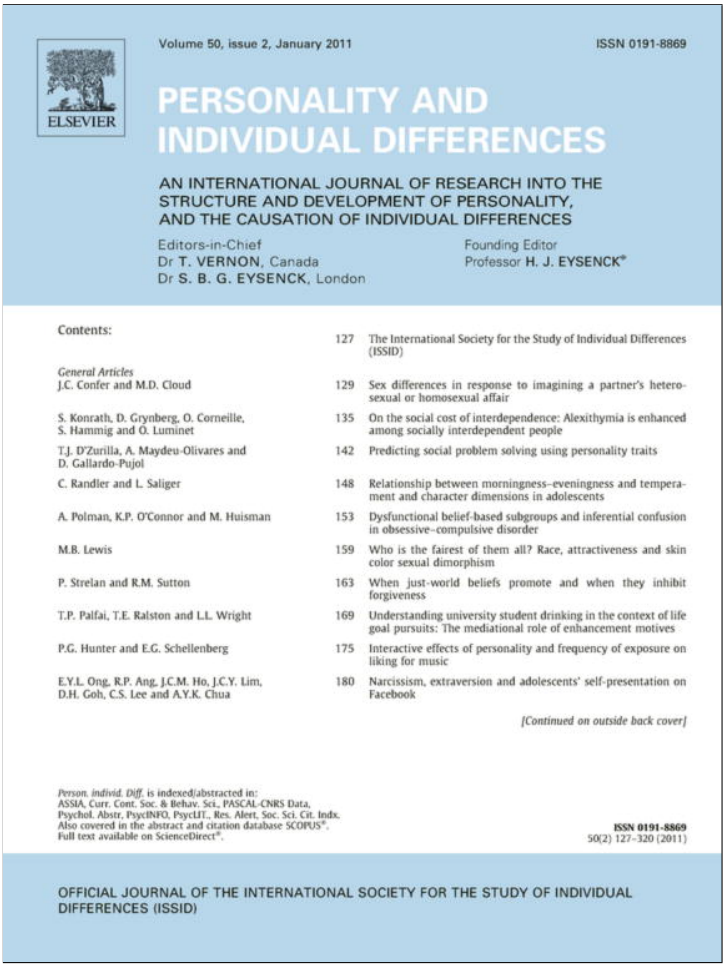

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Correspondence of aggressive behavior classifications among young adults using the Impulsive Premeditated Aggression Scale and the Reactive Proactive Questionnaire

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ABSTRACT

The two most studied bimodal classifications of aggressive behavior are impulsive/premeditated and reactive/proactive aggression. Despite differences in the conceptualization of these classifications and the primary use of each in different developmental phases, the two classifications are often used interchangeably. The purpose of the current study was to determine the correspondence of the two classification schemes in a sample of young adults ($N = 250$) using two validated measures: the Reactive Proactive Questionnaire (Raine et al., 2006) and the Impulsive Premeditated Aggression Scale (Stanford et al., 2003). Convergent and discriminant validity of the scales was partially supported. Clusters derived from each scale corresponded for 38% of the cases. When the scales were used together, six subtype categories were identified, such that low, impulsive, and premeditated components were found for reactive and proactive aggressors. The six categories differed significantly on measures of aggression, anger, and hostility. Thus, the measures, and potentially the classifications, complemented but did not correspond to each other. These results suggest that the two classification systems may not be equivalent and should not be used interchangeably.

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1. Introduction

The classification of aggressive behavior is important for determining the etiology (Barratt, Felthous, Kent, Liebman, & Coates, 2000) and treatment strategies for aggressive disorders (Crick & Dodge, 1996; Mathias et al., 2007). Bimodal classifications of aggressive behavior have been well-established in animals and humans (Ramirez & Andreu, 2006). Though different terms have been used, classifications typically identify two subtypes: one that is characterized by planning, carried out for a specific purpose, and marked by callous, cold-heartedness and another, which is spontaneous and characterized by loss of control or an acute emotional reaction to provocation. The former has been referred to as instrumental, premeditated, proactive, and predatory aggression; the latter has been termed impulsive, reactive, hostile, emotional, and affective aggression (Ramirez & Andreu, 2006). For most individuals one subtype is predominant, although subtypes are not mutually exclusive (Barratt, Stanford, Dowdy, Liebman, & Kent, 1999) and are often moderately correlated (Polman, de Castro, Koops, van Boxtel, & Merk, 2007). Individuals also may represent subtype hybrids and an aggressive response may vary by situational characteristics (Liu, 2004).

The bimodal classifications that have received the most empirical study are reactive/proactive and impulsive/premeditated aggressive dichotomies. Dodge (1991) defined reactive aggression as "a reaction to a presumed threat which is associated with anger" (Polman et al., 2007, p. 522). Proactive aggression is an organized, instrumental and "cold-blooded" aggression (Dodge, 1991), and is perpetrated more often by individuals with high scores on the Psychopathy Checklist (Hart & Dempster, 1997). The study of reactive/proactive aggression has risen out of social cognitive theories, such as the frustration-aggression model and social learning theory; the former has been used to describe the provoked emotional outburst associated with reactive aggression and the latter captures the instrumental function, or positively reinforcing nature, of proactive aggression (Dodge, 1991). Reactive/proactive aggression has been studied most frequently among children with psychiatric disorders, such as disruptive behavior disorders. In these

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studies, the form of aggression often reflects trait characteristics that are indicators of the way children process social information, the way they interact with their peers, and future antisocial lifestyles.

Impulsive aggression "refers to unplanned aggressive acts which are spontaneous in nature, are either provoked or out of proportion to the provocation and occur among persons who are often characterized as 'having a short fuse.' Perpetrators often report regret after the act" (Barratt et al., 1999, p. 164). Like proactive aggression, premeditated acts are cold-blooded rather than emotionally charged (Barratt et al., 1999). The study of impulsive/premeditated aggression developed clinically through work with adult forensic and psychiatric populations. These subtypes have been examined primarily with biological theories, suggesting impulsive and premeditated aggressors may be distinguished based on psychophysiological and neurochemical characteristics, as well as differential response to treatment (Stanford et al., 2003). In these studies, the form of aggression often reflects a state that is an indicator of the mood or physiological events that are occurring in the moment of the aggressive act. For example, the thought confusion often reported during an impulsive aggressive episode (Barratt et al., 1999) describes the aggressive state, rather than an ongoing cognitive deficit.

Despite the apparent overlap in definition between reactive and impulsive aggression on the one hand and proactive and premeditated aggression on the other, the literature (though inconsistent) seems to distinguish the classifications to some extent. When they are assessed, the classifications differ in the phase of the aggressive outburst they capture: reactive/proactive describes the intent of the aggression and the frequency of certain aggressive traits whereas impulsive/premeditated describes the nature and qualities of recent aggressive acts (Raine et al., 2006; Stanford et al., 2003). They also differ in the developmental phase in which they have been primarily examined, with reactive/proactive research often involving children and adolescents, and impulsive/premeditated involving adults.

The domains that have been examined as correlates and predictors of the subtypes in each classification overlap in few areas. Both literatures suggest that psychopathic traits are more common to premeditated or proactive aggressors (Raine et al., 2006; Stanford, Houston, & Baldridge, 2008), anger is most commonly associated with impulsive or reactive aggression (Dodge, 1991; Stanford et al., 2003), and hostility is associated with men's proactive or premeditated aggression (Connor, Steingard, Anderson, & Melloni, 2003; Stanford et al., 2003). The correspondence of correlates in other domains is less clear. For example, substantial work has identified distinct deficits in social information processes for reactive and proactive aggression (Crick & Dodge, 1996; Dodge & Coie, 1987); but, social information processing has not been examined in impulsive/premeditated aggressors. Given the differences in definition and application, it is unclear if reactive/proactive and impulsive/premeditated classifications are capturing comparable categories of aggressive behavior. The accurate distinction of aggressive subtypes is important because investigations into etiology and the development and evaluation of intervention and prevention programs that reflect known correlates and predictors of one subtype are generalizable to the other subtype only to the degree that the subtypes correspond. Moreover, the developmental continuity of aggressive subtypes is not clear. Information about such variation is needed to understand how the expression and correlates of aggressive subtypes change over time and to identify key times for intervention.

Validated instruments have been developed to assess and classify aggression. The Reactive/Proactive Questionnaire (RPQ; Raine et al., 2006) has been validated cross-culturally among adolescents (Fossati et al., 2009). The Impulsive Premeditated Aggression Scale (IPAS; Stanford et al., 2003) has been validated with a variety of clinical and non-clinical adult samples (e.g., Haden, Scarpa, & Stanford, 2008). Each instrument reflects the qualities of the aggressive classification that it measures; the IPAS provides a time-frame for recalling events, thus capturing state characteristics, while the RPQ asks about typical or trait-like aggressive responses. The RPQ subscales tend to be moderately correlated (Raine et al., 2006), which led the authors to recommend using the standardized residuals of the scales rather than raw scores. This approach has been criticized based on threats to construct validity that transforming a subscale may have (Lynam, Hoyle, & Newman, 2006). Despite their independent validation, the IPAS and RPQ have not been examined in the same sample, so the degree to which they are measuring the same constructs or are identifying the same individuals as aggressive has not been explored. Therefore the first aim of the current study was to determine the correspondence of the subtypes by examining the convergent and discriminant validity of the IPAS and RPQ in relation to each other and to measures of verbal and physical aggression, anger, hostility, and psychopathic traits. Given the differences between classifications and instruments noted above, we did not expect to find complete correspondence between the IPAS and RPQ. As such, for our second aim we explored the degree to which the classifications corresponded and what additional information about classifications can be generated by using them as complementary rather than equivalent instruments.

2. Method

2.1. Participants

Participants were 250 psychology students from a moderate-sized Southern university. Participants had an average age of 19.43 (SD = 1.46). The majority of the sample (85.6%) was female (n = 214). Sixty-one percent were Caucasian (n = 153), 12.8% were Hispanic (n = 32), 12.8% were Asian/Pacific Islander (n = 32), 8.8% were African American (n = 22), and 4.4% self-identified as "other" or were multi-racial (n = 11).

2.2. Instruments

The Reactive Proactive Questionnaire (Raine et al., 2006) is a 23-item measure that yields continuous subscale scores for the reactive (11 items) and proactive (12 items) subscale by summing item responses. The instructions to the measure facilitate a non-defensive response and the items tap into the motivational and situational context for the acts. Participants indicate how frequently they have experienced each of the items from 0 = *Never* to 2 = *Often*. To control for the moderate correlation between the subscales, Raine et al. (2006) recommend using standardized residuals of the subscales as an alternative to the raw score. We used both raw and residualized scores for the correlations (see below).

The Impulsive Premeditated Aggression Scale (IPAS; Stanford et al., 2003) is a 30-item measure which classifies an individual's aggressive acts. The IPAS asks participants to consider their aggressive acts over the past 6 months and then indicate their agreement (from 5 = *Strongly Agree* to 0 = *Strongly Disagree*) for each item on a five point Likert-type scale. Traditionally, a screening question is used ("Over the past 6 months have you had episodes where you would become angry and enraged with other people and acted in an aggressive way?") and only participants who answer affirmatively complete the IPAS items. In the current study, to parallel the administration of the RPQ, we omitted the screening question so that all participants completed the IPAS. The scoring method for the IPAS was recently revised to reflect new factor analysis findings (Stanford, unpublished manual). The new scoring

method utilizes 18 of the 30 IPAS items (Impulsive subscale, 10 items; Premeditated subscale 8 items) and items can be scored to obtain a continuous, dimensional score or can be used to categorize participants as impulsive or premeditated aggressors. To be consistent with the RPQ scoring, the dimensional approach, in which the item responses for each subscale are summed, was used.

Additional measures were used for convergent and discriminant validity: The Personality Assessment Inventory (PAI; Morey, 2007) assesses a variety of personality constructs. The Verbal (4 items) and Physical Aggression (4 items) subscales were used as measures of general aggression and were not expected to vary by aggressive classification. Participants respond to items on a five-point Likert-type scale, where 0 = *False, Not at All True* and 4 = *Very True*. The Buss-Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1992) is a 29-item measure that contains four subscales: Verbal Aggression (5 items), Physical Aggression (9 items), Anger (7 items), and Hostility (8 items). Participants respond to items on a five-point Likert-type scale, where 1 = *Extremely Uncharacteristic of Me* and 5 = *Extremely Characteristic of Me*. In past work anger has been associated with reactive and impulsive aggression and hostility has been associated with premeditated aggression (Dodge, 1991; Stanford et al., 2003). The Verbal and Physical Aggression subscales were used as measures of general aggression and were not expected to vary by aggressive classification. The Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996) is a 154-item measure of psychopathic traits. The PPI has 10 subscales, and responses are made on a 4-point Likert scale with 1 = *False* and 4 = *True*. The PPI total score was used to examine the convergent validity with proactive/premeditated classifications.

2.3. Procedure

As part of a class requirement, participants were recruited from introductory psychology classes using an online website. Consent and all questionnaires were completed online. Questionnaires were presented in the same order for every participant with the IPAS completed first followed by a delinquency scale (not included in the current study) followed by the RPQ. The study was approved by the university's institutional review board.

2.4. Data analysis

To examine convergent and discriminant validity of the classifications and to understand their correspondence, we performed bivariate correlations for the IPAS and RPQ subscales, and correlations among all study measures. In the correlations we used both the raw and standardized residual scores for the Reactive and Proactive subscales, with the goal of determining which method was best able to demonstrate discriminant validity. The method that fared best in terms of validity would be used in the cluster analyses, as the goal of cluster analysis is to maximize differences among clusters. We then performed two-step cluster analyses to examine the correspondence of individuals identified as impulsive-reactive and premeditate-proactive on each scale and to develop "data driven" classification clusters that reflected both instruments. ANOVAs with Scheffe post hoc tests and eta squared effect sizes, where appropriate, were used to identify mean differences on study measures by the novel clusters.

3. Results

3.1. Descriptive analyses

Means, standard deviations, and internal consistency coefficients are presented in Tables 1 and 2. Mean scores were not significantly different based on age, year in school, race/ethnicity, or biological sex.

3.2. Correlations

Correlations for the IPAS and RPQ are presented in Table 1. Convergent validity was supported for the IPAS and raw and residualized RPQ subscales, but only the residualized RPQ subscale scores demonstrated discriminant validity. A substantial correlation between raw Proactive and Reactive subscales was found. Correlations among the IPAS, RPQ and measures of aggression and psychopathy are presented in Table 2. Correlations were inconsistent with our expectations and supported the convergent, but not the discriminant, validity of the IPAS and RPQ subscales. Correlations among measures of aggression and the residualized RPQ scales indicated these scales, though transformed, were still tapping into aggressive constructs. Because residualized scores were more useful in discriminating between the IPAS subscales, they were used in the cluster analyses.

3.3. Cluster analyses

We performed separate cluster analyses on the IPAS and residualized RPQ subscale scores. The IPAS yielded three clusters, which based on the mean patterns, we labeled low aggressors (LA, $n = 72$, 28.9%), impulsive aggressors (IA, $n = 55$, 22.1%), and premeditated aggressors (PM, $n = 122$, 49.0%). The RPQ yielded two clusters, which based on the mean patterns we labeled reactive ($n = 120$, 48.0%) and proactive ($n = 130$, 52.0%) aggressors. When the clusters produced for each scale were compared, the categories did not match in 62% ($n = 155$) of the cases. Thirty cases (12%) corresponded on Impulsive-Reactive Aggression. Sixty-four cases (25.6%) corresponded on Premeditated-Proactive Aggression. Both

Table 1
Pearson correlations among Reactive Proactive Questionnaire (RPQ) and Impulsive Premeditated Aggression Scale (IPAS) subscales.

	M (SD)	α	RPQ Subscales				IPAS Subscales	
			Raw		Residualized			
			Proactive	Reactive	Proactive	Reactive	Premeditated	Impulsive
Raw Proactive	1.24 (1.81)	.70	–					
Raw Reactive	7.12 (3.51)	.80	.55***	–				
Residualized proactive	0.00 (1.00)	–	.83***	.00	–			
Residualized reactive	0.00 (1.00)	–	.00	.83***	−.55***	–		
Premeditated	21.72 (5.41)	.73	.27***	.25***	.16*	.12	–	
Impulsive	27.23 (5.62)	.74	.20**	.27***	.07	.19**	.14*	–

* $p < .05$.
** $p < .01$.
*** $p < .001$.

Table 2
Pearson correlations among the Reactive Proactive Questionnaire (RPQ), Impulsive Premeditated Aggression Scale (IPAS), and aggression measures.

	M (SD)	α	RPQ Subscales				IPAS subscales	
			Raw		Residualized		Premeditated	Impulsive
			Proactive	Reactive	Proactive	Reactive		
Verbal Aggression (PAI)	3.62 (3.00)	.80	.51***	.46***	.21**	.31***	.16*	.17**
Verbal Aggression (BPAQ)	12.45 (3.78)	.80	.47***	.41***	.19**	.29***	.20**	.15*
Physical Aggression (PAI)	0.87 (1.40)	.64	.52***	.38***	.11	.37***	.13*	.36***
Physical Aggression (BPAQ)	16.46 (5.81)	.84	.54***	.43***	.16*	.36***	.30***	.15*
Anger (BPAQ)	15.24 (5.04)	.76	.49***	.42***	.18**	.31***	.23***	.26***
Hostility (BPAQ)	15.80 (5.32)	.83	.52***	.53***	.29***	.27***	.18**	.28***
Psychopathic Personality Inventory	291.90 (35.61)	.75	.20**	.27***	.19**	.06	.14*	.13*

Note: BPAQ, Buss-Perry Aggression Questionnaire; PAI, Personality Assessment Inventory.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

the correlations and the overlap in the cluster analyses suggested only partial correspondence between the two measures.

We then explored the possibility that the scales could be used in a complementary way to elucidate nuances within each classification. A cluster analysis with the three IPAS and two RPQ clusters as the categorical variables produced 6 clusters: Proactive/Premeditated, Proactive/Impulsive, Proactive/Low Aggression, Reactive/Premeditated, Reactive/Impulsive, and Reactive/Low Aggression (Table 3). A multinomial logistic regression with the 6-cluster group as the dependent variable and IA, PM, Reactive (raw), and Proactive (raw) subscales scores as the factors was significant, χ^2 (df = 405) = 787.03, $p < .001$, which represents 98% agreement between predicted and observed clusters. Univariate *F* tests were performed on all scales with the six clusters as the grouping factor, followed by Scheffe post hoc tests to identify the nature of the effect (Table 3, in the interest of space, post hoc tests not shown). Standardized subscale means for the six clusters on all study measures are presented in Figs. 1 and 2. As expected the IPAS and RPQ clusters with different subtypes were generally significantly different. Although only a few post hoc tests reached significance, the pattern of means suggested that the Reactive/Premeditated cluster had the highest mean on measures of verbal and physical aggression, anger, hostility, and psychopathic traits. Similarly, the Reactive/Impulsive cluster tended to be higher than those for the Proactive clusters. Small cell sizes likely limited our ability to detect significant group differences. Eta squared effect sizes for the IPAS and RPQ ANOVAs were moderate, whereas effects for PAI, BPAQ, and psychopathic traits were small.

4. Discussion

This study examined the correspondence between two validated measures that classify aggressive behavior. An inconsistent pattern of correlations, non-overlapping factors, and low agreement between clusters suggested correspondence was only partially supported. In fact, the scales identified the same individuals as reactive-impulsive or proactive-premeditated in only 37.6% of the cases. The lack of correspondence between the IPAS and RPQ suggests that specificity is needed when examining and describing bimodal classifications of aggressive behavior. Some reviews of classifications imply equivalence of different classification conceptualizations (e.g., Ramirez & Andreu, 2006). Our findings suggest that equivalence is not supported, at least in the case of reactive/proactive and impulsive/premeditated classifications as measured by the RPQ and IPAS. Work is needed to replicate

Table 3
Means, standard deviations, and significance tests for study measures by the six-cluster classification.

n (%)	*F* (5, 243)	η^2	Reactive/Low Aggression 31 (12.4%) *M* (SD)	Reactive/ Impulsive 30 (12.0%) *M* (SD)	Reactive/ Premeditated 58 (23.2%) *M* (SD)	Proactive/Low Aggression 41 (16.4%) *M* (SD)	Proactive/ Impulsive 25 (10.0%) *M* (SD)	Proactive/ Premeditated 64 (25.6%) *M* (SD)
Impulsive (IPAS)	67.76***	.58	$20.97\ (3.21)_a$	$32.93\ (2.42)_{bc}$	$28.78\ (3.57)_{bd}$	$20.76\ (4.26)_a$	$30.92\ (3.50)_b$	$28.89\ (4.08)_{bd}$
Premeditated (IPAS)	47.26***	.49	$19.61\ (4.33)_a$	$17.80\ (3.22)_a$	$25.47\ (3.17)_b$	$18.59\ (5.31)_a$	$16.64\ (3.05)_a$	$25.52\ (3.30)_b$
Residualized Reactive (RPQ)	85.06***	.64	$0.67\ (0.62)_a$	$0.82\ (0.64)_a$	$0.91\ (0.68)_a$	$-0.72\ (0.56)_b$	$-0.66\ (0.48)_b$	$-0.72\ (0.56)_b$
Residualized Proactive (RPQ)	25.61***	.35	$-0.58\ (0.50)_a$	$-0.64\ (0.55)_a$	$-0.58\ (0.59)_a$	$0.38\ (0.73)_b$	$0.36\ (0.86)_b$	$0.73\ (1.18)_b$
Verbal Aggression (PAI)	2.29*	.05	3.23 (2.45)	4.20 (3.61)	4.55 (3.18)	3.05 (2.49)	2.76 (2.49)	3.39 (3.09)
Physical Aggression (PAI)	5.06***	.09	$0.42\ (0.77)_a$	$1.60\ (1.52)_{bc}$	$1.33\ (1.69)_c$	$0.39\ (0.92)_d$	0.64 (1.60)	0.75 (1.26)
Psychopathic Personality Inventory	0.82	.02	283.87 (33.21)	290.23 (37.57)	298.03 (30.20)	287.93 (33.87)	293.36 (33.91)	293.84 (41.43)
Physical Aggression (BPAQ)	4.09**	.08	14.97 (4.84)	16.80 (6.22)	$19.17\ (7.01)_a$	$14.76\ (4.01)_b$	15.48 (6.30)	16.06 (4.92)
Verbal Aggression (BPAQ)	2.04	.04	12.06 (3.60)	12.67 (3.65)	13.72 (3.88)	12.07 (3.86)	11.36 (2.97)	12.13 (3.90)
Anger (BPAQ)	3.28**	.06	13.97 (5.46)	16.53 (4.91)	17.05 (5.15)	13.93 (4.12)	14.12 (4.27)	14.92 (5.20)
Hostility (BPAQ)	3.48**	.07	14.32 (3.32)	17.00 (5.90)	17.48 (4.68)	13.95 (4.75)	14.40 (3.82)	16.12 (6.59)

Note: Means that are significantly different at $p < .05$ are marked with a subscript. Means with subscripts a and b and means with subscripts c and d are significantly different. IPAS, Impulsive Premeditated Aggression Scale. RPQ, Reactive Proactive Questionnaire. BPAQ, Buss-Perry Aggression Questionnaire. PAI, Personality Assessment Inventory.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

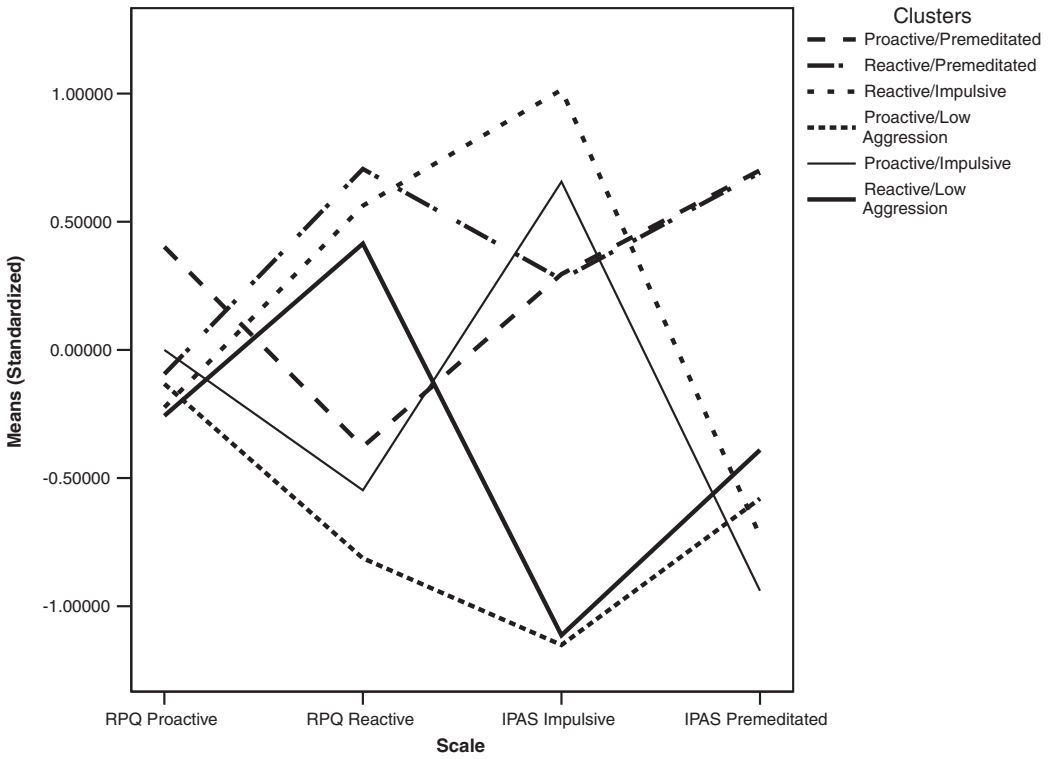

Fig. 1. Standardized means on the Impulsive Premeditated Aggression Scale (IPAS) and Reactive Proactive Questionnaire (RPQ) subscale for the six-clusters.

and understand the extent of the differences across age groups and measurement modalities.

In exploratory analyses to determine the degree to which the scales complemented each other, not two but six classifications were identified, in which low aggression, impulsive, and premeditated components were identified for reactive and proactive aggressors. The significant mean differences between several clusters on anger, hostility, verbal, and physical aggression measures suggested these clusters differed in meaningful ways; though, it is somewhat unclear how clinically relevant the clusters are given the small cell sizes and small effect sizes. The Reactive/Premeditated cluster had the highest mean scores on most measures. This may suggest that individuals whose aggression is cold-blooded and who exhibit affective dyscontrol are at highest risk for serious acts of violence. This finding is consistent with Lynam's (1998) findings that the confluence of conduct problems, often marked by callous/unemotional traits, and hyperactivity/impulsivity resemble adult psychopaths, who are disproportionately responsible for crime and serious violence (Lynam, 1998). In addition both Reactive/Impulsive and Reactive/Premeditated clusters evidenced the highest means on aggression measures, which may suggest that Reactive aggression may characterize individuals at highest risk for subsequent violence.

These results suggest that the scales differ in how they identify and perhaps the way they conceptualize Reactive/Impulsive and Premeditated/Proactive aggressors. The mechanism of these differences may reflect the fact that the RPQ was developed for use in children and the IPAS for use with adults. It also may reflect measurement differences between the tools, or theoretical differences related to the constructs. In terms of measurement differences, based on the operationalization of impulsive/premeditated and reactive/proactive aggression on the IPAS and RPQ, it may be that the former is capturing state characteristics of an aggressive act and the latter may reflect trait characteristics of an aggressive individual. If the classifications are conceptualized as state and trait characteristics that reflect aggressive acts and people, respectively, then it naturally follows that the classification schemes could be fully complementary as we found. This conclusion is supported by the different response formats for the instruments, in that the RPQ prefaces its questions by normalizing anger and then asking participants to rate the frequency of certain responses to anger, and the IPAS asks participants to consider a specific time frame and then agree with a statement about the nature of an angry act. In the former, the tendency to act in a certain way is assessed, while in the latter, the nature of an angry act is assessed. In terms of theoretical differences, the complementary nature of the scales may reflect the different theoretical frameworks underlying each classification system (e.g., biological and social cognitive theories).

Although the basis of the differences between classifications is not yet clear, non-correspondence has implications for how research findings for one subtype are generalized to another and how this etiological work is used to inform the development and evaluation of intervention and prevention programs. For example, findings for reactive children identified using the RPQ may not apply to individuals identified as impulsive using the IPAS. The specificity of definition and measurement is important when the classifications are translated into practice and used clinically, such that addressing a factor associated with reactive aggression may not impact impulsive aggression. Findings also have implications for the developmental continuities of different types of aggression, in that reactive children may not become impulsive aggressive adults, so understanding the life course, extended risk, and appropriate treatments for aggressive subtypes over time is further complicated by the apparent non-correspondence of the subtypes. While the nature of the associations between the RQP and IPAS are clarified in subsequent research, specificity is needed in how subtypes are defined and measured in studies, and researchers must take caution in generalizing results beyond a specific subtype.

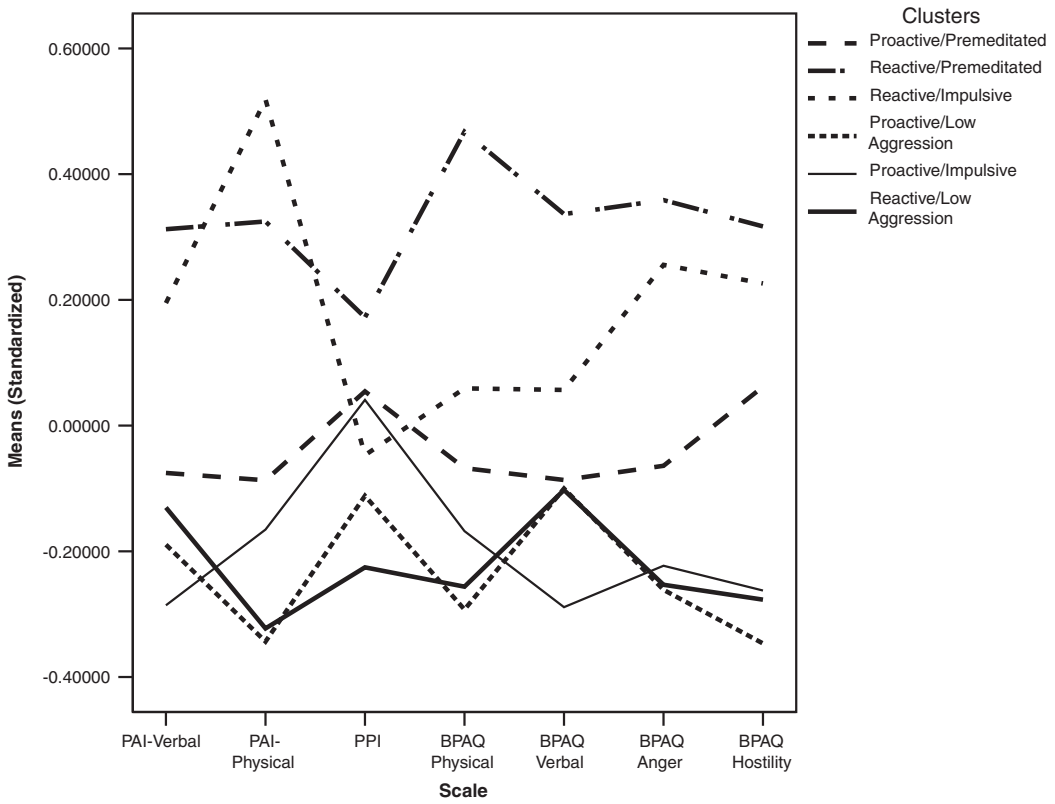

Fig. 2. Standardized means on the Personality Assessment Inventory (PAI) subscales, Buss-Perry Aggression Questionnaire (BPAQ) subscales and Psychopathic Personality Inventory (PPI) total score for the six clusters.

The study was limited by our sample which was a convenience sample of predominantly female, ethnically homogenous college students. Although a convenience sample, collegiate participants were useful for the current study because they were midway between the developmental phases typically used for each classification—children/adolescents and adults. The sample may have resulted in lower variation on the scales and lower overall aggression or seriously aggressive incidents. These qualities may have obscured some of the distinctions among subtypes, such that the subtypes in our study may appear more similar, in terms of aggression and psychopathic traits than would be found in samples of violent individuals. Moreover, our sample was fairly small, the data were cross-sectional and relied on self-reports of aggression. The findings require replication in a sample that addresses these shortcomings. We also excluded the IPAS screening question, so that the IPAS and RPQ administrations were consistent. However, this may account for the identification of the third subtype—low aggression—in the IPAS cluster analysis, as individuals with infrequent aggression typically do not complete the IPAS.

While preliminary and in need of replication, the results of our study begin to suggest that impulsive/premeditated and reactive/proactive aggression subtypes, as measured by the IPAS and RPQ, respectively, are not interchangeable or equivalent. Whether the result of differences in definition, measurement, theory, or target age group, the scales seemed to complement, rather than correspond to, each other. Differences among the clusters derived from a data-driven approach provide clues about the combination of aggressive state and trait characteristics that may be associated with the highest risk of aggressive behavior.

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