# Observing psychopathy promptly, reliably, and validly: Development and validation of the Short Psychopathy Rating Scale (SPRS)

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## ARTICLE INFO

## ABSTRACT

The goal of the present research was to develop a short, valid, and reliable rating measure of psychopathy: the Short Psychopathy Rating Scale (SPRS). To achieve this, we conducted three studies. In Study 1 ($N = 485$), the participants from a community sample rated persons they know well on items that assess psychopathy. By conducting the Factor Analysis, we selected the items that depict three psychopathy characteristics: Deceitfulness, Emotional coldness, and Recklessness. In Study 2, the raters provided estimates of these three psychopathy measures on the target individuals ($N = 429$). Furthermore, we collected self-report measures from the target persons, which were used to establish the validity of the new psychopathy scales: Psychopathic Personality Traits Scale (PPTS), short version of the Triarchic Personality Measure (TriPM), impulsiveness, physical aggression, Positive self-view, short-term mating, moral disgust, and substance use. Expected latent structure was obtained from this data as well; furthermore, psychopathy scales had high reliabilities. Finally, the correlations with self-report measures provided evidence for convergent and divergent validity of SPRS scales. In study 3 we obtained positive associations between SPRS scales, aggression, and risk assessment regarding criminal behavior in a sample of prisoners ($N = 290$) thus confirming the validity of the scales in a forensic context. In sum, the results of the present research showed evidence that SPRS is a valid and reliable measure of psychopathy which can be easily administered and informants can be both professionals and laymen as well; hence, it is an important addition to the psychopathy assessment, both in research and practical contexts.

## 1. Introduction

### 1.1. Psychopathy in different life contexts

The construct of psychopathy is a frequent topic of practitioners and researchers in the fields of clinical and forensic psychology, but also in the area of general individual differences. The reason for this is that psychopathy depicts an intriguing set of traits which puzzles psychologists and legal experts: dishonesty, charm, lack of guilt, shame, insight and learning by experience, egocentricity, inability to follow long-term goals, antisocial behavior, but also an absence of psychopathological symptoms (Cleckley, 1941, 1976). The examination of psychopathy was first localized in the clinical context, where psychopathy was viewed as an unusual personality disorder which appeared to present itself by an appearance of sanity and well-organized psychological functioning. However, the links between psychopathy and criminal behavior transferred the construct into the field of forensic and legal psychology, which became the dominant arena for psychopathy exploration. Indeed, empirical findings showed that psychopathic individuals tend to express a stable and consistent criminal behavior (Leistico et al., 2008), and their crimes are characterized by specific attributes like premeditation and lack of emotional motivation for the offence (Woodworth & Porter, 2002). Some scholars claimed that psychopathy was the most important behavioral disposition for understanding antisocial behavior (DeLisi, 2009).

Finally, in two recent decades, psychopathy was explored in the general population as well. This research direction started with the notion that psychopathic traits are present in the general population and not necessarily related to behavioral dysfunctions and criminal behavior. However, the data frequently show that psychopathy is related to socially aversive outcomes, such as aggressiveness (Porter et al., 2018), violence (Gray et al., 2003), lying (Porter et al., 2012), and others. Nevertheless, there are indications that psychopathy may be related to some functional behaviors as well. These aspects of psychopathy are labeled as "successful psychopathy" (Lilienfeld et al., 2015) and they may be the reason why psychopathic traits can be more present in certain professional niches like corporate management (Babiak et al., 2010).

### 1.2. The measurement of psychopathy

Quantitative assessment of psychopathy started with a rating method operationalized via Psychopathy Check-List and its revised version (Hare, 1991/2003; Harpur et al., 1988). This protocol (PCL-R) is based on a structured interview which must be conducted by a trained professional. Furthermore, the target individuals usually belong to the prisoners or forensic populations, as the rating process involves objective information about the target individuals which are collected from institutional files and dossiers. Finally, the interviewer rates the target person on 20 psychopathy indicators, ranging from 0 to 2. This enables the calculation of the summary score on the scale, but also on two broad factors and four narrow psychopathy facets: Factor 1 is consisting of Manipulative (lying, manipulation, and elevated sense of self-worth) and Affective traits (lack of guilt and empathy, followed by general emotional superficiality), while Factor 2 encompasses Lifestyle (problems with behavioral control, irresponsibility, lack of long-term plans) and Antisocial characteristics (early onset of criminal behavior, criminal versatility). PCL-R has its derivatives, which include the scale's short form (Hart et al., 1995) and the version of the scale which can be applied to the measurement of psychopathy in adolescents (Forth et al., 2003). PCL-R and its derivatives are currently the best known rating scales (based on informants' evaluations) with adequate reliability and validity that are used to measure psychopathy. Another rating measure of psychopathy is the Comprehensive Assessment of Psychopathic Personality Symptom Rating Scale (CAPP SRS: Cooke et al., 2020). It is based on the CAPP psychopathy model (Cooke et al., 2012) that encompasses six domains: Attachment (lack of empathy and care), Behavioral (impulsive, disruptive, and aggressive behavior), Cognitive (suspiciousness, lack of planning and concentration), Dominance (manipulative, deceitful, arrogant behavior), Emotional (lack of anxiety, remorse, and emotional depth), and Self domain (narcissism and self-centeredness). The CAPP SRS is a rating measure administered by an expert observer; a semi-structured interview and an observational rating scale of behavior are available to help in scoring target individual on 33 symptoms of psychopathy. Finally, there are attempts to construct prototypical informants-based measures, however these are not multi-item scales but prototypical descriptions of narrower traits which are commonly evaluated via single items (Lowman et al., 2021); hence, their psychometric characteristics are necessarily lower than full multi-item scales.

In contrast to the rating measures of psychopathy, there are several self-report questionnaires for assessing this construct (the following list is not exhaustive, but we believe that it well represents the existing inventories and various operationalizations of psychopathy traits). Firstly, there are self-report instruments which are also derivatives of PCL-R. The first one is the Levenson Self-Report Psychopathy Scale (LSRP: Levenson et al., 1995). It operationalizes psychopathy via two scales: primary (selfishness, lack of care, and manipulation) and secondary psychopathy (impulsiveness and quick temper). The second one is the Self Report Psychopathy (Paulhus et al., 2016). The latest version of this scale (SRP-4) has a structure that closely resembles the four factors of PCL-R; these are Interpersonal, Affective, Lifestyle, and Antisocial psychopathy traits. Other instruments were constructed on a different conceptual basis. Notably, they exclude the separate trait depicting antisocial behavior, because several empirical studies showed that it is not a core psychopathy trait, but a correlate, or a potential behavioral outcome of psychopathy (Cooke et al., 2004; Cooke et al., 2007; Međedović et al., 2015). The most prominent of these measures are Psychopathic Personality Inventory (PPI: Lilienfeld & Andrews, 1996) and Triarchic Personality Measure (Patrick, 2010). The revised version of Psychopathic Personality Inventory (PPI-R) describes psychopathy via three traits labeled as Fearless Dominance, Self-centered Impulsivity, and Coldheartedness. Similarly, TriPM has three subscales as well - Boldness, Meanness, and Disinhibition. Comprehensive Assessment of Psychopathic Personality model has a self-report version of the

inventory as well (CAPP-SR: Sellbom et al., 2019) and it measures the same six domains of psychopathy as abovementioned rating instrument. Finally, the latest self-report operationalization of psychopathy excluded impulsive and reckless behavior from the definition of psychopathy; this is the Psychopathic Personality Traits Scale (PPTS: Boduszek et al., 2016) and it assesses psychopathy via four traits: Affective and Cognitive responsiveness, Manipulation, and Egocentricity. Apparently, these self-report measures capture slightly different constructs, but the examined traits are still quite similar, which is expressed in positive correlations between different inventories (e.g., Seibert et al., 2011).

### 1.3. Goals of the present research

It is quite surprising that the methodology of psychopathy rating measurement is limited to only two instruments; there are several reasons why this state of affairs is unwarranted. Firstly, rating measures are indispensable tools in the measurement of personality-related constructs. They provide valuable information regarding individual differences, which help in understanding behavioral traits and improve the prediction of relevant outcomes. This is why major personality inventories regularly have rating versions (e.g., Costa Jr. & McCrae, 1992; Lee & Ashton, 2018). Secondly, PCL-R, as a major rating measure of psychopathy, has several limitations that undermine its use in the research context: 1) the rater must be a trained professional; 2) the assessment is time-consuming, as it demands over one hour interview with the participant; 3) its application is limited, because the method demands additional information about the participant which is commonly extracted from institutional dossiers; 4) some items of the scale (mostly belonging to Interpersonal and Affective subscales) have been found difficult to estimate as they are not easily visible in the behavior (Rufino et al., 2011). Finally, psychopathy represents a construct that has manipulation and deceitful behavior as its core traits. Researchers frequently expressed concerns that psychopathic individuals may intentionally provide false results on self-report inventories, both by generating socially desirable (MacNeil & Holden, 2006) and undesirable impressions (Rogers et al., 2002; however, note that others believe that response distortion does not diminish the validity of self-report measures of psychopathy: Ray et al., 2013; Watts et al., 2016).

It seems that the field of psychopathy assessment would highly benefit if another rating scale were added to its methodological set; one that is easily applicable (i.e., the raters can be laymen), requires a small amount of time to obtain ratings, and can be applied to everyone and in various settings (i.e., target individuals do not need to be institutionalized persons). Construction of such a scale was the main goal of the present research. We conducted three studies in order to develop such an instrument, which we labeled as the Short Psychopathy Rating Scale (SPRS). By analyzing three sets of empirical data, we will show the findings regarding the scale's construction, its latent structure, reliability, and validity. All three studies were approved by the Ethic Committees of the Faculty of media and communication and Institute of criminological and sociological research in Belgrade.

## 2. Study 1

### 2.1. The goal of study 1

The goal of Study 1 was to develop the rating items for SPRS and to evaluate their latent structure.

### 2.2. Constructing the SPRS items

Firstly, we constructed the items for the new psychopathy scale. In the process of items composing, we were guided by the existing forms of rating-based personality inventories (Costa Jr. & McCrae, 1992; Lee &

Ashton, 2018): we formulated the items which are easy to understand and capture behavior that can be observed in social interaction; the content of the items was determined by the existing depictions and characterizations of psychopathy. Furthermore, we had a priori conceptual expectations regarding the number and the content of the psychopathy traits that should structure the new model. By examining several prominent models of psychopathy and their respective measures (SRP-4: Paulhus et al., 2016; PPI: Lilienfeld & Andrews, 1996; LSRP: Levenson et al., 1995; TriPM: Patrick et al., 2009; CAPP: Cooke et al., 2012; PPTS: Boduszek et al., 2016), we concluded that most of them comprise three psychopathy traits: some form of manipulation and exploitation of others, emotional shallowness and callousness, and a lack of behavioral control (only PPTS does not operationalize the last trait). In line with the previous research (Cooke et al., 2004, 2007; Međedović et al., 2015) we did not construct the items that tap behavioral disposition toward antisocial behavior – we view this behavioral tendency as a correlate of psychopathy not the core psychopathic trait. Hence, our model was conceived to have three narrow psychopathy characteristics.

While we had in mind the common core of all prominent psychopathy models (affective callousness, manipulation, and disinhibition), we were particularly oriented to the Hare's (2003) model of psychopathy. There are several reasons for this: it is based on the rating method on assessing psychopathy, it is constructed using comprehensive clinical observations of psychopathy conducted by Cleckley (1941, 1976), and it is proven to be reliable and robust predictor of various phenomena associated with psychopathy. The PCL-R method is based on a relatively long interview, but in contrast, most of the 20 indicators that compose PCL-R are common markers of human behavior; hence, we believe that they are adequate for layman to observe and estimate the magnitude of their expressions in other individuals. For example, one of the indicators of PCL-R's Interpersonal factor is labeled as "Glibness/superficial charm". We converted this psychopathic indicator into: "He/She uses charm to get what he/she wants from other people." Another example is the indicator "Poor behavioral control" that belongs to the PCL-R's Lifestyle factor; we simply converted this into "He/She lacks self-control." Once again, we would like to emphasize that these indicators are in fact present in all analyzed models of psychopathy in very similar formulations. It is important to highlight that this was not the first research aimed to construct SPRS, previous studies were conducted in which the smaller, initial pool of the SPRS items was tested (Međedović & Petrović, 2018); therefore, we already empirically tested some of the items aimed to operationalize SPRS and former data helped us to make the SPRS items that were evaluated in the present research. In total, we developed 41 items aimed to measure psychopathy: all items, together with the constructs they were intended to operationalize are shown in the Supplementary material.

### 2.3. Method

#### 2.3.1. Sample and procedure

The data for Study 1 was collected via online research. The survey was set on the Google forms platform and distributed online, mostly via snowball sampling. Initial distributers included the researcher and a small group of students who attended the course on individual differences at the Faculty of media and communications in Belgrade, Serbia. The students participated voluntarily in this study and they distributed the survey link via social networks and emails; informed consent was presented on the first page of the survey. The sample for Study 1 was comprised of 485 participants ($M_{age}$ = 29.32; SD = 10.93; 68 % females). Almost half of the respondents were attending college at the time of data collection (47.1 %), a large proportion of the participants had finished college (38.3 %), while the rest of the participants had secondary school education (14.6 %). The participants were asked to rate an individual they knew very well on psychopathy items. Hence, there were 485 target individuals as well ($M_{age}$ = 38.83; SD = 11.80; 56.9 % females) and the analysis was conducted on these scores.

#### 2.3.2. Measures

We collected the ratings on 41 items in total. The items have a 5-point Likert-type scale for responding, where 1 stands for "Completely disagree" and 5 denotes "Completely agree".

### 2.4. Results

#### 2.4.1. The latent structure of SPRS psychopathy items

We conducted a Maximum Likelihood Factor Analysis (MLFA) on the psychopathy indicators. Firstly, we conducted Parallel Analysis in order to estimate the optimal number of factors that should be retained in the analysis. Three empirically extracted factors had the following eigenvalues: 6.52, 3.83, and 2.21; random egienvalues were: 1.58, 1.51, and 1.46. However, the fourth empirical factor had eigenvalue of 1.14 while the eigenvalue of the fourth random factor was 1.42. Hence, Parallel Analysis suggested that the three-factor solution is the optimal one. When analyzing the pattern matrix of the three-factor solution we excluded the items that had low loadings on the latent factors (<0.30) or they had high loadings on several factors. The final model was obtained with 25 SPRS items. We repeated MLFA on this subsample of items (Parallel Analysis advised the three-factor solution once again); extracted factors explained the following percentages of the original indicators' variation, respectfully: 20.89 % ($\lambda$ = 5.22), 8.31 % ($\lambda$ = 2.08), and 6.57 ($\lambda$ = 1.64). The loadings of items on extracted factors are shown in Table 1.

The first factor is saturated with the indicators depicting impulsiveness, lack of deliberation and long-term plans, risk proneness, and quick temper – it has been labeled as Recklessness. The second factor depicts manipulative tendencies, conning, impression management, moral relativism, and high opinion about self; it was named Deceitfulness. Finally, the third factor taps a lack of compassion toward others, lack of anxiety, and emotional shallowness – it was labeled as Emotional coldness. Due to the tendency of reversely coded items to construct separate latent factors, Deceitfulness and Recklessness do not have reversely coded items, while Emotional coldness has four items which were previously reversely coded. There was only one deviation from our a priori expectations of how the items should be loaded on their respective factors: we assumed that the item "He/She believes that one should take care of him/herself first, even if it means that someone else is hurt" primarily assesses Emotional coldness psychopathy trait; however, its primary loading was on Deceitfulness, although it had a secondary loading on Emotional coldness, as expected.

#### 2.4.2. Reliabilities, sex differences, and correlations between psychopathy traits

Using the information obtained from MLFA we calculated the mean scores on three psychopathy traits. In Table 2 we showed descriptive statistics, reliabilities, and the correlations between the psychopathy measures. We also analyzed sex differences in psychopathy characteristics but we did not detect any significant differences. As we can see in Table 2, all psychopathy traits have high reliabilities. Deceitfulness and Recklessness are moderately positively correlated while the correlations between Emotional coldness and the remaining traits are positive and low in magnitude.

### 2.5. Discussion

In Study 1, we administered the initial pool of rating items intended to measure psychopathy. From a set of 41 items, we obtained a model containing 25 statements about the target individuals. These items loaded on three latent factors interpreted as Deceitfulness, Emotional coldness, and Recklessness. The content of extracted factors was a priori predicted, because a majority of psychopathy models identify traits depicting manipulation and conning, emotional superficiality and shallowness, and impulsiveness and lack of deliberation (Boduszek et al., 2016; Cooke et al., 2012; Levenson et al., 1995; Lilienfeld &

**Table 1**
The pattern matrix of the extracted factors (Study 1).**

| | Recklessness | Deceitfulness | Emotional coldness |
|---|---|---|---|
| He/She is hasty. | 0.89 | | |
| He/She lacks self-control. | 0.65 | | |
| He/She makes decisions quickly without much thought. | 0.63 | | |
| He/She is impatient. | 0.63 | | |
| He/She often says something without first thinking about it. | 0.61 | | |
| He/She is a person who bursts easily. | 0.55 | | |
| He/She takes unnecessary risks. | 0.45 | | |
| He/She often gets into trouble. | 0.40 | | |
| He/She lives day by day, with no long-term plans. | 0.33 | | |
| He/She is skilled at getting others to do what he/she wants. | | 0.77 | |
| He/She often finds ways to make things turn out the way he/she wants. | | 0.75 | |
| He/She uses charm to get what he/she wants from other people. | | 0.58 | |
| He/She has a high opinion of him/herself. | | 0.55 | |
| He/She tries to present him/herself to others in the best possible light. | | 0.54 | |
| He/She believes that person must do anything which is necessary in order to succeed in life. | | 0.49 | |
| He/She is a cunning person. | | 0.46 | |
| His/Her view is that one should not criticize people because they can be useful to us in the future. | | 0.44 | |
| He/She believes that people are gullible and that they are easy to manipulate. | | 0.44 | |
| He/She believes that one should take care of him/herself first, even if it means that someone else is hurt. | | 0.40 | 0.30 |
| He/She often worries not to hurt others with his actions.[rc] | | | 0.72 |
| He/She is sad when he/she hears that someone has been struck by bad luck.[rc] | | | 0.66 |
| When he/she makes a mistake he/she deeply regrets it.[rc] | | | 0.65 |
| He/She often worries about things.[rc] | | | 0.60 |
| He/She does not care how other people feel. | | | 0.44 |
| He/She is an emotionally cold person. | | | 0.37 |

Notes: only the loadings above 0.30 are shown in the table.
** p < .01.
[rc] Reversely coded.

Andrews, 1996; Patrick et al., 2009; Paulhus et al., 2016). The analysis also showed that emotional superficiality and lack of empathy was the trait that is the most difficult to measure, especially with the items that directly assess this trait - this is why this factor was more loaded with the markers of its opposite pole. Furthermore, most of the discarded items were the ones that were intended to measure Emotional coldness, hence, this trait turned to be most difficult to operationalize. This finding is in line with the previous data showing that affective psychopathy traits indeed pose the greatest problem for the observers and are the most difficult to rate (Rufino et al., 2011). To sum up, Study 1 provided an initial model for SPRS which was further developed and tested in the subsequent study.

## 3. Study 2

### 3.1. The goals of study 2

Leaning on the initial model of SPRS, Study 2 had several goals. Firstly, we further developed the measure itself, especially the Emotional coldness scale, since it had a smaller number of items in the initial model. Secondly, we once again evaluated the latent space of SPRS indicators; the scales' reliabilities, sex differences in SPRS measures and correlations between them are evaluated as well. Finally, we explored the validity of the new scales: the target individuals provided self-report measures on the short TriPM scales (Boldness, Meanness, and Disinhibition), PPTS scales (Affective and Cognitive responsiveness, Manipulation, and Egocentricity), impulsiveness, aggressiveness, Positive self-view, short-term mating, moral disgust, and substance use. Our hypotheses on expected relations between the SPRS scales and validity measures were as follows: Deceitfulness should be most closely related to Boldness, Manipulation, Egocentricity, Positive self-view, and a lack of moral disgust (Falkenbach et al., 2013); Emotional coldness is expected to have highest associations with Meanness, and Affective and Cognitive responsiveness; finally, Recklessness was assumed to associate with Disinhibition, impulsiveness, aggressiveness, short-term mating, and substance use (García-Forero et al., 2009; Grant & Chamberlain, 2014; Walsh et al., 2007; Wygant & Sellbom, 2012). Hence, these analyses were aimed to test several types of validity regarding new scales: the associations between SPRS measures and other psychopathy scales (Short TriPM and PPTS) were used to establish convergent and divergent validity; the links with the remaining measures (impulsiveness, aggressiveness, Positive self-view, short-term mating, moral disgust, and substance use), estimated primarily via regression models were used to test the criterion validity of the new scales.

### 3.2. Method

#### 3.2.1. Sample and procedure

Study 2 was also conducted via online surveys using the Google forms platform. The raters in Study 2 were psychology students from the Faculty of media and communications in Belgrade, Serbia ($N = 228$; 82 % females). The sample size of observers was markedly lower in Study 2 compared to Study 1; hence we asked the observers to rate two individuals of opposite sex (i.e., target individuals) with whom they are well acquainted on SPRS items in order to have both sexes of target individuals equally represented in the sample. The rating was performed as a part of practice in the course on individual differences. Target individuals provided self-report data on the measures we used to validate SPRS scales. Participation was not mandatory, neither for the raters, or

**Table 2**
Descriptive statistics, reliabilities, and correlations between the SPRS scales (Study 1).*

| | M(SD) | α | M(SD)$_{males}$ | M(SD)$_{females}$ | t | 1. | 2. |
|---|---|---|---|---|---|---|---|
| 1. Emotional coldness | 2.20(0.71) | 0.76 | 2.13(0.68) | 2.23(0.73) | −1.36 | | |
| 2. Deceitfulness | 2.96(0.75) | 0.78 | 2.94(0.71) | 2.96(0.77) | −0.21 | 0.28** | |
| 3. Recklessness | 2.54(0.77) | 0.81 | 2.61(0.74) | 2.50(0.78) | 1.52 | 0.24** | 0.41** |

* p < .05.
** p < .01.

for the target individuals; informed consent was present on the first page of the survey. As a consequence, some observers rated only one person (but since the target individuals were close others, this was very rare - only 4 observers rated 1 person). Raters were instructed to conceive a code (any code was permitted, there were no specific instructions for constructing it) and to provide target individuals with the same code, so the data from the raters and the target persons could be integrated. There was a total of 432 target individuals (48.4 % females; $M_{age} =$ 30.20 years; SD = 11.92). Many of target individuals were attending college at the time of data collection (43.3 %), others had already finished college (37.3 %) or had secondary education (19.4 %). The raters identified most of the target individuals as friends (39.5 %), followed by family members or other biological relatives (37.6 %), and romantic partners (22.9 %).

### 3.2.2. Measures

We used the same items for *SPRS* as the ones which were presented in Table 1 (the 25 items selected by factor analysis). However, we added two more items for the Emotional coldness scale, the ones which are reflected toward higher psychopathy: "He/She rarely shows guilt" and "He/She rarely shows compassion for other people." These items are included due to their association with the PCL-R model of psychopathy; hence they are also based on the work of Hare (2003). Thus, we administered 27 items in total, all SPRS scales are comprised of nine items.

*Psychopathic Personality Traits Scale* (Boduszek et al., 2016; for Serbian adaptation see Međedović, Bulut, et al., 2018) was used for assessing self-reported psychopathic characteristics. It has 20 items, equally distributed in four scales: Affective and Cognitive responsiveness, Manipulation, and Egocentricity.

We could not administer the whole TriPM scale (Patrick, 2010), because we wanted the pay attention to the total length of the survey. Hence, we collected data via the *Short TriPM scale* (Međedović & Damjanović, 2018). The items for this inventory are taken from the original TriPM; Boldness, Meanness, and Disinhibition are operationalized via 5 items in this questionnaire. Previous findings showed that the short scales have expected latent structure, high convergence with the original scales, they show the expected relations with general personality traits and other outcomes conceptually related to psychopathy (Međedović, 2019; Međedović & Damjanović, 2018).

To measure *Impulsiveness,* we administered ten items from the Barratt Impulsiveness Scale 15 (BIS 15: Spinella, 2007). These items assess non-planning (5 items) and motor impulsivity (5 items). The total mean score on these items is used in the analyses.

*Physical aggression* was measured by the same-labeled scale from the Aggression Questionnaire (AQ: Buss & Perry, 1992; for Serbian adaptation see Dinić & Janičić, 2012). This scale measures the physical manifestation of aggressiveness via nine items.

*Positive self-view* was assessed via the same-labeled scale from the Big Five Plus Two questionnaire (Smederevac et al., 2010). The scale has eleven items and it measures various positive impressions about self, including traits such as charm, talent, wisdom, and others.

*Short-term mating* was measured using five items taken from the Short Term Mating Orientation scale (Jackson & Kirkpatrick, 2007), which is a part of the Sociosexual Orientation Inventory (Simpson & Gangestad, 1991). These five items describe thoughts, attitudes, and motivations toward short-term sexual relations. The scale has been used previously in the samples of Serbian participants (Međedović, 2021).

*Moral disgust* was measured using the same-labeled scale from the Three Domains of Disgust Scale (TDSS: Tybur et al., 2009). It has seven items which explore the magnitude of a disgust reaction to various immoral actions, such as lying, shoplifting, deceiving, academic cheating, and others. The scale was previously administered in Serbian language (Bulut, 2021).

Finally, we measured *Substance use* as well. We asked the participants how often (measured by the 6-point scale where 1 stands for "Never"

and 6 for "Everyday") they consume the following substances: beer, wine, strong liquors, cannabis, ecstasy (MDMA), amphetamines, and hallucinogenic drugs. The first factor extracted from these items showed that all items have >0.30 positive loadings on it ($\lambda = 2.89$; 41.34 % of the original indicators' variation explained); this result provided a rationale to calculate the total average score on all items.

The participants used a 5-point Likert-type scale to respond their agreement (1 stands for "Completely disagree" and 5 for "Completely agree") to all of the self-report items (except for the Substance use scale). Higher scores on all scales indicate higher expressions of the measured variables.

### 3.3. Results

### 3.3.1. Latent space of SPRS indicators

First we examined the latent structure of SPRS items in the present data once again. We used MLFA as in Study 1, with three factors a priori set and rotated in the promax position. Fit indices of the obtained model were high: $\chi^2(273) = 768.62; p < .01$; CFI = 0.93; GFI = 0.97; RMSEA = 0.066. However, the item "He/She believes that one should take care of him/herself first, even if it means that someone else is hurt" once again had higher loading on Deceitfulness than on Emotional coldness, similarly as in Study 1 (the table of factor loadings can be seen in Supplementary material – Table S1). Therefore, we excluded this item from further analyses. The fit of the model remained almost exactly the same when this item was removed: $\chi^2(250) = 745.07; p < .01$; CFI = 0.94; GFI = 0.97; RMSEA = 0.069. Hence, the final model has 9 items per Deceitfulness and Recklessness, and 8 items measuring Emotional coldness.

### 3.3.2. Descriptive statistics, reliabilities, sex differences, and inter-correlations of the SPRS scales

In Table 3, we showed descriptive statistics, reliabilities, sex differences, and intercorrelations of the SPRS scales. We can see that all scales have high reliabilities. Furthermore, the mean scores of all three psychopathy measures were significantly higher in males than in females, although the effect sizes were small. Finally, the correlation analysis (Pearson's correlation coefficients are calculated) showed that Deceitfulness and Emotional coldness were modestly positively associated; Recklessness had lower positive correlations with the two former scales.

### 3.3.3. The relations between SPRS and validity scales: bivariate associations and regressions

In Table 4 we showed correlations between the SPRS scales with the validity measures, the table also contains descriptive statistics and reliabilities of validity scales. We can see that the PPTS traits generally positively correlate with the SPRS scales, but Cognitive and Affective responsiveness showed the highest associations with Emotional coldness, while Manipulation and Egocentricity had the highest relations with Deceitfulness. Impulsiveness positively correlated only with Recklessness. The TriPM scales also showed the hypothesized associations with the SPRS traits: Meanness showed to be the most congruent with Emotional coldness; Boldness with Deceitfulness, and Disinhibition with Recklessness. Physical aggression was positively associated with all SPRS scales, but mostly with Recklessness. Positive self-view correlated

**Table 3**

Descriptive statistics, reliabilities, sex differences, and correlations between the SPRS scales (Study 2).

| | M(SD) | α | M(SD)_females | M(SD)_males | t | d | 1. | 2. |
|---|---|---|---|---|---|---|---|---|
| 1. Emotional coldness | 2.19(0.77) | 0.83 | 2.07(0.77) | 2.33(0.75) | −3.48** | 0.34 | | |
| 2. Deceitfulness | 3.09(0.75) | 0.80 | 2.97(0.72) | 3.23(0.76) | −3.64** | 0.35 | 0.42** | |
| 3. Recklessness | 2.55(0.89) | 0.85 | 2.47(0.84) | 2.64(0.92) | −2.01* | 0.19 | 0.20** | 0.27** |

Notes: d - Cohen's d (effect size).
* p < .05.
** p < .01.

**Table 4**

Correlations between validity measures, psychopathy in the raters, and SPRS scales (Study 2).

| | M(SD) | α | Emotional coldness | Deceitfulness | Recklessness |
|---|---|---|---|---|---|
| Affective (PPTS) | 2.01 (0.76) | 0.72 | 0.39** | 0.19** | 0.20** |
| Cognitive (PPTS) | 2.14 (0.64) | 0.65 | 0.24** | 0.08 | 0.12* |
| Manipulation (PPTS) | 2.63 (0.93) | 0.75 | 0.13** | 0.29** | 0.18** |
| Egocentricity (PPTS) | 2.91 (0.57) | 0.64 | 0.23** | 0.29** | 0.15** |
| Meanness (TriPM-short) | 1.90 (0.76) | 0.82 | 0.40** | 0.23** | 0.19** |
| Boldness (TriPM-short) | 3.31 (0.83) | 0.74 | 0.23** | 0.44** | 0.07 |
| Disinhibition (TriPM-short) | 1.98 (0.74) | 0.64 | 0.03 | 0.15** | 0.38** |
| Impulsiveness | 2.58 (0.68) | 0.78 | −0.05 | −0.05 | 0.30** |
| Aggressiveness | 2.20 (0.82) | 0.83 | 0.17** | 0.21** | 0.38** |
| Positive self-view | 3.77 (0.60) | 0.86 | 0.06 | 0.23** | −0.02 |
| Short-term mating | 2.96 (1.12) | 0.85 | 0.15** | 0.07 | 0.14** |
| Substance use | 1.96 (0.61) | 0.67 | 0.08 | −0.01 | 0.12* |
| Moral disgust | 3.85 (0.80) | 0.74 | −0.14** | −0.16** | −0.20** |

* p < .05.
** p < .01.

exclusively with Deceitfulness. Short-term mating was associated mostly with Emotional coldness, while substance use positively correlated with Recklessness. Finally, moral disgust was negatively associated with all psychopathy traits, but the highest correlations were the ones with Recklessness once again.[1]

In order to facilitate the analysis of the SPRS scales' divergent and criterion validity we conducted multiple linear regression analyses with SPRS measures as predictors and validity scales as the criteria measures. The results of regression models are shown in Table 5. We can see that they closely mirrored bivariate associations. Emotional coldness positively predicted Affective, Cognitive, and Egocentricity PPTS scales, Meanness, and Short-term mating. Deceitfulness had significant positive contribution to the prediction of Manipulation, Egocentricity, Boldness, and Positive self-view; it was a sole predictor in the models that had

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[1] Readers can find several other analyses regarding the Study 2 data in the Supplementary material: the final outline of the SPRS scale, the data regarding the shape of SPRS scales' distribution (skewness, kurtosis, and normality tests) and graphical representations of distributions, eigenvalues and pattern matrix of the Maximum Likelihood Factor Analysis,the regression models where SPRS scales were set as the criteria measures while validity scales were set as the predictors, and the hierarchical regression models where incremental contribution of SPRS above and beyond other psychopathy scales (PPTS and Short TriPM) in the prediction of the remaining validity scales is analyzed.

Boldness and Positive self-view as the criteria measures. Finally, Recklessness positively predicted Affective, Manipulation, Meanness, Short-term mating; furthermore, it was the only SPRS scale that significantly predicted Disinhibition, Impulsiveness, Aggressiveness, Substance use, and Moral disgust (with negative coefficient in the prediction of the last criterion measure).

*3.4. Discussion*

Factor analysis of the SPRS items showed the expected structure, hence, we can conclude that this solution is a stable one. The first indication of the SPRS scales' validity obtained in the present data is reflected in sex differences: the existing data shows that psychopathy is a set of traits that is more highly expressed in males compared to females (Lilienfeld & Hess, 2001; Međedović, Wertag, et al., 2018). We replicated these findings in the present study. Certainly, the direct data regarding validity stem from the associations between the self-report measures collected from the target individuals and rating psychopathy measures (some of the self-report measures have reliabilities below 0.70; however, note that these are short scales and that these reliabilities, in fact, represent adequate internal consistencies for the scales consisting of small number of items). The pattern of associations confirmed our expectations and thus showed the validity of the SPRS scales. Firstly, and perhaps the most importantly, rating psychopathy measures showed convergence with the self-report psychopathy measures: PPTS and TriPM. Furthermore, the highest associations were detected between the traits which are conceptually similar and share the same content. Divergent validity was established as well: the clearest examples were the regression functions where Cognitive traits (predicted solely by Emotional coldness), Boldness (predicted only by Deceitfulness) and Disinhibition (predicted solely by Recklessness) were the criteria measures. Finally, the regression models suggested that new scales met the conditions of criterion validity as well. The findings of positive relations between physical aggressiveness, substance use, and Recklessness are congruent with the existing literature – these forms of behavior in part can be generated by low behavioral control and impulsiveness (García-Forero et al., 2009; Grant & Chamberlain, 2014; Walsh et al., 2007; Wygant & Sellbom, 2012). The only exception was the prediction of moral disgust: we anticipated that the lack of moral disgust will be explained primarily by Deceitfulness – individuals who manipulate and exploit others should not be prone to feel disgust when engaging in immoral behavior. While the correlation analysis showed negative associations between all three SPRS traits and moral disgust, the regression model still pinpointed Recklessness as the crucial predictor. The result of elevated self-view in individuals who exhibit manipulative and deceitful behavior is also in line with theory and the existing data (Falkenbach et al., 2013). Individuals with high Emotional coldness are more oriented toward short-term partner relations, probably because of their positive attitude to unrestricted sexual behavior and low commitment in romantic relationships (Ali & Chamorro-Premuzic, 2010). Hence, correlation and regression analyses showed that SPRS scales have both convergent and divergent validity. All the obtained correlations were low to moderate in effect sizes, but this could be expected, because there was no covariation which emerges from the same method of measurement. Importantly, the correlations between the

**Table 5**
SPRS scales as the predictors of the validity measures (Study 2).

| | Affective | Cognitive | Manipulation | Egocentricity | Meanness | Boldness | Disinhibition |
|---|---|---|---|---|---|---|---|
| Emotional coldness | 0.39(0.05)** | 0.25(0.05)** | 0.02(0.07) | 0.14(0.04)** | 0.39(0.05)** | 0.04(0.05) | −0.08(0.05) |
| Deceitfulness | −0.03(0.05) | −0.06(0.05) | 0.25(0.07)** | 0.21(0.04)** | 0.02(0.05) | 0.44(0.06)** | 0.08(0.05) |
| Recklessness | 0.13(0.04)** | 0.08(0.04) | 0.11(0.05)* | 0.07(0.03) | 0.10(0.04)* | −0.06(0.04) | 0.38(0.04)** |
| F | 30.11** | 9.88** | 14.74** | 16.78** | 31.70** | 34.63** | 25.26** |
| $R^2$ | 0.18 | 0.07 | 0.09 | 0.11 | 0.18 | 0.20 | 0.15 |
| | | Impulsiveness | Aggressiveness | Positive self-view | Short-term mating | Substance use | Moral disgust |
| Emotional coldness | | −0.09(0.05) | 0.06(0.06) | −0.06(0.04) | 0.16(0.08)** | 0.09(0.05) | −0.09(0.06) |
| Deceitfulness | | −0.10(0.05) | 0.08(0.06) | 0.29(0.04)** | −0.03(0.08) | −0.09(0.05) | −0.07(0.06) |
| Recklessness | | 0.34(0.04)** | 0.34(0.04)** | −0.09(0.03) | 0.12(0.06)* | 0.12(0.04)* | −0.16(0.05)* |
| F | | 17.90** | 26.17** | 9.84** | 5.75** | 3.27* | 8.72** |
| $R^2$ | | 0.11 | 0.16 | 0.07 | 0.04 | 0.02 | 0.06 |

Notes: standardized estimates are shown in the table with standard errors in the parentheses.
\*\* $p < .01$.
\* $p < .05$.

traits that share similar content are ≈ 0.40, which represents an adequate level of congruence.

## 4. Study 3

### 4.1. The goals of study 3

Psychopathy is frequently used in the forensic and penal context, both for scientific and practical purposes, as a risk assessment for criminal behavior and recidivism. The main reason for this is that psychopathy represents a reliable predictor of consistent criminal behavior and criminal relapse (Leistico et al., 2008; Walters, 2003). In fact, the construct of psychopathy helped psychologists and criminologists to gain deeper understanding of criminal behavior and delinquency, and some researchers believe it is the most important construct from the field of individual differences for understanding crime (DeLisi, 2009). Therefore, the main goal of this study was to provide additional evidence of SPRS' validity in the one of the most important context where it is aimed to be administered – penitentiary institutions. We explored the relations between SPRS, offenders' risk assessment, and the narrow aspects of aggressiveness as a personality trait. The associations between SPRS and aggressiveness were analyzed to obtain convergence validity (having in mind conceptual overlap between psychopathy and aggression) while the links with the risk of reoffending can be viewed as a further evidence of criterion validity. Based on the previous data, positive associations between all measures are expected. This research was conducted as part of a larger project (PrisonLIFE: https://prisonlife.rs/en/).

### 4.2. Method

#### 4.2.1. Sample

The participants in this study were prisoners from all major penitentiary facilities in Serbia: Penitentiary facilities of Sremska Mitrovica, Požarevac, Niš, Zabela, and Belgrade. Therefore, although not representative, the sample was largely heterogenous and comprehensive regarding the prisoners' population in Serbia. Participation in the research was on a voluntary base and the prisoners that participated ($N$ = 290; 23.2 % females; $M_{age}$ = 40.22[SD = 10.41]) needed to have only the basic reading skills- they provided responses on the measures of aggressiveness. Most of the participants finished secondary school (64.3 %) followed by the ones with primary school diploma (22.7 %) with only small percentages of participants that had high education (6.3 %), incomplete primary education (5 %) or no formal schooling whatsoever (0.7 %). The raters were members of the Treatment service, i.e., employees in the Penitentiary facilities, and they were asked to fill in SPRS items for the prisoners they work with (the raters were mostly psychologists and other specialists for offenders' education and rehabilitation). Informants were instructed to assess only the prisoners that they

are confident they can validly describe on SPRS items; for example, if a prisoner was only recently started to serve a sentence and a treatment officer was not been able to observe him/her for a long enough time, the SPRS assessment was not conducted.

#### 4.2.2. Measures

SPRS was administered on a basis from the Study 2 results (see Supplementary material for the exact items); *Deceitfulness* and *Recklessness* were measured via 9 items while *Emotional coldness* was assessed via 8 items.

Aggressiveness was measured by the Aggressiveness Questionnaire (Buss & Perry, 1992; for Serbian adaptation see Dinić & Janičić, 2012), but in difference to Study 2, the complete inventory was administered here. It assesses four narrow aspects of aggression - *Physical Aggression* (9 items), *Verbal Aggression* (5 items), *Anger* (7 items), and *Hostility* (8 items), together with the inventory's *total score*. The response scale has 5 degrees where 1 stands for "Completely disagree" while 5 stands for "Completely agree".

*Risk assessment* was obtained by the total score on Offender Assessment System (OASys: Home Office, 2002; for the Serbian version see Ministry of Justice: The Administration for the Enforcement of Penal Sanctions, 2013, 2013a; Vujičić & Karić, 2020); higher scores on this measure indicate an elevated risk of a subsequent criminal offending. OASys represents a broad and comprehensive system of offenders' assessment that combines actuaries and dynamic indicators of antisocial behavior risk (including Accommodation, Employment, Training and employability, Relationships – family, friends, and romantic partners, Lifestyle and associates, Drug and Alcohol misuse, Thinking and behavior – impulsivity, aggressiveness, problem solving, and Attitudes - pro-criminal attitudes, attitudes toward staff). OASys is conducted by the Penitentiary Facility staff (using the interviews with prisoners accompanied by the information from courts, police officers, and social workers) and it is a part of every prisoner's dossier, and these data are in fact taken from the participants' prison dossiers. The range of points on OASys is from 0 to 160; the higher score represents higher risk for reoffending. It is important to mention that OASys scores are provided by the penitentiary facility staff that work in an admission of prisoners to the institution; hence the individuals who estimated risk of reoffending are not the same who provided ratings on SPRS.

### 4.3. Results

#### 4.3.1. Latent space of SPRS indicators

We conducted MLFA on the SPRS items, i.e., we applied the same method as in Study 1 and Study 2. This time we obtained the perfect factor structure – all items loaded on their expected factors; furthermore, neither of SPRS items had even secondary loadings with magnitude >0.30. (the table of factor loadings can be seen in Supplementary material – Table S5). This solution was supported by Parallel analysis as

well; the percentages of real vs. random explained variance of SPRS items were as follows: 38.22 % vs. 8.07 % for the first factor, 13.88 % vs. 7.53 % for the second, 9.95 % vs. 7.10 % for the third, and 4.75 % vs. 6.74 % for the fourth factor (thus showing that only first three extracted factors explain more variation than random factors). Importantly, this latent solution had excellent fit indices: $\chi^2(250) = 385.92$; $p < .01$; CFI $= 0.99$; GFI $= 0.99$; RMSEA $= 0.043$. Having in mind relatively low sample size in this study we believe that the fit indices of the SPRS's latent space showed that the factors' structure is a robust one.

### 4.3.2. Correlations between the examined measures

The main goal of this study was examining the associations between SPRS, aggressiveness, and risk assessment; therefore, we calculated Pearson's coefficients of correlations between the administered measures. These correlations, together with the descriptive statistics and scales' reliabilities are shown in Table 6. We can see that all scales had high coefficients of internal consistency. Psychopathy measures are moderately positively correlated between themselves. Furthermore, SPRS scales are systemically positively associated with aggressiveness facets (although three of all associations were not statistically significant) and the total score on aggression inventory. Finally, and most importantly, Emotional coldness and Recklessness are positively related to Risk assessment; the former scale showed higher association with the probability of future antisocial behavior – in fact, this association was higher than any correlations between aggression traits and Risk assessment.

### 4.4. Discussion

Psychopathy is a construct that originated from clinical tradition (Cleckley, 1941, 1976); the first psychometrically-sound operationalizations of psychopathy have been made by rooting it in a forensic and penal context (Hare, 1991/2003). Psychopathic set of traits gained much attention as a fruitful heuristic tool in explaining criminal behavior due to its potential to explain and predict antisocial behavior and delinquency, and especially criminal recidivism (Leistico et al., 2008; Walters, 2003). This is why we explored the associations between SPRS, aggressiveness, and overall index of criminal behavior which includes future risk of antisocial behavior estimated by correctional officers that work with prisoners. The data from this study confirmed findings from Study 2 regarding the associations between SPRS and aggressiveness and expanded them by showing robust associations between psychopathy and aggressiveness. The links between psychopathy and aggression are captured in a vast number of existing empirical research (e.g., Garofalo et al., 2021; Warren & Clarbour, 2009). A lack of empathy and guilt, narcissistic view of own abilities, together with a lack of behavioral control represent facilitators toward aggressive behavior, both premeditated and reactive forms (Feilhauer et al., 2012; Wilson et al., 2011). Furthermore, Emotional coldness and Recklessness showed positive associations with overall index of criminal behavior and risk of future recidivism. Shallow emotions, lack of care for others,

disinhibition, and impulsiveness are associated with the risk of future antisocial behavior. This result confirmed previous findings of positive associations between psychopathy scores and general score on OASys (Sellbom et al., 2021), thus showing once again the utility of psychopathy in predicting the risk assessment of criminal behavior and behavior associated to delinquency in general.

## 5. General discussion

### 5.1. Short psychopathy rating scale – reliability, factor structure, and validity

Psychopathy is a frequently investigated construct which has an important place in clinical and legal contexts, as well as in the psychology of individual differences. It can help us understand the dispositions toward immoral and antisocial behavior and their consequences. In order to build scientific knowledge about psychopathy, or to use this construct for practical purposes, first we need to measure it in a valid and reliable manner. And indeed, there are many self-report inventories which assess psychopathy as a multidimensional construct (Boduszek et al., 2016; Levenson et al., 1995; Lilienfeld & Andrews, 1996; Patrick et al., 2009; Paulhus et al., 2016) and even several short scales that use a single score to describe individual differences in psychopathy (Jonason & Webster, 2010; Jones & Paulhus, 2014). However, the rating measures of psychopathy are limited to the PCL-R instrument and CAPP-SRS. While PCL-R has several advantages as a method for psychopathy estimation, it has various limitations as well - it requires a professional interviewer (this stands for CAPP-SRS as well), it is time-consuming, and its applicability to general population is limited, because it is constructed to be primarily clinical/forensic instrument. This is why we wanted to construct a rating measure of psychopathy that could overcome these limitations - the one which is short, suitable for laymen as raters, and applicable to all target individuals; additionally, our goal was to construct the measure that would fulfill all relevant psychometric criteria, such as construct and external validity, and reliability.

The data from the three studies we conducted suggest that we largely succeeded in this task. The SPRS consists of 26 statements that assess psychopathy in target individuals. These items measure three psychopathic traits that have a consistent support in empirical literature about psychopathy: Deceitfulness (manipulation, exploitation of others, inflated self-view), Emotional coldness (lack of emotional empathy, care for others, guilt, and fear), and Recklessness (impulsiveness, quick temper, and proneness to risk-taking). Our data showed that these measures are reliable, they have the expected latent structure (all items from Study 2 and Study 3 loaded at their respectable factors), and they are positively associated with other psychopathy measures, various forms of aggressiveness, positive self-view, short-term mating, and substance use while negatively related to moral disgust, all measured by self-reports by the target individuals. Furthermore, SPRS Emotional coldness and Recklessness were positively linked with the risk assessment of future reoffending in convicted criminals, which is a major

**Table 6**
Descriptive statistics, reliabilities, and correlations between the examined measures (Study 3).

| | M(SD) | α | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. Deceitfulness | 3.20(0.74) | 0.86 | | | | | | | | |
| 2. Emotional coldness | 3.25(0.77) | 0.89 | 0.51** | | | | | | | |
| 3. Recklessness | 3.07(0.87) | 0.92 | 0.38** | 0.42** | | | | | | |
| 4. Physical aggression | 2.58(1.02) | 0.85 | 0.18** | 0.28** | 0.21** | | | | | |
| 5. Verbal aggression | 3.02(0.90) | 0.69 | 0.11 | 0.14* | 0.16** | 0.60** | | | | |
| 6. Anger | 2.64(0.95) | 0.78 | 0.14* | 0.19** | 0.24** | 0.71** | 0.69** | | | |
| 7. Hostility | 2.90(0.94) | 0.82 | 0.07 | 0.11 | 0.15* | 0.43** | 0.67** | 0.65** | | |
| 8. Aggression total score | 2.76(0.81) | 0.93 | 0.15** | 0.22** | 0.23** | 0.85** | 0.84** | 0.90** | 0.80** | |
| 9. Risk assessment | 76.51(27.94) | / | −0.01 | 0.31** | 0.13* | 0.23** | 0.20** | 0.20** | 0.15** | 0.23** |

** p < .01.
* p < .05.

criminological indicator of persistent criminal behavior. We captured expected sex differences (males showing higher scores) only in Study 2, but they could be the consequence of an observer bias: in difference to Study 1, the Study 2 raters described two individuals of different sex. Hence, sex differences in SPRS and their stability are yet to be determined in future research. SPRS is very easy to use and the rating process is quite short - the scale can be filled out in less than four minutes. Therefore, the scale can be used in various contexts - clinicians and psychiatrists can rate their patients, employees in penitentiary institutions can estimate psychopathy traits in offenders, workers in firms and factories can rate their bosses, and vice versa. In this way, SPRS can help further advances in the psychopathy exploration in different contexts, such as clinical, forensic, corporate, but also in the field of general individual differences. The scale is an open-source instrument and it is free to use for research purposes; practical applications will have to wait for additional empirical data to confirm the validity and reliability of the scales, and standardization procedures which would start afterwards. All researchers who would like to use the scale should note that they should administer the final version of the scale which is showed at the end of the Supplementary file of this manuscript.

### 5.2. Correlations between the SPRS scales

We would like to comment on the correlations between the SPRS traits – apparently the pattern of intercorrelations between the psychopathy measures differed across the studies, but positive significant associations were obtained in all three datasets. These correlations have both practical and theoretical implications. Practically, they suggest that the total score on the scale can be calculated. However, we do not recommend this - narrow psychopathy traits can have different relations with various outcomes (Međedović, 2015). If only the total score is analyzed, it can mask different or even opposite relations of the narrow scales with the other variables. Conceptually, positive associations between the scales could suggest that psychopathy can be viewed as a singular construct, a multidimensional trait comprised of narrower facets - this is the view of the PCL-R constructors (Hare, 2003). However, the correlations between the psychopathy traits in PCL-R are usually higher than the ones we obtained in the present research (especially the ones between Recklessness and other traits). Our view is that the SPRS may be more similar to the PPI and TriPM models of psychopathy, which conceive psychopathy as a set of functionally different traits with separate etiologies (Lilienfeld, 2013). These traits can positively correlate between themselves, but the strength of associations can depend on various conditions, including the population that the measures are collected in (Neumann et al., 2013). Hence, the correlations between psychopathy traits can vary – this, in fact, emerged in the present research as well, because the pattern of SPRS correlations differed in separate studies; further research would be needed to derive more definite conclusion about the relations between the SPRS traits.

### 5.3. Limitations, future directions, and conclusions

The present research had several limitations. Sample size and structure are one of them. The samples used in all studies are not representative and hence, the data cannot be straightforwardly generalized to the population level. Despite the fact that we had three studies, the sample size in every of them was not sufficient enough to perform confirmatory factor analysis that can produce reliable results. Furthermore, separate analyses should be done for males and females and in forensic and non-forensic samples as well to investigate measurement invariance. Some of the scales used for the purposes of SPRS validation were short and had lower reliabilities; despite the fact that they were associated with SPRS, additional validation data is required as well. This additional validation data should especially include PCL-R, because there is vast amount of data regarding PCL-R's validity and reliability; we were not able to administer PCL-R in Study 3 of the present research

which should be recognized as another limitation of our current data. We hope that other researchers will find the scale to be useful and use it in their own research programs - this will represent an empirical test of the scale's psychometric properties and predictive powers. The data collected in the present research represent a solid ground and the foundation for future use of SPRS in research and practical context.

### CRediT authorship contribution statement

I am the sole author of this manuscript.

### Declaration of competing interest

The author declares no conflict of interest.

### Data availability

Data will be made available on request.

### Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.paid.2023.112520.

### References

Ali, F., & Chamorro-Premuzic, T. (2010). The dark side of love and life satisfaction: Associations with intimate relationships, psychopathy and Machiavellianism. *Personality and Individual Differences, 48*(2), 228–233. https://doi.org/10.1016/j.paid.2009.10.016

Babiak, P., Neumann, C. S., & Hare, R. D. (2010). Corporate psychopathy: Talking the walk. *Behavioral Sciences & the Law, 28*(2), 174–193. https://doi.org/10.1002/bsl.925

Boduszek, D., Debowska, A., Dhingra, K., & DeLisi, M. (2016). Introduction and validation of Psychopathic Personality Traits Scale (PPTS) in a large prison sample. *Journal of Criminal Justice, 46*, 9–17. https://doi.org/10.1016/j.jcrimjus.2016.02.004

Bulut, T. (2021). *Emotional processes as the basis for distinguishing psychopathy and sadism.* Doctoral dissertation: Faculty of philosophy, University of Belgrade.

Buss, A. H., & Perry, M. (1992). The aggression questionnaire. *Journal of Personality and Social Psychology, 63*(3), 452–459. https://doi.org/10.1037/0022-3514.63.3.452

Cleckley, H. (1941). *The mask of sanity.* St. Louis, MO: Mosby.

Cleckley, H. (1976). *The mask of sanity* (5th ed.). St. Louis, MO: Mosby.

Cooke, D. J., Hart, S. D., & Logan, C. (2020). Comprehensive Assessment of Psychopathic Personality: Symptom Rating Scale (CAPP SRS). Retrieved from https://capp-network.no/wp-content/uploads/2021/04/Manual-PPD-Edited-December-2020-Final.pdf.

Cooke, D. J., Hart, S. D., Logan, C., & Michie, C. (2012). Explicating the construct of psychopathy: Development and validation of a conceptual model, the Comprehensive Assessment of Psychopathic Personality (CAPP). *International Journal of Forensic Mental Health, 11*(4), 242–252. https://doi.org/10.1080/14999013.2012.746759

Cooke, D. J., Michie, C., Hart, S. D., & Clark, D. A. (2004). Reconstructing psychopathy: Clarifying the significance of antisocial and socially deviant behavior in the diagnosis of psychopathic personality disorder. *Journal of Personality Disorders, 18*(4), 337–357. https://doi.org/10.1521/pedi.2004.18.4.337

Cooke, D. J., Michie, C., & Skeem, J. (2007). Understanding the structure of the psychopathy checklist–revised: An exploration of methodological confusion. *The British Journal of Psychiatry, 190*, s39–s50. https://doi.org/10.1192/bjp.190.5.s39

Costa, P. T., Jr., & McCrae, R. R. (1992). *Revised NEO personality inventory (NEO-PI-R) and NEO five-factor inventory (NEO-FFI professional manual).* Odessa, FL: Psychological Assessment Resources.

DeLisi, M. (2009). Psychopathy is the unified theory of crime. *Youth Violence and Juvenile Justice, 7*(3), 256–273. doi:10.1177%2F1541204009333834.

Dinić, B., & Janičić, B. (2012). Evaluacija Bas-Perijevog Upitnika agresije po modelu TOS (IRT) [evaluation of Buss-Perry aggression questionnaire with item response theory (IRT)]. *Psihologija, 45*(2), 189–207. https://doi.org/10.2298/PSI1202189D

Falkenbach, D. M., Howe, J. R., & Falki, M. (2013). Using self-esteem to disaggregate psychopathy, narcissism, and aggression. *Personality and Individual Differences, 54*(7), 815–820. https://doi.org/10.1016/j.paid.2012.12.017

Feilhauer, J., Cima, M., Korebrits, A., & Kunert, H. J. (2012). Differential associations between psychopathy dimensions, types of aggression, and response inhibition. *Aggressive Behavior, 38*(1), 77–88. https://doi.org/10.1002/ab.20415

Forth, A. E., Kosson, D. S., & Hare, R. D. (2003). *Hare psychopathy checklist: Youth version.* New York: Multi-Health Systems.

García-Forero, C., Gallardo-Pujol, D., Maydeu-Olivares, A., & Andrés-Pueyo, A. (2009). Disentangling impulsiveness, aggressiveness and impulsive aggression: An empirical approach using self-report measures. *Psychiatry Research, 168*(1), 40–49. https://doi.org/10.1016/j.psychres.2008.04.002

Garofalo, C., Neumann, C. S., & Velotti, P. (2021). Psychopathy and aggression: The role of emotion dysregulation. *Journal of Interpersonal Violence, 36*(23–24). https://doi.org/10.1177/0886260519900946. NP12640-NP12664.

Grant, J. E., & Chamberlain, S. R. (2014). Impulsive action and impulsive choice across substance and behavioral addictions: Cause or consequence? *Addictive Behaviors, 39* (11), 1632–1639. https://doi.org/10.1016/j.addbeh.2014.04.022

Gray, N. S., Hill, C., McGleish, A., Timmons, D., MacCulloch, M. J., & Snowden, R. J. (2003). Prediction of violence and self-harm in mentally disordered offenders: A prospective study of the efficacy of HCR-20, PCL-R, and psychiatric symptomatology. *Journal of Consulting and Clinical Psychology, 71*(3), 443–451. https://doi.org/10.1037/0022-006X.71.3.443

Hare, R. D. (1991/2003). *The Hare psychopathy checklist—Revised.* Toronto, ON, Canada: Multi-Health Systems.

Harpur, T. J., Hakstian, A. R., & Hare, R. D. (1988). Factor structure of the psychopathy checklist. *Journal of Consulting and Clinical Psychology, 56*(5), 741–747. https://doi.org/10.1037/0022-006X.56.5.741

Hart, S. D., Cox, D. N., & Hare, R. D. (1995). *Hare psychopathy checklist: Screening version (PCL: SV).* Toronto, Ontario, Canada: Multi-Heath Systems.

Home Office. (2002). *OASys user manual* (Volume 2). National Probation Directorate.

Jackson, J. J., & Kirkpatrick, L. A. (2007). The structure and measurement of human mating strategies: Toward a multidimensional model of sociosexuality. *Evolution and Human Behavior, 28*(6), 382–391. https://doi.org/10.1016/j.evolhumbehav.2007.04.005

Jonason, P. K., & Webster, G. D. (2010). The dirty dozen: A concise measure of the dark triad. *Psychological Assessment, 22*(2), 420–432. https://doi.org/10.1037/a0019265

Jones, D. N., & Paulhus, D. L. (2014). Introducing the short dark triad (SD3) a brief measure of dark personality traits. *Assessment, 21*(1), 28–41. doi:10.1177%2F1073191113514105.

Lee, K., & Ashton, M. C. (2018). Psychometric properties of the HEXACO-100. *Assessment, 25,* 543–556. doi:10.1177%2F1073191116659134.

Leistico, A. M. R., Salekin, R. T., DeCoster, J., & Rogers, R. (2008). A large-scale meta-analysis relating the Hare measures of psychopathy to antisocial conduct. *Law and Human Behavior, 32,* 28–45. https://doi.org/10.1007/s10979-007-9096-6

Levenson, M. R., Kiehl, K. A., & Fitzpatrick, C. M. (1995). Assessing psychopathic attributes in a noninstitutionalized population. *Journal of Personality and Social Psychology, 68*(1), 151–158. https://doi.org/10.1037/0022-3514.68.1.151

Lilienfeld, S. O. (2013). Is psychopathy a syndrome? Commentary on Marcus, Fulton, and Edens. *Personality Disorders: Theory, Treatment, and Research, 4*(1), 85–86. https://doi.org/10.1037/a0027544

Lilienfeld, S. O., & Andrews, B. P. (1996). Development and preliminary validation of a self-report measure of psychopathic personality traits in noncriminal population. *Journal of Personality Assessment, 66*(3), 488–524. https://doi.org/10.1207/s15327752jpa6603_3

Lilienfeld, S. O., & Hess, T. H. (2001). Psychopathic personality traits and somatization: Sex differences and the mediating role of negative emotionality. *Journal of Psychopathology and Behavioral Assessment, 23*(1), 11–24. https://doi.org/10.1023/A:1011035306061

Lilienfeld, S. O., Watts, A. L., & Smith, S. F. (2015). Successful psychopathy: A scientific status report. *Current Directions in Psychological Science, 24*(4), 298–303. doi:10.1177%2F0963721415580297.

Lowman, K. L., Patrick, C. J., Perkins, E. R., Bottesi, G., Caruso, M., Giulini, P., & Sica, C. (2021). Evaluating the validity of brief prototype-based informant ratings of triarchic psychopathy traits in prisoners. *Behavioral Sciences & the Law, 39*(5), 641–662. https://doi.org/10.1002/bsl.2542

MacNeil, B. M., & Holden, R. R. (2006). Psychopathy and the detection of faking on self-report inventories of personality. *Personality and Individual Differences, 41*(4), 641–651. https://doi.org/10.1016/j.paid.2006.03.004

Međedović, J. (2015). Nomološka mreža psihopatije [Nomological network of psychopathy]. *Institut za kriminološka i sociološka istraživanja.*

Međedović, J. (2019). Harsh environment facilitates psychopathy's involvement in mating-parenting trade-off. *Personality and Individual Differences, 139,* 235–240. https://doi.org/10.1016/j.paid.2018.11.034

Međedović, J. (2021). Phenotypic signals of sexual selection and fast life history dynamics for the long-term but not short-term mating. *Evolutionary Psychology, 19* (4). https://doi.org/10.1177/14747049211057158, 14747049211057158.

Međedović, J., Bulut, T., Savić, D., & Đuričić, N. (2018). Delineating psychopathy from cognitive empathy: The case of psychopathic personality traits scale. *European Journal of Analytic Philosophy, 14*(1), 53–62. https://doi.org/10.31820/ejap.14.1.3

Međedović, J., & Damjanović, A. (2018). Measuring psychopathy via small sample of TriPM items. *Zbornik Instituta za kriminološka i sociološka istraživanja, 37*(1), 7–22.

Međedović, J., & Petrović, B. (2018). *Short Psychopathy Rating Scale (SPRS): Preliminary validation results, 24,* 24–28.

Međedović, J., Petrović, B., Kujačić, D., Đorić, J.Ž., & Savić, M. (2015). What is the optimal number of traits to describe psychopathy? *Primenjena Psihologija, 8*(2), 109–130. https://doi.org/10.19090/pp.2015.2.109-130

Međedović, J., Wertag, A., & Sokić, K. (2018). Can psychopathic traits be adaptive? Sex differences in relations between psychopathy and emotional distress. *Psihologijske teme, 27*(3), 481–497. https://doi.org/10.31820/pt.27.3.7

Ministry of Justice: The Administration for the Enforcement of Penal Sanctions. (2013). *Priručnik za primenu Instrumenta za procenu rizika do i tri godine [manual for the application of the instrument for risk assessment up to three years of sentence].* Ministry of Justice, Republic of Serbia.

Ministry of Justice: The Administration for the Enforcement of Penal Sanctions. (2013a). *Priručnik za primenu instrumenta za procenu rizika preko tri godine [manual for the application of the instrument for risk assessment over three years of sentence].* Ministry of Justice, Republic of Serbia.

Neumann, C. S., Uzieblo, K., Grombez, G., & Hare, R. D. (2013). Understanding the psychopathic personality inventory (PPI) in terms of the unidimensionality, orthogonality, and construct validity of PPI-I and -II. *Personality Disorders: Theory, Research, and Treatment, 4*(1), 77–79. https://doi.org/10.1037/a0027196

Patrick, C. J. (2010). Triarchic psychopathy measure (TriPM) [database record]. *APA PsycTests.* https://doi.org/10.1037/t42471-000

Patrick, C. J., Fowles, D. C., & Krueger, R. F. (2009). Triarchic conceptualization of psychopathy: Developmental origins of disinhibition, boldness, and meanness. *Development and Psychopathology, 21*(3), 913–938. https://doi.org/10.1017/S0954579409000492

Paulhus, D. L., Neumann, C. S., & Hare, R. D. (2016). *Manual for the self-report psychopathy scale.* Toronto, Ontario: Multi-Health Systems.

Porter, S., Ten Brinke, L., & Wallace, B. (2012). Secrets and lies: Involuntary leakage in deceptive facial expressions as a function of emotional intensity. *Journal of Nonverbal Behavior, 36,* 23–37. https://doi.org/10.1007/s10919-011-0120-7

Porter, S., Woodworth, M. T., & Black, P. J. (2018). Psychopathy and aggression. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 611–634). The Guilford Press.

Ray, J. V., Hall, J., Rivera-Hudson, N., Poythress, N. G., Lilienfeld, S. O., & Morano, M. (2013). The relation between self-reported psychopathic traits and distorted response styles: A meta-analytic review. *Personality Disorders: Theory, Research, and Treatment, 4*(1), 1–14. https://doi.org/10.1037/a0026482

Rogers, R., Vitacco, M. J., Jackson, R. L., Martin, M., Collins, M., & Sewell, K. W. (2002). Faking psychopathy? An examination of response styles with antisocial youth. *Journal of Personality Assessment, 78*(1), 31–46. https://doi.org/10.1207/S15327752JPA7801_03

Rufino, K. A., Boccaccini, M. T., & Guy, L. S. (2011). Scoring subjectivity and item performance on measures used to assess violence risk: The PCL-R and HCR-20 as exemplars. *Assessment, 18*(4), 453–463. doi:10.1177%2F1073191110378482.

Seibert, L. A., Miller, J. D., Few, L. R., Zeichner, A., & Lynam, D. R. (2011). An examination of the structure of self-report psychopathy measures and their relations with general traits and externalizing behaviors. *Personality Disorders: Theory, Research, and Treatment, 2*(3), 193–208. https://doi.org/10.1037/a0019232

Sellbom, M., Cooke, D. J., & Shou, Y. (2019). Development and initial validation of the comprehensive assessment of psychopathic personality–self-report (CAPP-SR). *Psychological Assessment, 31*(7), 878–894. https://doi.org/10.1037/pas0000714

Sellbom, M., Laurinaitytè, I., & Laurinavičius, A. (2021). Further validation of the comprehensive assessment of psychopathic personality-self-report (CAPP-SR) in Lithuanian offender and nonoffender samples. *Assessment, 28*(2), 472–484. https://doi.org/10.1177/1073191120914403

Simpson, J. A., & Gangestad, S. W. (1991). Individual differences in sociosexuality: Evidence for convergent and discriminant validity. *Journal of Personality and Social Psychology, 60*(6), 870–883. https://doi.org/10.1037/0022-3514.60.6.870

Smederevac, S., Mitrović, D., & Čolović, P. (2010). *Velikih pet plus dva: Primena i interpretacija [big five plus two: Application and interpretation].* Beograd: Centar za primenjenu psihologiju.

Spinella, M. (2007). Normative data and a short form of the Barratt impulsiveness scale. *International Journal of Neuroscience, 117*(3), 359–368. https://doi.org/10.1080/00207450600588881

Tybur, J. M., Lieberman, D., & Griskevicius, V. (2009). Microbes, mating, and morality: Individual differences in three functional domains of disgust. *Journal of Personality and Social Psychology, 97*(1), 103–122. https://doi.org/10.1037/a0015474

Vujičić, N., & Karić, T. (2020). Procenarizikainapredovanje u tretmanu u Kazneno-popravnomzavodu u SremskojMitrovici [Risk assessment and advancement in treatment in Sremska Mitrovica Correctional Facility]. *Anali Pravnog fakulteta u Beogradu, 68*(1), 164–185. https://doi.org/10.5937/AnaliPFB2001170V

Walsh, Z., Allen, L. C., & Kosson, D. S. (2007). Beyond social deviance: Substance use disorders and the dimensions of psychopathy. *Journal of Personality Disorders, 21*(3), 273–288. https://doi.org/10.1521/pedi.2007.21.3.273

Walters, G. D. (2003). Predicting institutional adjustment and recidivism with the psychopathy checklist factor scores: A meta-analysis. *Law and Human Behavior, 27,* 541–558. https://doi.org/10.1023/A:1025490207678

Warren, G. C., & Clarbour, J. (2009). Relationship between psychopathy and indirect aggression use in a noncriminal population. *Aggressive Behavior, 35*(5), 408–421. https://doi.org/10.1002/ab.20317

Watts, A. L., Lilienfeld, S. O., Edens, J. F., Douglas, K. S., Skeem, J. L., Verschuere, B., & LoPilato, A. C. (2016). Does response distortion statistically affect the relations between self-report psychopathy measures and external criteria? *Psychological Assessment, 28*(3), 294–306. https://doi.org/10.1037/pas0000168

Wilson, L., Miller, J. D., Zeichner, A., Lynam, D. R., & Widiger, T. A. (2011). An examination of the validity of the elemental psychopathy assessment: Relations with other psychopathy measures, aggression, and externalizing behaviors. *Journal of*

*Psychopathology and Behavioral Assessment, 33*, 315–322. https://doi.org/10.1007/s10862-010-9213-6

Woodworth, M., & Porter, S. (2002). In cold blood: Characteristics of criminal homicides as a function of psychopathy. *Journal of Abnormal Psychology, 111*(3), 436–445. https://doi.org/10.1037/0021-843X.111.3.436

Wygant, D. B., & Sellbom, M. (2012). Viewing psychopathy from the perspective of the personality psychopathology five model: Implications for DSM-5. *Journal of Personality Disorders, 26*(5), 717–726. https://doi.org/10.1521/pedi.2012.26.5.717