $SD = 1.43$ ). An antisocial behavior count was created by giving participants a “1” for every antisocial act they endorsed (9 items;  $M = 1.20$ ;  $SD = 1.23$ ). For the prison sample, lifetime counts of substance use ( $M = 3.13$ ,  $SD = 2.1$ ) and antisocial acts ( $M = 4.43$ ,  $SD = 2.3$ ) were used. In addition, three variables were included for alcohol use, which were  $z$ -scored and added to form a composite: “ever drink,” “pattern of drinking over previous 12 months prior to incarceration,” and “ever had five drinks or more in one day.”

**Disciplinary Infractions.** For the prison sample, information regarding disciplinary infractions was collected. The Georgia Department of Corrections maintains a comprehensive code of inmate misconduct. Violation of this code results in the issue of a DR noting the form of misconduct. The number of infractions was summed to create a total DR score for each inmate. The mean number of DRs was 6.01 ( $SD = 9.88$ ).

## Results

### Item Response Theory Results

The two undergraduate samples were used in item selection; after listwise deletion, these two samples provided between 1,559 and 1,603 participants for IRT analyses of each of the 18 EPA scales. Using MPlus Version 6.0, an IRT analysis was conducted; specifically, Samejima’s graded response model was applied to items from each EPA subscale. Within these models, all items from a subscale were treated as ordered categorical indicators of a single latent factor; factor loadings and item thresholds were all estimated. The WLSMV (weighted least squares means and variance adjusted) estimator with a probit link was used. Item information curves were examined to identify items for the short form. Specifically, areas under the curve ranging from  $\Theta > 0$  to  $\Theta = 6.0$  were calculated for each item.

Theta references the latent trait and has a mean of zero and a standard deviation of 1. Items were selected based on the total psychometric information supplied in this range of theta. We explored results for three-, four-, and five-item scales; ultimately deciding on four-item subscales based on considerations of length and amount of information retained.

Table 1 provides summary information from the IRT analyses for the final four items selected for the short-form scales.<sup>1</sup> The second column gives the percentage of total psychometric information across the nine items that is captured by the four items. These percentages range from a low of 49 for Manipulation and Self-contentment to a high of 61 for Unconcern; on average, these short-form scales captured 54% of the psychometric information of the nine-item full scales. Results are similar for the psychometric information available at higher levels of theta; at higher levels of theta, the four items selected for the short forms of the scales captured between 51% and 62% (average = 55%) of the psychometric information provided by the nine-item versions. The fourth column gives the percentage increase in the average item information for the four items relative to the original nine items. For example, the average amount of psychometric information provided by the nine items of the Anger scale was 4.30; the average amount of information provided by the four items selected for the short form was 5.39, which represents a 25% increase. Across all subscales, the average information provided by each item was 24% higher for the four-item subscales than for the nine-item version. The next two columns provide the alpha coefficients for the short- and long-form versions of the subscales. Alphas for the long form range from .64 for Arrogance to .88 for Thrill-Seeking, with a mean of .81. Alphas are lower but generally good for the short-form scales, ranging from .55 for Arrogance to .85 for Thrill-Seeking with a mean of .74. Finally, the last column presents the convergent correlations between the long- and short-form subscales, which range from .84 for Arrogance to .94 for Unconcern with a mean of .91.

### Factor Analyses

To ascertain whether the short scales related to one another in the same manner that the long-form scales did, exploratory factor analyses were conducted separately on the short- and long-form scales. Specifically, the 18 subscale scores were submitted to a factor analysis using principal axis factoring and oblimin rotation. In the first analysis, the full nine-item subscales were used; in the second analysis, the four-item subscales were used. In each analysis, there were four eigenvalues greater than one with the scree plot and minimum average partial method of Velicer (1976) suggesting four-factor solutions; results from Horn’s (1965) parallel analysis suggested up to five factors could be



**Table 1.** Initial Item Response Theory Results.

Scale	% Info Total	% Info $\Theta > 0$	% Increase average item info	9-Item $\alpha$	4-Item $\alpha$	Convergent $r$
Anger	56	55	24	.83	.76	.93
Arrogance	52	57	29	.64	.55	.84
Callous	51	52	17	.82	.72	.90
Coldness	52	55	24	.82	.75	.90
Disobliged	57	57	28	.77	.73	.87
Distrust	55	54	21	.74	.66	.88
Dominance	54	54	22	.79	.70	.91
Impersistence	52	54	21	.83	.76	.93
Invulnerable	54	53	19	.83	.76	.90
Manipulation	49	52	17	.82	.72	.90
Opposition	54	56	27	.79	.74	.90
Rashness	51	53	19	.85	.76	.92
Self-assured	55	54	23	.84	.78	.93
Self-centered	53	56	27	.83	.78	.90
Self-contentment	49	51	16	.80	.69	.91
Thrill-seeking	57	57	28	.88	.85	.93
Unconcern	61	62	39	.83	.81	.94
Urgency	60	61	36	.82	.77	.92
Average	54	55	24	.81	.74	.91

Note. % Info Total is the percentage of total psychometric information provided by the nine-item scale that is captured by the shortened four-item scales across the range of theta (i.e., from  $-6$  to  $+6$ ). % Info  $\Theta > 0$  is the percentage of information at positive values of theta captured by the four-item scales. % Increase Avg Item Info is the percentage increase in the average item information from the nine-item set to the four-item set. Convergent  $r$  is the correlation between the long- and short-form scales.

extracted. Thus, four factors were extracted in each analysis. In the long-form analysis, the four factors explained 70% of the variance, whereas in the short-form analysis they explained 63% of the variance. The four factors corresponded to the factors extracted previously (Few et al., 2013): Antagonism, Emotional Stability, Narcissism, and Disinhibition. Table 2 provides the pattern matrix loadings for the scales from each analysis. As can be seen in the table, loadings were quite consistent across the long and short scales. In both analyses, Antagonism was marked by Callousness, Coldness, Disobliged, Distrust, Manipulation, and Self-centeredness. Emotional Stability was marked by low Anger, low Distrust, Invulnerability, Self-contentment, Unconcern, and low Urgency. Narcissism was marked, in both analyses, by Anger, Dominance, low Impersistence, and Self-assuredness. The highest loadings for the Disinhibition factor in both analyses were for Disobliged, Impersistence, Oppositional, Rashness, Thrill Seeking, and Urgency. The one obvious difference between the results for the short and long forms was for Arrogance, which loaded most highly on Narcissism in the long-form analysis, but most highly on Callousness in the short-form analysis. To quantify the replicability of the factor structure across versions, we computed Tucker's (1951) congruence coefficients. The coefficients for the four factors ranged from .89 (EPA Narcissism) to .99 (EPA Emotional Stability)

and the coefficient for entire structure was .96; four of the five values were greater than the .95 value suggested by Lorenzo-Seva and ten Berge (2006) as indicating equality. In general, with the exception of slight differences in the loadings for Narcissism, the internal structure of the scales was quite similar across short and long versions. Similarly, correlations among the four factors were nearly identical across the two analyses, ranging from a low of  $-.16$  for Antagonism with Emotional Stability to a high of .45 for Antagonism with Disinhibition. Finally, the convergent correlations between estimated factor scores for the short- and long-form factors ranged from 0.90 for Narcissism to 0.97 for Antagonism and Emotional Stability.

### Relations With External Criteria: Total Scores

To examine whether the nomological network surrounding the full scale was preserved with the short form, the correlations with various external criteria were examined separately in each sample. Table 3 provides the correlations between the various criteria and the total scores from the long and short forms of the EPA. As can be seen in the correlations themselves and in the summary statistics at the bottom of Table 3, the two versions produced very similar correlational profiles in each sample. When the correlational profiles were compared via double-entry intraclass

**Table 2.** Factor Loadings for Original and Short-Form Elemental Psychopathy Assessment Subscales.

	Antagonism		Emotional Stability		Narcissism		Disinhibition	
	Full	Short	Full	Short	Full	Short	Full	Short
Anger	.29	.29	<b>-.41</b>	<b>-.45</b>	.38	.32	.20	.22
Arrogance	.29	<b>.53</b>	-.05	-.04	<b>.51</b>	.25	.01	.10
Callous	<b>.85</b>	<b>.83</b>	.19	.12	.10	.04	.03	.00
Coldness	<b>.85</b>	<b>.67</b>	.07	.05	-.20	-.26	.02	-.04
Disobliged	<u>.45</u>	<b>.47</b>	-.09	-.02	-.24	-.38	<b>.54</b>	.33
Distrust	<b>.44</b>	<b>.42</b>	-.37	-.32	.24	.16	-.01	-.06
Dominance	.04	.14	.10	.10	<b>.76</b>	<b>.61</b>	.01	.11
Invulnerability	.16	.09	<b>.71</b>	<b>.59</b>	.16	.19	-.01	.01
Impersistence	.14	.18	-.23	-.19	-.33	<b>-.49</b>	<b>.53</b>	.39
Manipulation	<b>.46</b>	<b>.51</b>	-.01	-.00	.23	.14	.33	.26
Oppositional	.23	.27	-.06	-.01	.32	.13	<b>.51</b>	<b>.59</b>
Rashness	-.07	-.05	.05	-.07	-.04	-.11	<b>.89</b>	<b>.82</b>
Self-assured	-.31	-.22	<b>.41</b>	.38	<b>.51</b>	.40	.17	.21
Self-centered	<b>.78</b>	<b>.83</b>	.06	.13	.18	-.05	.04	.05
Self-contentment	-.09	.03	<b>.68</b>	<b>.68</b>	.14	.10	-.13	-.05
Thrill-seeking	.02	.01	.21	.18	.19	.11	<b>.70</b>	<b>.66</b>
Unconcern	.16	.17	<b>.87</b>	<b>.79</b>	-.02	-.01	.22	.19
Urgency	-.06	.04	<b>-.59</b>	<b>-.62</b>	.23	.13	.52	.48

Note. Coefficients in boldface represent the highest loading for a given scale; underlined coefficients index significant (>.30) secondary loadings.  $N = 1,610$  for the full-scale analyses and  $N = 1,608$  for the short-form analyses.

correlations, similarity indices were .98 or greater in each sample. In the derivation sample, the largest divergence between correlations obtained using the long- and short-form total scores was .04 for the FFM domain of Extraversion; the average difference was only .02. The range of scores and the median  $r$  were virtually identical across version type.

### Relations With External Criteria: Subscale Scores

A benefit of the EPA is the ability to provide a fully articulated description of the psychopathic personality at the subscale level. Thus, a major advantage of the EPA would be lost if, in moving to a short form, the ability to work at the subscale level was lost. Although the subscales remain relatively reliable, it is important to examine their validity. To ensure that this articulation is maintained in the short form we compared the correlations for the short- and long-form subscales in each sample with the validation variables used above. Table 4 presents the results for the Impersistence subscale across the three samples. Looking at the summary statistics in the bottom of the table, the short and long forms bear similar relations to the criteria. The similarities in the correlational profiles for the two forms were .99 in the student samples and .94 in the prison sample. The range of correlations and median correlation were virtually identical

for the two forms, and the average difference in correlations was fairly small—.03 in the two student samples and .04 in the prison sample.

To conserve space, rather than present the correlations for each of the remaining 17 subscales, Table 5 presents the summary statistics for each subscale in each sample. Similar to the results presented for the total scores, the average divergence of the correlations between subscale scores and external criteria for the two forms were all less than .10 with the exception of the Self-Assurance subscale in the prison sample (average  $|\text{difference}| = .11$ ). Within each sample the ranges of correlations of the subscales and external criteria for the two versions were similar, as were the median correlations between the external criteria and subscales of each version. The similar correlational profiles of the short and long forms again resulted in high intraclass correlations, ranging from .93 to .99 and .94 to .99 for the various subscales in the derivation and second student sample, respectively. It is notable that the prison sample yielded lower intraclass correlations for the two forms, ranging from a low of .57 to .99. However, the majority of intraclass correlations were above .90, comparable to the other samples.

### Discussion

The present article reports on the development of a short form of the EPA (Lynam et al., 2011)—a recently developed

**Table 3.** Relations Between the Total Score and External Criteria in Three Samples.

	Derivation sample		Second student sample		Prison sample	
	Short	Full	Short	Full	Short	Full
SRP total score	<b>0.80</b>	<b>0.83</b>	<b>0.78</b>	<b>0.8</b>	<b>0.84</b>	<b>0.89</b>
SRP callousness	<b>0.62</b>	<b>0.61</b>	<b>0.68</b>	<b>0.71</b>	<b>0.87</b>	<b>0.88</b>
SRP interpersonal	<b>0.67</b>	<b>0.69</b>	<b>0.70</b>	<b>0.73</b>	<b>0.81</b>	<b>0.85</b>
SRP erratic lifestyle	<b>0.73</b>	<b>0.76</b>	<b>0.72</b>	<b>0.74</b>	<b>0.72</b>	<b>0.76</b>
SRP antisocial	<b>0.54</b>	<b>0.57</b>	<b>0.50</b>	<b>0.48</b>	<b>0.59</b>	<b>0.68</b>
LSRP total	<b>0.80</b>	<b>0.79</b>	<b>0.75</b>	<b>0.76</b>		
LSRP Factor 1	<b>0.75</b>	<b>0.75</b>	<b>0.70</b>	<b>0.71</b>		
LSRP Factor 2	<b>0.60</b>	<b>0.59</b>	<b>0.59</b>	<b>0.6</b>		
PPI total	<b>0.80</b>	<b>0.82</b>	<b>0.82</b>	<b>0.82</b>		
PPI Factor 1	<b>0.43</b>	<b>0.46</b>	<b>0.46</b>	<b>0.47</b>		
PPI Factor 2	<b>0.68</b>	<b>0.69</b>	<b>0.69</b>	<b>0.7</b>		
PPI coldheartedness	<b>0.41</b>	<b>0.38</b>	<b>0.59</b>	<b>0.57</b>		
Neuroticism	-0.04	-0.03	-0.07	-0.06		
Extraversion	-0.03	0.01	<b>-0.10</b>	-0.09		
Openness	-0.09	-0.07	-0.08	-0.06		
Agreeableness	<b>-0.69</b>	<b>-0.70</b>	<b>-0.71</b>	<b>-0.72</b>		
Conscientiousness	<b>-0.39</b>	<b>-0.39</b>	<b>-0.39</b>	<b>-0.39</b>		
Alcohol use					<b>0.36</b>	<b>0.35</b>
Substance use			<b>0.30</b>	<b>0.33</b>	0.15	0.18
Antisocial behavior			<b>0.36</b>	<b>0.4</b>	<b>0.44</b>	<b>0.49</b>
Disciplinary reports					<b>0.35</b>	<b>0.4</b>
Summary Statistics						
Similarity scores		.99		.99		.98
Range of <i>r</i>	-.69 to .80	-.70 to .83	-.71 to .82	-.72 to .82	.15 to .87	.18 to .89
Median <i>r</i>	.60	.59	.59	.57	.59	.68
Average difference		.02		.02		.04

Note. SRP = Self-Reported Psychopathy scale; LSRP = Levenson Self-Report Psychopathy Scale; PPI = Psychopathic Personality Inventory; FFM = five-factor model. Coefficients in boldface are significant at  $p < .05$ . In the derivation sample, *Ns* were 188 for the SRP, 319 for the LSRP, 305 for the PPI, and 785 for the FFM. In the second student sample, *Ns* ranged from 785 to 787. For the prison sample, *N* = 70.

assessment inventory based on the FFM trait description of psychopathy. IRT analyses were used to select four items for each scale that provided the maximum amount of psychometric information at upper values of the latent trait. Through this procedure, the 178-item EPA was reduced to 72 items using IRT analyses, which should cut the administration time by more than half.

The short-form scales remained relatively reliable. On average, the four-item subscales accounted for more than half of the psychometric information provided by the full nine-item scales. The new four-item subscales possessed generally adequate reliability with an average alpha of .74, compared with an average alpha of .81 for the full nine-item scales. In terms of internal structure, the short-form and full-form subscales were very similar; both were underlain by a four-factor structure consisting of Antagonism, Disinhibition, Narcissism, and Emotional Stability.

Correlations with other psychopathy inventories, basic personality dimensions, and behavioral outcomes were also compared for the short and long forms across three samples.

In general, validity coefficients were quite similar for the two forms. At the total score level, correlational profiles were virtually identical for the short and long forms across all three samples. The short-form subscales also performed quite well relative to their long-form counterparts across all three samples. Correlational profiles for each subscale were quite similar and little predictive power was lost in moving from the long-form version to the short-form version. In the two student samples, the similarities ranged from .94 to .99.

Given recent writings by several of the present authors (Lynam & Miller, 2012; Miller & Lynam 2012) arguing against the centrality of PPI Factor 1 (i.e., Fearless Dominance) to psychopathy, it may surprise some that we claim convergence with PPI Factor 1 as evidence of the validity of the EPA. However, there is no inconsistency here. The EPA is based on a consensus FFM profile derived from expert ratings, observed correlations between FFM inventories and extant psychopathy inventories, and a translation of the PCL-R. The expert raters included proponents of the Fearless Dominance construct and some of the



**Table 4.** Relations Between Impersistence and External Criteria in Three Samples.

	Derivation sample		Second student sample		Prison sample	
	Short	Full	Short	Full	Short	Full
SRP total score	<b>0.26</b>	<b>0.25</b>	<b>0.25</b>	<b>0.27</b>	0.13	0.18
SRP callousness	0.09	0.03	<b>0.17</b>	<b>0.16</b>	0.17	0.23
SRP interpersonal	<b>0.21</b>	0.19	<b>0.18</b>	<b>0.21</b>	0.13	0.15
SRP erratic lifestyle	<b>0.27</b>	<b>0.31</b>	<b>0.23</b>	<b>0.28</b>	0.15	0.22
SRP antisocial	<b>0.27</b>	<b>0.27</b>	<b>0.25</b>	<b>0.23</b>	0.00	0.03
LSRP total	<b>0.40</b>	<b>0.45</b>	<b>0.38</b>	<b>0.41</b>		
LSRP Factor 1	<b>0.28</b>	<b>0.29</b>	<b>0.22</b>	<b>0.23</b>		
LSRP Factor 2	<b>0.49</b>	<b>0.59</b>	<b>0.56</b>	<b>0.60</b>		
PPI total	<b>0.21</b>	<b>0.22</b>	<b>0.27</b>	<b>0.32</b>		
PPI Factor 1	<b>-0.22</b>	<b>-0.21</b>	<b>-0.18</b>	<b>-0.13</b>		
PPI Factor 2	<b>0.44</b>	<b>0.46</b>	<b>0.47</b>	<b>0.51</b>		
PPI coldheartedness	<b>0.18</b>	0.14	<b>0.15</b>	<b>0.14</b>		
Neuroticism	<b>0.34</b>	<b>0.40</b>	<b>0.39</b>	<b>0.40</b>		
Extraversion	<b>-0.33</b>	<b>-0.29</b>	<b>-0.31</b>	<b>-0.23</b>		
Openness	-0.06	-0.05	0.00	0.00		
Agreeableness	<b>-0.22</b>	<b>-0.23</b>	<b>-0.25</b>	<b>-0.25</b>		
Conscientiousness	<b>-0.68</b>	<b>-0.73</b>	<b>-0.70</b>	<b>-0.75</b>		
Alcohol use					<b>0.33</b>	<b>0.29</b>
Substance use			0.08	0.08	-0.12	-0.10
Antisocial behavior			0.05	0.06	0.00	-0.06
Disciplinary reports					0.02	0.00
Summary Statistics						
Similarity scores		.99		.99		.94
Range of <i>r</i>	-.68 to .49	-.73 to .59	-.70 to .56	-.75 to .60	-.12 to .33	-.10 to .29
Median <i>r</i>	.21	.22	.18	.21	.13	.15
Average difference		.03		.03		.04

Note. SRP = Self-Reported Psychopathy scale; LSRP = Levenson Self-Report Psychopathy Scale; PPI = Psychopathic Personality Inventory; FFM = five-factor model. Coefficients in boldface are significant at  $p < .05$ . In the derivation sample, *N*s were 188 for the SRP, 319 for the LSRP, 305 for the PPI, and 785 for the FFM. In the second student sample, *N*s ranged from 785 to 787. For the prison sample, *N* = 70.

observed correlations that contributed to the meta-analysis included findings from the PPI. It is natural that FD-related content is present in the EPA; in fact, it is well represented by the Emotional Stability factor (e.g., Few et al., 2013). Our argument against FD is that it cannot serve as an indicator of psychopathy on its own, cannot be the core etiologic component of psychopathy, and may be best considered a diagnostic specifier. As noted previously (Lynam et al., 2011), a motivation behind creating the EPA was to allow researchers to work at a more basic trait level so they can “examine which elements are most central, which are peripheral, and which are unnecessary to the construct of psychopathy” (p. 15). Following Lynam and Miller (2012), we suspect that some traits included within the EPA, particularly those most similar to FD (e.g., Self-assurance, Self-contentment, and Invulnerability) will ultimately be shown to be relatively unimportant to psychopathy. The inclusion of this content in the EPA is important, however, as it will allow psychopathy researchers to continue to test the importance of this content in a variety of ways (e.g.,

exploring additive and interactive effects of Emotional Stability).

Overall, the current results indicate that little is lost in terms of psychometric information or validity in moving from the long form to the short form, even at the level of the 18 subscales. Thus, the short form maintains the capacity to provide an articulated and fine-grained description of psychopathy. We believe such a high bandwidth and high fidelity instrument has many potential advantages. First, the EPA elements can be used as assays of other instruments to identify points of convergence and divergence, to clarify factor structures, and to explain relations among other instruments. For example, Lynam et al. (2011) used the 18 elemental traits of the EPA to illustrate similarities and differences in the content of the four SRP-III factors and used this information to account for the two higher order factors and the general positive factor. Specifically, Lynam et al. argued that the general factor was explained by the 10 EPA scales that relate to each of the four subscales: EPA Anger, Coldness, Thrill Seeking, Distrust, Manipulation, Self-Centeredness, Opposition,

**Table 5.** Comparison of Validity Coefficients for Short and Long Forms in Three Samples.

	Range of <i>r</i>		Median <i>r</i>		Similarity	Average difference
	Short	Full	Short	Full		
Derivation sample						
Anger	-.53 to .61	-.60 to .62	.31	.35	.99	.04
Arrogance	-.57 to .52	-.47 to .47	.33	.22	.93	.08
Callousness	-.63 to .68	-.67 to .72	.41	.43	.98	.07
Coldness	-.43 to .46	-.54 to .64	.32	.38	.96	.09
Disobliged	-.56 to .57	-.65 to .67	.38	.41	.99	.05
Distrust	-.49 to .56	-.53 to .56	.28	.31	.99	.04
Dominance	-.36 to .38	-.41 to .44	.19	.23	.97	.04
Impersistence	-.68 to .49	-.73 to .59	.21	.22	.99	.02
Invulnerable	-.59 to .61	-.67 to .67	.16	.18	.98	.04
Manipulation	-.59 to .75	-.65 to .80	.44	.47	.99	.05
Opposition	-.45 to .69	-.49 to .65	.45	.44	.99	.04
Rashness	-.62 to .68	-.67 to .72	.29	.30	.99	.02
Self-Assurance	-.42 to .65	-.45 to .66	-.01	.01	.98	.04
Self-Centered	-.62 to .73	-.72 to .81	.40	.41	.99	.05
Self-Contentment	-.74 to .43	-.77 to .46	-.03	-.06	.98	.05
Thrill Seeking	-.30 to .70	-.37 to .79	.38	.43	.98	.05
Unconcern	-.67 to .57	-.72 to .61	.15	.16	.99	.02
Urgency	-.42 to .65	-.46 to .66	.14	.24	.98	.04
Second undergraduate sample						
Anger	-.54 to .47	-.60 to .53	-.30	-.34	.98	.05
Arrogance	-.55 to .56	-.43 to .47	.36	.25	.94	.08
Callousness	-.67 to .66	-.70 to .75	.46	.45	.99	.04
Coldness	-.48 to .52	-.62 to .59	.33	.41	.98	.06
Disobliged	-.58 to .61	-.67 to .68	.38	.42	.99	.05
Distrust	-.56 to .42	-.61 to .47	.23	.27	.98	.05
Dominance	-.28 to .43	-.32 to .47	.17	.20	.97	.04
Impersistence	-.70 to .56	-.75 to .60	.18	.21	.99	.03
Invulnerable	-.52 to .53	-.62 to .61	.11	.16	.98	.04
Manipulation	-.60 to .71	-.62 to .75	.40	.41	.99	.03
Opposition	-.57 to .67	-.62 to .64	.42	.40	.99	.02
Rashness	-.52 to .60	-.58 to .64	.27	.28	.99	.04
Self-Assurance	-.54 to .59	-.53 to .65	.05	.09	.98	.04
Self-Centered	-.68 to .68	-.72 to .76	.47	.44	.99	.04
Self-Contentment	-.73 to .42	-.76 to .42	-.01	-.07	.95	.08
Thrill-Seeking	-.28 to .67	-.33 to .75	.34	.40	.98	.05
Unconcern	-.65 to .61	-.70 to .63	.15	.12	.99	.02
Urgency	-.41 to .57	-.43 to .60	.25	.26	.99	.03
Prison sample						
Anger	.20 to .52	.15 to .57	.39	.42	.93	.04
Arrogance	-.12 to .37	-.14 to .30	.24	.21	.74	.07
Callousness	.12 to .75	.13 to .76	.50	.50	.98	.03
Coldness	.02 to .61	-.01 to .69	.27	.28	.95	.04
Disobliged	.00 to .51	.04 to .51	.27	.31	.93	.04
Distrust	-.05 to .43	.12 to .48	.32	.42	.79	.09
Dominance	.09 to .61	.02 to .60	.50	.50	.96	.04
Impersistence	-.12 to .33	-.10 to .29	.13	.15	.94	.04
Invulnerable	-.23 to .24	-.22 to .15	.03	.04	.92	.04
Manipulation	.14 to .71	.19 to .81	.52	.67	.91	.09
Opposition	.23 to .74	.24 to .78	.51	.60	.97	.04

(continued)

Table 5. (continued)

	Range of <i>r</i>		Median <i>r</i>		Similarity	Average difference
	Short	Full	Short	Full		
Rashness	.01 to .52	.08 to .61	.32	.41	.91	.06
Self-Assurance	-.27 to .19	-.24 to .22	-.05	.12	.57	.11
Self-Centered	-.01 to .66	.01 to .74	.33	.44	.93	.07
Self-Contentment	-.23 to .34	-.23 to .34	.04	.18	.79	.09
Thrill Seeking	-.28 to .67	-.33 to .75	.34	.40	.98	.03
Unconcern	.10 to .80	.12 to .82	.53	.60	.99	.05
Urgency	.12 to .45	.09 to .50	.39	.40	.92	.05

Note. In the derivation sample, *N*s were 188 for the Self-Reported Psychopathy Scale, 319 for the Levenson Self-Report Psychopathy Scale, 305 for the Psychopathic Personality Inventory, and 785 for the five-factor model. In the second student sample, *N*s ranged from 785 to 787. For the prison sample, *N* = 70. The range of *r* represents the most negative to most positive correlation observed for a trait across all outcomes in each sample. The median *r* is the median correlation observed for a trait across all outcomes in each sample. The similarity column indexes how similar are the correlational profiles for the long and short forms across all outcomes in each sample. The average difference is the mean of the absolute values of the differences between the correlations for the long and short forms across all outcomes in each sample.

Callousness, Disobliged, and Rashness. The two higher order factors were argued to result from content that was shared by the two facets contributing to the factor but distinct from the content in the other two facets: EPA Self-Centeredness and Callousness for SRP-III Callous Affect and Interpersonal Manipulation, and EPA Thrill-Seeking, Disobliged, and Rashness for SRP-III Erratic Lifestyle and Antisocial Behavior.

Second, one can begin fine-mapping elements of psychopathy to the diversity of behavioral outcomes associated with psychopathy. Third, one can begin to identify which elements are most central, which are peripheral, and which are unnecessary to the construct of psychopathy (Lynam & Miller, 2012). Fourth, one can study combinatorial effects of the basic elements comprising psychopathy.

Finally, the derivation of the EPA from a basic model of personality allows a bridge to be built between psychopathy and basic research on personality, which can help inform etiology, development, and treatment of disordered personality. For example, basic research on the FFM has been used to explain observed sex differences in psychopathy (Lynam & Derefinko, 2006) as well as the relation between psychopathy and age (Vachon et al., 2013). Additionally, several researchers are studying the basic processes underlying the various traits, including Antagonism (e.g., Graziano & Tobin, 2002; Meier, Robinson, & Wilkowski, 2006)—a central feature of psychopathy. Other researchers are examining personality pathways to impulsive behavior, which appear as four facets from three different domains within the NEO PI-R (Whiteside & Lynam, 2001), and placing these traits into larger neurocognitive frameworks rooted in neurology (Bechara, 2005). Even more researchers are examining the self-relevant negative affects, including anxiety, depression, and shame/guilt and how these emotions

relate to psychopathic behavior (e.g., Beer, Heerey, Keltner, Scabini, & Knight, 2003).

Despite the encouraging results for the short form of the EPA, this study is not without limitations. The first concerns the relative novelty of the parent measure—the full-scale EPA. Although there are a handful of validation studies already published, more studies are needed to provide additional support for the validity and utility of the EPA. Second, the samples included in the current study all relied on self-report measures with the exception of the disciplinary infractions used in the forensic sample, which were coded from official institutional records. Lilienfeld and Fowler (2006) articulated several potential problems with assessing psychopathic traits with self-report measures, including the potential for deceptive responding and the issue of limited insight (cf. Miller, Jones, & Lynam, 2011). Future studies would be strengthened by using other sources of information, including interviews (e.g., PCL-R) and informant reports. Third, two of the samples used undergraduate students; although this is not a problem for the IRT analyses that are not sample dependent, a restriction in the range of psychopathy scores may have had an impact on the size of the validity coefficients found. This concern has less relevance for the analyses comparing the short form and long form with one another, however, as the restriction would presumably operate similarly for both versions.

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## Note

1. A copy of the short form is available from the first author.

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