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Linking Callous-Unemotional Traits to Instrumental and Non-Instrumental Forms of Aggression

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Abstract The current study investigated the relation of callous-unemotional (CU) traits to bullying, victimization, and proactive and reactive aggression. We also examined whether CU traits will be more strongly related to groups of children exhibiting combined or pure forms of proactive and reactive aggression and combined or pure forms of bullying and victimization. The findings suggested that the presence of CU traits, which consists of three dimensions of behavior, uncaring, callousness, and unemotional, may designate important subgroups of aggressive children. Evidence suggested that the adolescents characterized by higher levels of CU traits were more likely to exhibit combined proactive and reactive aggression in comparison to pure forms of proactive or reactive aggression. Additionally, bullies scored higher on the uncaring dimension, and bully-victims (adolescents exhibiting both bullying and victimization) scored higher on the callous dimension. In contrast, victims of bullying scored lower on the uncaring dimension of behavior.

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The concept of psychopathy has been used by researchers to understand antisocial behavior in adults, with psychopathy being related to a more severe pattern of antisocial behavior (Leistico et al. 2008). Additionally, previous research has suggested that adults with psychopathic traits show more severe violent behavior and their violence is characterized by low empathy toward the victim and is often motivated by instrumental goals (Cornell et al. 1996; Porter and Woodworth 2006; Williamson et al. 1987). Thus, this research suggests that psychopathic traits show a specific link with instrumental forms of aggression. Recently, there have been attempts to extend the construct of psychopathy to children and adolescents in an effort to understand the developmental course of antisocial behavior (Edens et al. 2001; Frick 2006). Similar to the adult literature, psychopathic traits have been related to severe antisocial behavior in youth, such as conduct problems, aggression and delinquency (see Edens et al. 2007; Frick and White 2008; Leistico et al. 2008 for reviews).

The majority of studies investigating the relation of psychopathy with aggressive and antisocial behavior across the lifespan have indicated the importance of callous-unemotional traits, the hallmark of the construct of psychopathy (Cleckley 1976). There is evidence suggesting that callous-unemotional (CU) traits, which refers to a specific affective (absence of guilt, constricted display of emotion) and interpersonal (failure to show empathy, callous use of others for one's own gain) style, is especially important for predicting severe levels of antisocial and aggressive behavior among youth (Frick and Dickens 2006;

Kruh et al. 2005). Moreover, there is also evidence to suggest that it is CU traits which can help to predict distinct patterns of aggressive and violent behavior in samples of antisocial youth (Frick and White 2008).

Reactive and Proactive Aggression

One of the aims of the current study was to use CU traits to differentiate between proactive and reactive aggression. Reactive aggression is described as "a defensive reaction to a perceived threatening stimulus and is accompanied by some visible form of anger" (Price and Dodge 1989). The reactive aggressor is viewed as short tempered and volatile and is characterized in part by feelings of remorse and by thought confusion following the aggressive acts (Barratt et.al. 1999; Dodge, 1991). On the other hand proactive aggression is described as "unprovoked aversive means of influencing or coercing another person and is more goal-directed than reactive aggression" (Price and Dodge 1989). Proactive aggressors use aggression for social gain and dominance, think of aggression as a positive behavior, and show less negative emotions when acting aggressively (Dodge, 1991; Barratt et.al. 1999).

There is evidence to suggest that CU traits are differentially related to proactive and reactive forms of aggression. Specifically, youth with CU traits not only show a more severe and pervasive pattern of aggressive behavior but they also tend to show aggression that is both reactive and proactive in nature (Enebrink et al. 2005; Frick et al. 2003; Kruh et al., 2005). In contrast, antisocial youth without CU traits tend to show less aggression overall and, when they do show aggressive behavior, it tends to be largely reactive in nature (Frick et al., 2003; Kruh et al., 2005). This pattern would be consistent with research showing that youth who show only reactive aggression appear to be distressed by their behavior, whereas individuals scoring high on CU traits are less distressed by the negative effects of their aggressive behavior on others (Pardini et al. 2003).

However, an important issue in this research is the high correlation between the two forms of aggression (Polman et al. 2007). Even though factor analyses have identified separate categories of proactive and reactive aggression, these two dimensions of aggression are highly correlated (Brown et al. 1996; Dodge and Coie 1987; Poulin and Boivin 2000; Salmivalli and Nieminen 2002). As a result, studies that do not take into account the co-occurrence between proactive and reactive aggression might provide misleading evidence.

Also, there are some inconsistencies in the findings of studies investigating the relation of CU traits to combined or pure forms of proactive and reactive aggression in samples of youth. For example, Munoz et al. (2008) found that CU traits did not differentiate between a group of individuals exhibiting high levels of combined proactive and reactive aggression and a group exhibiting high levels of pure reactive aggression. However, this finding is different from several other studies showing that the combined proactive-reactive group shows higher levels of CU traits (Frick et al., 2003; Kruh et al., 2005; Mayberry and Espelage 2007). In contrast, Raine et al. (2006) examined differences between pure proactive and reactive aggression and found that the purely proactive, but not the purely reactive group, was associated with psychopathy in a sample of boys. Therefore, the differences between groups of children displaying combined levels of proactive-reactive aggression and pure proactive or reactive aggression is not clear in the literature.

Bullying and Victimization

An additional objective of the current study was to investigate whether CU traits have the power to differentiate between bullying and victimization behaviors in schools. Bullying at school is defined as a physical, verbal or psychological attack or intimidation that is intended to cause fear, distress or harm to the victim (Olweus 1993). To be considered as bullying, an aggressive act must be intentional and systematic. Furthermore, the two individuals involved must be characterized by an imbalance of power (Farrington 1993; Rigby 2002). It was suggested that bullying is a subset of proactive aggression because bullies use aggression to achieve a desired goal or to dominate and intimidate their peers (Carney and Merrell 2001; Griffin and Gross 2004). However, even though bullying has characteristics in common with proactive aggression, bullying has been related to both proactive and reactive aggression (Pelligrini et al. 1999; Salmivalli and Nieminen 2002), although victims of bullies often only exhibit reactive aggression (Camodeca et al. 2002). According to Camodeca et al. (2002) bullies might use proactive aggression to dominate others and reactive aggression when being attacked by others. However, some researchers have identified three groups of children: victims, bullies, and bully-victims (Kokkinos and Panayiotou 2004). When the victim group is divided into those who do and do not bully, it appears that the victims are less likely to engage in aggressive behavior (Carney and Merrell 2001), and, when they do, they only engage in reactive aggression (Salmivalli and Nieminen 2002). However, bullies and bully-victims engage in both proactive and reactive aggression. Therefore, in accordance with studies linking CU traits to combined proactive-reactive aggression and studies linking bullying (with or without victimization) to proactive and reactive aggression, it is likely that CU traits

will be more strongly related to bullying behavior than victimization.

Current Study

Based on this research, we explored the relation of CU traits to instrumental, bullying and proactive aggression, and non-instrumental forms of aggression, victimization and reactive aggression. Because previous studies have suggested that CU traits are related to severity in terms of aggressive behavior, and because children who show instrumental forms of aggression are at higher risk for delinquency in adolescence and criminality in adulthood (Pukkinen 1996; Vitaro et al. 2002; Vitaro et al. 1998), we predicted that CU traits would be related more strongly to instrumental forms of aggression than non-instrumental forms of aggression. Additionally, because combined psychopathological syndromes indicate higher risk subgroups of individuals (Fanti 2008; Nottelman and Jensen 1995), we predicted that groups of children exhibiting combined proactive-reactive aggression or combined bullying-victimization would be more likely to be characterized by high CU traits in comparison to groups of children exhibiting only one type of aggression or just victimization.

Additionally, we controlled for gender and demographics, such as parental education and parental marital status. According to previous studies, boys are at higher risk for developing aggressive problems than girls (e.g. Offord et al. 1991; Youngstrom et al. 2003). Boys tend to engage in more bullying behaviors and more proactive and reactive aggression compared to girls, although no gender differences in the prevalence rates of victimization have been reported (Mayberry and Espelage 2007; Schwartz et al. 2001; Seals and Young 2003; Solberg et al. 2007). In addition, children in single-parent families tend to score higher on behavioral problems (Hilton et al. 2001) and, according to previous findings, children exhibiting instrumental forms of aggression are more likely to have less educated parents and to come from single-parent status families (Raine et al. 2006).

The final objective of the present study was to test the factor structure of the Inventory of Callous-Unemotional traits (ICU), a measure of CU traits, within a community sample of Greek Cypriot adolescents. Two previous studies tested the factor structure of the ICU in a community and an incarcerated sample of adolescents (Essau et al. 2006; Kimonis et al. 2008). Both of these studies suggested the existence of three independent factors (uncaring, callousness, and unemotional) that were related to a higher-order callous-unemotional dimension. In this study, we tested whether the same factor structure would emerge in a Greek Cypriot sample, and we tested whether certain factors would be more strongly associated with instrumental forms of aggression and bullying.

Method

Participants

The participants of the present study were 347 Greek Cypriot adolescents ages 12 to 18 (M=14.63), recruited from a middle and high school. 49.3% of the students attended middle school and the remaining attended high school. About half of the students (n=171) were girls. The sample was diverse in terms of maternal (13% did not complete high school, 57% had a high school education, and 30% had a university degree) and paternal educational levels (12% did not complete high school, 56% had a high school education, and 32% had a university degree). Additionally, 6% of the participants came from single parent families. These categorizations approximate national demographics in Cyprus (http://www.pio.gov.cy).

Procedure

School administrators were provided with a description of the study, and the study was approved by the school principal and the school board. Students were then given an informed consent which they took to their parents, and only those who returned parental consent forms were allowed to participate in the study. The refusal rates were 5% for the middle school population and 4% for the high school population. Furthermore, students were informed about the study, and the ones who agreed to participate signed an assent form. In the school auditorium, students were informed by the principal investigator that the researchers were interested in studying adolescent emotions and behaviors. Students were also informed that no teachers or parents would have access to their answers. Students were instructed not to report their name on the questionnaire to safeguard their anonymity. Questionnaires were group administered in classrooms of 20–25 students by the classroom teachers who were informed about the study. The research team and the principal investigator were available to answer any potential questions. Younger students were allowed extra time to complete the questionnaires. On average, students completed the questionnaires in less than 45 min.

Measures

Callous-unemotional Traits The Inventory of Callous-Unemotional Traits (ICU; Frick 2004) is a 24-item self-report

scale designed to assess callous and unemotional traits in youth. The ICU was derived from the 6–item callous-unemotional (CU) subscale of the Antisocial Process Screening Device (APSD; Frick and Hare 2001). The CU component of the APSD has emerged as a distinct factor in clinic and community samples of preadolescent boys and girls (Frick et al. 2000) and detained samples of adolescent boys and girls (Vitacco et al. 2003). It has been associated with more severe aggression and more pro-active patterns of aggression and violence in detained male adolescents (Kruh et al. 2005). However, the self-reported CU scale has demonstrated only moderate internal consistency in many past studies (e.g., Loney et al. 2003), which is likely due to its small number of items (n=6) and three-point rating system. Also, 5 out of the 6 items are worded in the same direction, increasing the possibility of response bias.

The ICU was developed to overcome these limitations and to provide a more extended assessment of CU traits. It was constructed using the four items (out of the original six) that loaded significantly on the CU scale of the APSD in both clinic-referred and community samples (Frick et al. 2000). For each item ("I am concerned about the feelings of others," "I feel bad or guilty when I do something wrong," "I care about how well I do at school or work," and "I do not show my emotions to others"), three positively and three negatively worded variations were developed (including the original item in its exact wording), and these 24 items were placed on a four-point scale (0 = "not at all true," 1 = "somewhat true," 2 = "very true," and 3 = "definitely true"). Scores are calculated by reverse-scoring the positively worded items and then summing the items to obtain a total score.

Using Confirmatory Factor Analysis, previous research has provided evidence for a three-factor bifactor model for CU traits in a community sample of German adolescents (Essau et al. 2006) and in a high risk sample of American adolescents (Kimonis et al. 2008). The bifactor model indicated that, in addition to loading on three independent subfactors, all items also loaded onto a general callous-unemotional factor. The three subfactors identified were: Callousness (e.g., "the feelings of others are unimportant to me"), Unemotional (e.g., "I hide my feelings from others"), and Uncaring (e.g., "I try not to hurt others' feelings"). The ICU is composed of 12 positively worded items and 12 negatively worded items.

Bullying Bullying and victimization were measured with the Student Survey of Bullying Behavior-Revised (SSBB-R; Varjas et al. 2006). The SSBB-R includes 12 items assessing three facets of bullying: physical (e.g., "How often do you pick on younger, smaller, less powerful, or less popular kids by hitting or kicking them?"); verbal (e.g., "How often do you pick on younger, smaller, less powerful, or less popular kids by calling them names?"); and relational (e.g., "How often do you pick on younger, smaller, less powerful, or less popular kids by spreading rumors about them?"). Participants indicated whether they had engaged in each type of bullying on an ordinal scale of: never, once or twice a year, monthly, weekly, or daily. Four items asked about each of the three types of bullying (physical, verbal, relational). The SSBB-R also includes 12 victimization items designed to mirror the bullying items. Victimization items include: physical (e.g., "How often do older, bigger, more popular or more powerful kids pick on you by hitting or kicking you?"); verbal (e.g., "How often do older, bigger, more popular or more powerful kids pick on you by calling you names?"); and relational (e.g., "How often do older, bigger, more popular or more powerful kids pick on you by spreading rumors about you?"). Participants indicated how often the types of victimization happened to them, using the same response scale as the bullying items. The Cronbach's alpha for the bullying scale was .88, and for the victimization scale was .87. Previous research using the SSBB-R successfully identified victims, bullies, and bully-victim groups in samples of children and adolescents, showing that bullying was associated with measures of aggression, school safety, school climate, and coping (Hunt et al. 2005; Varjas et al. 2006).

Proactive and Reactive Aggression The 23-item Reactive-Proactive Aggression Questionnaire was used to measure proactive (e.g. "Had fights with others to show who was on top") and reactive aggression (e.g. "gotten angry when others threatened you") (Raine et al. 2006). Proactive aggression was based on 12 items and reactive aggression on 11 items. Each item was rated as 0 (never), 1 (sometimes), or 2 (often) for frequency of occurrence. The items reflect either physical or verbal aggression for both proactive and reactive aggression. The motivational and situational context for the aggressive behavior is used to differentiate between the two forms of aggression. The Cronbach's alpha for proactive aggression was .81, and for reactive aggression was .82. Previous research using the Reactive-Proactive Aggression Questionnaire showed that proactive aggression was associated with initiation of fights, delinquency, poor school motivation, poor peer relationships, single-parent status, psychosocial adversity, substance-abusing parents, hyperactivity, psychopathic personality, blunted affect, delinquency, and serious violent offending in a sample of adolescents. Reactive aggression was associated with adolescents' impulsivity, hostility, social anxiety, lack of close friends, unusual perceptual experiences, and ideas of reference (Raine et al. 2006).

Translation of Instruments

The English versions of the questionnaires were adapted and translated according to cross-cultural research guidelines (Brislin 1970). One bilingual translator translated the questionnaire from English to Greek, and another bilingual translator translated it back to English. In the case that differences were found between the original and the back-translated versions of the questionnaires, the translators had to come to a joint agreement of how to resolve the issue. The questionnaires were then piloted in samples of college students to assess for readability.

Results

Data Analyses

The analyses were designed to (a) examine the factor structure of the ICU questionnaire using Confirmatory Factor Analysis (CFA) in Mplus 5.1 (Muthén and Muthén 1998–2007), (b) investigate how the construct of callous-unemotional traits and the three subscales were related to bullying, victimization, and proactive and reactive aggression using Hierarchical Linear Regression in SPSS, and (c) examine how callous-unemotional traits and the three subscales were related to groups of adolescents exhibiting low, pure, or a combination of bullying and victimization, and to groups of adolescents exhibiting low, pure, or a combination of proactive and reactive aggression, using multinomial logistic regression analyses in SPSS. We decided to use multinomial logistic regression in order to make person centered interpretations.

Descriptive Statistics

Table 1 reports the descriptive statistics of the study's variables differently for boys and girls. According to t-test analyses, boys scored higher on the total ICU scale ($t(345)=5.53$, $p<.001$), on the callous ($t(345)=4.28$, $p<.001$), uncaring ($t(345)=4.93$, $p<.001$), and unemotional ($t(345)=2.24$, $p<.05$) subscales, and on bullying ($t(345)=4.82$, $p<.001$) and proactive aggression ($t(345)=6.35$, $p<.001$) compared to girls. Table 2 reports the correlations among the variables under investigation. As shown in Table 2, with the exception of the unemotional subscale, CU traits and the callous and uncaring subscales were positively related to bullying, proactive and reactive aggression, but not to victimization. Additionally, bullying, victimization, and proactive and reactive aggression were positively intercorrelated.

Confirmatory Factor Analysis for CU traits

Three steps of confirmatory factor analyses were conducted to test whether a single-factor model, a three factor model, or a bifactor model better fit the data, following previous research on the ICU (Essau et al. 2006; Kimonis et al. 2008). Three standard fit indexes were used in addition to the Chi-square statistic to evaluate model fit: The Root Mean-square Error of Approximation (RMSEA), Standardized Root Mean Residual (SRMR), and the Comparative Fit Index (CFI). Values less than .06 for the RMSEA and less than .09 for the SRMR are considered a close fit, and a value higher than .90 for CFI is considered acceptable (Hu and Bentler 1998; Kline 1998). Furthermore, according to Hu and Bentler, obtaining these values for the fit indices minimizes Type I and Type II error rates. Finally, the Akaike information criterion (AIC) was used for model comparison. Smaller values for the AIC indicate better fit (Akaike 1987). For all the analyses maximum likelihood estimation was employed.

Model 1 was a single factor model in which all items loaded onto one factor representing CU traits. According to Table 3, the unifactor model showed a poor fit. Model 2 was a three-factor model in which items were loaded on three intercorrelated factors, callousness, unemotional, uncaring. The three-factor model fit the data well based

Table 1 Mean and standard deviation scores (SD) on each measured variable ($N=347$)

	Boys				Girls			
Measured variables:	Mean	SD	Min.	Max.	Mean	SD	Min.	Max.
ICU total scale	21.63	8.86	3	50	16.52	8.14	3	41
Callous	6.44	4.09	0	19	4.57	3.91	0	22
Uncaring	7.98	4.86	0	24	5.51	4.34	0	22
Unemotional	7.22	3.06	0	15	6.44	3.32	0	14
Bullying	8.72	9.27	0	48	4.44	5.39	0	25
Victimization	8.68	9.66	0	40	7.41	7.61	0	36
Proactive aggression	3.97	4.22	0	18	1.75	1.79	0	9
Reactive aggression	9.61	4.67	0	20	9.15	3.77	1	19

Table 2 Correlations between the study's main variables (N=347)

	ICU total score	Bullying	Victimization	Proactive aggression	Reactive aggression	Callous	Uncaring
Bullying	.32**						
Victimization	.10	.61**					
Proactive aggression	.57**	.42**	.68**				
Reactive aggression	.28**	.37**	.43**	.65**			
Callous	.76**	.22**	.11	.37**	.27**		
Uncaring	.82**	.21*	−.01	.31**	.16**	.43**	
Unemotional	.57**	−.03	−.03	.04	.02	.19**	.22**

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

on one of the indexes (Table 3), and fit the data better than the unifactor model based on the AIC and a chi-square difference test, $\Delta\chi^2_{(3,\ N=347)}$=209.11, p<.001. The unemotional factor was significantly correlated with the uncaring (r=.39, p<.001) and callousness (r=.24, p<.01) factors, and the uncaring factor was significantly correlated with the callousness (r=.62, p<.001) factor.

Model 3, the bifactor model, shown in Fig. 1, specifies that all items load onto a general callous-unemotional dimension, as well as three uncorrelated subfactors. As reported by Chen, West and Sousa (2006), bifactor models, also known as general-specific or nested models, are "applicable when (a) there is a general factor that is hypothesized to account for the commonality of the items; (b) there are multiple domain specific factors, each of which is hypothesized to account for the unique influence of the specific domain over and above the general factor; and (c) researchers may be interested in the domain specific factors as well as the common factor that is of focal interest." As shown in Fig. 1, there is a single callous-unemotional factor that underlies each of the items, and there are domain specific factors of callous, unemotional, and uncaring. The bifactor model differs from a second-order factor model, which represents subfactors as correlated components of a higher-order construct. The bifactor model fit the data well based on two of the indexes (Table 3), and fit the data better than the three-factor model based on the AIC and a chi-square difference test, $\Delta\chi^2_{(21,\ N=347)}$=214.42, p<.001.

According to these analyses, the bifactor model was the best fitting model, although it did not achieve satisfactory fit based on all of the indexes. Because of that modification indices were utilized, and correlations between error variables were added. According to Table 3, the model including modification indices fit the data well based on all of the fit indexes, and fit the data better than model 3 based on the AIC and a chi-square difference test, $\Delta\chi^2_{(16,\ N=347)}$=136.23, p<.001. The factor loadings are presented in Table 4. Table 4 also presents the ICU questionnaire items. Based on the modification indices, item 1 was correlated with items 2 and 12. Item 6 was correlated with items 12, 22, and 23. Item 8 was correlated with items 7, 17 and 19. Item 9 was correlated with items 2, 7, 8 and 11. Item 13 was correlated with items 14, 16 and 18. Item 15 was correlated with item 20. Item16 was correlated with item 18. The bifactor model identified in the current study suggests that the use of either a total CU scale or the three subscales can be justified. The internal consistencies of the three subscales, callousness (α=.79), unemotional (α=.68), uncaring (α=.78), and for the total ICU scale (α=.81) were acceptable.

Hierarchical Linear Regressions

Tables 5 and 6 shows the hierarchical linear regression analyses with bullying, victimization, proactive and reactive aggression as the outcomes. In all the analyses we controlled for demographics in step 1. The demographics were gender, grade level, maternal education, paternal education, and parental marital status. Gender was coded with 1 for boys and 2 for girls. Parental marital status was coded with 1 for two-parent families and 2 for one-parent families. Coding of parental marital status and gender

Table 3 Fit indices comparing the structural models for the ICU (N=347)

Model	df	χ2	CFI	RMSEA	SRMR	AIC
Model 1 (1 factor)	252	931.88	.572	.089	.090	20,833.12
Model 2 (3 factors)	249	722.77	.702	.075	.082	20,630.01
Model 3 (bifactor)	228	508.35	.824	.058	.061	20,455.59
Model 4 (modifications indices)	212	372.12	.919	.047	.050	20,401.36

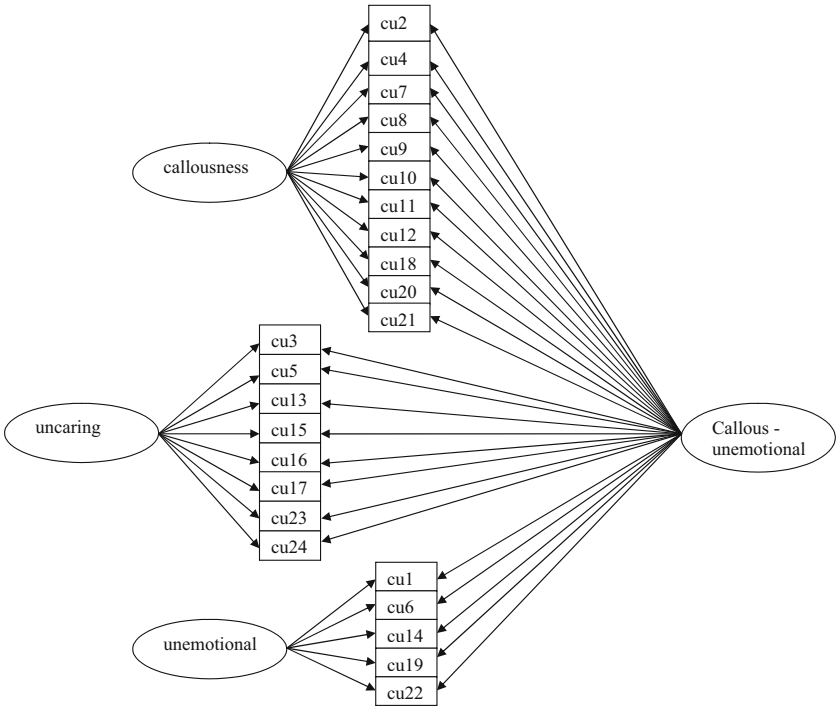

Fig. 1 Bifactor CFA model. See Table 4 for items

does not require dummy coding for regression analyses. In step 2, we controlled for the association between bullying and victimization and between proactive and reactive aggression. Step 3a includes the general factor of CU traits and step 3b includes the subscales identified in the ICU questionnaire. Therefore, two different hierarchical regression models were conducted for each outcome variable. The first one included the ICU general factor

Table 4 Factor loadings (error terms) for the best fitting three factor bi-factor model *(N= 347)*

Questionnaire items	Callousness	Unemotional	Uncaring	General
2 What I think is right and wrong is different from what other people think	.29(.07)			.24(.06)
4 I do not care who I hurt to get what I want	.50(.06)			.36(.04)
7 I do not care about being on time	.58(.09)			.37(.10)
8 I am concerned about the feelings of others	.45(.09)			.53(.08)
9 I do not care if I get into trouble	.44(.09)			.32(.10)
10 I do not let my feelings control me	.25(.09)			.17(.08)
11 I do not care about doing things well	.47(.09)			.26(.10)
12 I seem very cold and uncaring to others	.39(.09)			.28(.09)
18 I do not feel remorseful when I do something wrong	.57(.09)			.39(.11)
20 I do not like to put the time into doing things well	.33(.08)			.18(.09)
21 The feelings of others are unimportant to me	.37(.08)			.20(.09)
1 I express my feelings openly		.66(.06)		.34(.07)
6 I do not show my emotions to others		.35(.07)		.29(.07)
14 It is easy for others to tell how I am feeling		.41(.06)		.28(.07)
19 I am very expressive and emotional		.59(.06)		.41(.07)
22 I hide my feelings from others		.41(.07)		.30(.07)
3 I care about how well I do at school			.52(.05)	.58(.05)
5 I feel bad or guilty when I do something wrong			.34(.05)	.39(.05)
13 I easily admit to being wrong			.65(.09)	.67(.09)
15 I always try my best			.69(.06)	.72(.07)
16 I apologize to persons I hurt			.84(.05)	.87(.06)
17 I try not to hurt others' feelings			.47(.05)	.59(.05)
23 I work hard on everything I do			.59(.06)	.58(.06)
24 I do things to make others feel good			.63(.05)	.61(.06)

All loadings statistically significant at the $p \leq .001$ level.

Table 5 Regression analyses with bullying and victimization as the outcomes (N=347)

	Bullying				Victimization			
	B	SE B	β	ΔR^2	B	SE B	β	ΔR^2
Step 1				.05**				.03
Gender	−2.60	.88	−.24**		−.82	.99	−.05	
Grade level	−.25	.21	−.06		−.17	.23	−.04	
Mother education	−.89	.38	−.15*		−.52	.43	−.08	
Father education	.44	.33	.08		−.49	.38	−.09	
Divorced	1.13	2.31	.03		2.60	2.53	.06	
Step 2				.26**				.27**
Victimization	.49	.05	.52**					
Bullying					.58	.05	.54**	
Step 3a				.06**				.02*
CU traits	.21	.04	.24**		−.10	.05	−.11*	
Step 3b				.06**				.02*
Callous	.21	.10	.12*		.10	.11	.05	
Uncaring	.29	.09	.18**		−.27	.10	−.15**	
Unemotional	.04	.11	.02		−.08	.13	−.03	

**$p<.01$; *$p<.05$. Regression coefficients represent value at final entry. Gender was coded with 1 for boys and 2 for girls. Divorced was coded with 1 for two-parent families and 2 for one-parent families

as step 3, and the second one included the subscales as step 3. The other steps of the regression models were exactly the same.

Bullying Table 5 shows the hierarchical linear regression analysis with bullying as the dependent variable. In the first step of independent variables, gender was significantly associated with bullying, suggesting that boys were at higher risk for exhibiting bullying behavior. In addition, maternal education was negatively related to bullying behavior. According to step 2, victimization strongly predicted bullying behavior. Step 3a suggested that CU traits were related to higher levels of bullying behavior above and beyond the demographics and the association between bullying and victimization. According to step 3b, two subscales were significantly related to bullying behavior, the callous and uncaring subscales, above and beyond the demographics and the association between bullying and victimization.

Table 6 Regression analyses with proactive and reactive aggression as the outcomes (N=347)

	Proactive				Reactive			
	B	SE B	β	ΔR^2	B	SE B	β	ΔR^2
Step 1				.14**				.03*
Gender	−2.05	.35	−.31**		−.11	.47	−.01	
Grade level	.11	.09	.07		.32	.11	.16**	
Mother education	−.38	.15	−.15**		−.17	.21	−.05	
Father education	.09	.13	.05		.03	.18	.01	
Divorced	−1.71	.90	−.10**		−1.78	1.23	−.08	
Step 2				.30**				.35**
Reactive	.44	.03	.56**					
Proactive					.80	.06	.63**	
Step 3a				.04**				.01
CU traits	.06	.02	.17**		.04	.02	.07	
Step 3b				.04**				.01
Callous	.13	.04	.16**		.14	.05	.11	
Uncaring	.06	.03	.09		−.03	.04	−.03	
Unemotional	−.03	.04	−.03		.01	.06	.01	

**$p<.01$; *$p<.05$. Regression coefficients represent value at final entry. Gender was coded with 1 for boys and 2 for girls. Divorced was coded with 1 for two-parent families and 2 for one-parent families

Victimization Table 5 shows the hierarchical linear regression analysis with victimization as the dependent variable. According to step 1, the demographic variables were not significantly related to victimization. Step 2 indicated that bullying strongly predicted the victimization variable. Additionally, the general variable of CU traits and the uncaring subfactor were negatively related to victimization above and beyond the demographics and the association between bullying and victimization. Therefore, children scoring high in the general ICU scale or in the uncaring subscale are less likely to be the victims of violence.

Proactive Aggression Table 6 shows the hierarchical linear regression analysis with proactive aggression as the dependent variable. In the first step of independent variables, gender, maternal education, and family status were significantly associated with proactive aggression. The findings suggested that boys were at higher risk for exhibiting proactive aggression, and that children from low education and single-parent families were at higher risk to exhibit proactive aggression. Step 2 indicated that reactive aggression strongly predicted proactive aggression. According to step 3a, CU traits were related to higher levels of proactive aggression after controlling for the demographics and reactive aggression. According to step 3b, only the callous subscale was significantly related to proactive aggression, above and beyond the demographics and the association between proactive and reactive aggression.

Reactive Aggression Table 6 shows the hierarchical linear regression analysis with reactive aggression as the dependent variable. In the first step of independent variables, grade level was significantly associated with reactive aggression, suggesting that older adolescents exhibit higher levels of reactive aggression. Step 2 indicated that proactive aggression strongly predicted reactive aggression. According to steps 3a and 3b, neither CU traits nor the subscales were significantly related to reactive aggression after controlling for proactive aggression.

Multinomial Logistic Regressions

Prior to conducting the multinomial logistic regressions we proceeded to classify individuals in the (1) low, bully only, victim only, bully-victim groups, and the (2) low, proactive only, reactive only, proactive-reactive groups. To classify individuals in the higher risk groups we chose a cut-off score corresponding to 1 Standard Deviation (SD) above the mean for proactive and reactive aggression and bullying and victimization, as done by previous research (e.g. Crick and Dodge 1996). All individuals scoring below the cut-off score on both bullying and victimization were classified in the low group (77.5%; 115 boys, 148 girls), individuals scoring 1 SD above the mean on both bullying and victimization were classified in the bully-victim group (6.3%; 19 boys, 3 girls), individuals scoring 1 SD above the mean on bullying but below the cut-off score on victimization were classified in the bully only group (6.6%; 17 boys, 5 girls), and individuals scoring below the cut-off score on bullying but 1 SD above the mean on victimization were classified in the victim only group (9.5%; 15 boys, 15 girls). Using a similar approach, all individuals scoring below the cut-off score on both proactive and reactive aggression were classified in the low group (76.1%; 116 boys, 144 girls), individuals scoring 1 SD above the mean on both proactive and reactive aggression were classified in the proactive-reactive group (7.5%; 23 boys, 0 girls), individuals scoring 1 SD above the mean on proactive but below the cut-off score on reactive aggression were classified in the proactive only group (4.3%; 14 boys, 1 girl), and individuals scoring below the cut-off score on proactive but 1 SD above the mean on reactive aggression were classified in the reactive only group (12.1%; 13 boys, 26 girls).

To compare the different groups, four multinomial logistic regressions were conducted. The first one compared the low, bullying only, victim only, and bully-victim groups in terms of the general ICU scale, controlling for demographics. The second one compared the low, bullying only, victim only, and bully-victim groups in terms of the subscales, controlling for demographics. The third one compared the low, proactive only, reactive only, and proactive-reactive groups in terms of the general ICU scale, controlling for demographics. The fourth one compared the low, proactive only, reactive only, and proactive-reactive groups in terms of the subscales, controlling for demographics.

The multinomial logistic regression comparing the low, bullying only, victim only, and bully-victim groups in terms of the general ICU scale was significant, $x^2(18, N=347)= 43.61$, $p<.001$. Table 7 incorporates odd ratios to compare the different groups. In general, odds ratios reflect the odds likelihood of being in one group over the other, based on the level of the independent variable. The only demographic finding was that males were more likely to be in the bully-victim and the bullying only groups than the low and victim only groups. The findings also suggested that children who scored higher on callous-unemotional traits were more likely to be in the bully-victim group or the bullying only group compared to the low and victim only groups. No differences were found between the bully-victim and bullying only group. Therefore, children exhibiting bullying behavior, irrespective of their levels of victimization status, were more likely to be characterized by high callous-unemotional traits.

Table 7 Multinomial logistic regression analyses for bullying and victimization (N=347)

	Group comparisons based on Odds ratios					
	4 vs 1	3 vs 1	2 vs 1	4 vs 2	3 vs 2	4 vs 3
Demographics:						
Gender	2.01*	3.56**	.87	2.29*	4.08*	.56
Grade level	.91	.99	.99	.91	.98	.91
Mother education	.85	.82	.86	.99	.95	1.03
Father education	.97	1.17	.95	1.02	1.23	.83
Divorced	1.67	1.42	2.25	.74	.63	1.17
General ICU measure:						
CU traits	1.15*	1.18**	.99	1.16*	1.19**	.97
Sub-scales:						
Callous	1.13**	1.02	.96	1.17**	1.06	1.12*
Unemotional	.95	.97	.98	.97	.98	.98
Uncaring	1.02	1.17**	1.01	1.01	1.16**	.87**

*$p \leq .05$; **$p \leq .01$; Group 1 is the low group; Group 2 is the victim only group; Group 3 is the bullying only group; Group 4 is the bully/victim group. Gender was coded with 1 for boys and 2 for girls. Divorced was coded with 1 for two-parent families and 2 for one-parent families.

The multinomial logistic regression comparing the low, bullying only, victim only, and bully-victim groups in terms of the subscales was significant, $x^2(24, N=347)=56.05$, $p<.001$. The findings suggested that children who scored higher on the callous subscale were more likely to be in the bully-victim group compared to the low, bullying only, and victim only groups. Additionally, children who scored higher on the uncaring subscale were more likely to be in the bullying only group compared to the low, bully-victim, and victim only groups. Therefore, the callous and uncaring subscales differentiated between the bullying only group and the bully-victim group.

The multinomial logistic regression comparing the low, proactive only, reactive only, and proactive-reactive groups in terms of the general ICU scale was significant, $x^2(18, N=347)=86.92$, $p<.001$. According to Table 8, boys were more likely to be in the proactive and proactive-reactive groups in comparison to the low and reactive only groups. Additionally, the findings suggested that children who scored higher on callous-unemotional traits were more likely to be in the proactive-reactive group compared to the low, proactive only, and reactive only groups, and more likely to be in the proactive only group in comparison to the low group.

The multinomial logistic regression comparing the low, proactive only, reactive only, and proactive-reactive groups in terms of the subscales was significant $x^2(24, N=347)=72.13$, $p<.001$. Children who scored higher on the callous subscale were more likely to be in the proactive-reactive group compared to the low, proactive only, and reactive only groups, and more likely to be in the proactive only group in comparison to the low group. No differences were found between the low and the reactive only groups, and between the proactive only and the reactive only groups.

Table 8 Multinomial logistic regression analyses for proactive and reactive aggression (N=347)

	Group comparisons based on Odds ratios					
	4 vs 1	3 vs 1	2 vs 1	4 vs 2	3 vs 2	4 vs 3
Demographics:						
Gender	2.59**	.51	3.60**	.94	.14**	3.12**
Grade level	1.14	1.04	1.04	.91	.99	.45
Mother education	.93	.94	.76	1.31	1.23	1.06
Father education	.95	.93	.95	1.01	.99	1.02
Divorced	3.23	1.33	2.91	1.11	.46	2.43
General ICU measure:						
CU traits	1.21**	1.03	1.08*	1.09*	.96	1.16*
Sub-scales:						
Callous	1.21**	1.07	1.11*	1.09*	.99	1.10*
Unemotional	1.03	1.03	.91	1.02	1.07	1.05
Uncaring	1.06	.98	1.04	1.13	.99	1.03

*$p \leq .05$; **$p \leq .01$; Group 1 is the low group; Group 2 is the proactive only group; Group 3 is the reactive only group; Group 4 is the proactive/reactive group. Gender was coded with 1 for boys and 2 for girls. Divorced was coded with 1 for two-parent families and 2 for one-parent families

Therefore, children exhibiting combined proactive and reactive aggression were at higher risk to be characterized by high callous-unemotional traits or to score higher on the callousness subscale.[1]

Discussion

The present study, in addition to investigating the factor structure of the Inventory of Callous-Unemotional traits (ICU), investigated the association between callous-unemotional traits and instrumental and non-instrumental forms of aggression. The findings suggested that the presence of CU traits, which consists of three dimensions of behavior, uncaring, callousness, and unemotional, may designate subgroups of aggressive children, supporting the utility of these characteristics for predicting certain patterns of aggression. The findings of the current study in a community sample of Greek Cypriot adolescents, and the findings of previous studies in a community sample of German adolescents (Essau et al. 2006) and a sample of detained adolescents from the United States (Kimonis et al. 2008) support the factor structure of the ICU. More importantly, these three cross-cultural studies provide evidence that CU traits may be related to antisocial and aggressive behavior in youth across many different cultures.

The findings also suggested the importance of taking into account combined and pure forms of aggression. After taking into account co-occurrence, evidence suggested that the adolescents characterized by higher levels of CU traits were more likely to exhibit combined proactive and reactive aggression in comparison to pure forms of proactive or reactive aggression. The findings that CU traits are associated with a combination of instrumental and non-instrumental forms of aggression are consistent with several previous studies (Frick et al. 2003; Kruh et al. 2005), indicating that CU traits are related to a more severe pattern of antisocial behavior (Frick and Dickens 2006).

Furthermore, the current findings extend this literature to also link CU traits to bullying behaviors. The findings linking CU traits to both pure forms of bullying and combined bullying and victimization experiences, are also in agreement with the finding linking CU traits to combined proactive-reactive aggression because individuals exhibiting pure bullying behavior or combined bullying and victimization exhibit both proactive and reactive aggression (Pelligrini et al. 1999; Salimivalli and Niemine 2002). Thus, adolescents exhibiting co-occurring proactive-reactive aggression, pure bullying behavior, and combined bullying and victimization, are more likely to show high CU traits. Additionally, it seems that children scoring higher on CU traits are less likely to be the victims of bullying behavior.

In terms of the subscales, our results suggested that the callous subscale is more strongly related to proactive aggression, even after taking into account reactive aggression. The callous subscale was also the only subscale that differentiated adolescents exhibiting combined or pure forms of proactive and reactive aggression, indicating that the group of adolescents exhibiting combined proactive and reactive aggression was more likely to be characterized by a dimension of behavior that includes a lack of empathy, guilt and remorse for misdeeds, in comparison to the rest of the sample. In contrast, both the callous and uncaring subscales were related to bullying behavior, after taking into account victimization. Moreover, it seems that the callous and uncaring subscales have the power to differentiate between bullies and bully-victims, with bullies being characterized by a dimension of behavior that includes a lack of caring about ones performance in tasks and for the feelings of other people (uncaring), and bully-victims being characterized by a dimension of behavior that includes a lack of empathy, guilt and remorse for misdeeds (callous). In contrast, victims of bullying scored lower on the uncaring subscale. This finding is in agreement with a previous study which provided evidence that victims are more likely to exhibit caring behaviors and be more concerned for others in comparison to bullies and bully-victims (Espelage et al. 2004).

Strengths, Limitations, and Future Directions

The large sample of early adolescents and the inclusion of multiple age groups were strengths of this investigation.

[1] These multinomial regression analyses required the formation of groups. While such analyses are very helpful for making person-centered interpretations (e.g., describing how youth who both bully and are victims differ from pure groups), there can be a loss of power due to the dichotomization of continuous variables. Thus, we also conducted a number of hierarchical linear regression analyses with the ICU total scale and the subscales as the outcomes and we tested the main and interactive effects of (a) bullying and victimization and (b) proactive and reactive aggression. In all the analyses we controlled for demographics in step 1 and in step 2 we entered main effects of bullying and victimization or proactive and reactive aggression. In step 3 we included the interaction between bullying and victimization or between proactive and reactive aggression. The findings were consistent with the multinomial regressions reported. Specifically, bullying and victimization significantly predicted the ICU total scale and the uncaring subscale. The bullying variable was also significantly related to the callous subscale. The interactions suggested that adolescents, who scored high in bullying, no matter their levels of victimization, were characterized by high CU traits and also score high on the callous subscale. Children who scored high in bullying, but low in victimization scored higher on the uncaring subscale in comparison to everybody else. In terms of proactive and reactive aggression, only proactive aggression was positively related to the ICU total scale and the uncaring subscale. Both proactive and reactive aggression were related to the callous subscale. The interactions suggested that adolescents, who scored high in proactive aggression, irrespective of their levels of reactive aggression, were characterized by high CU traits and they scored high on the callous subscale.

Data were based on adolescent self-report for all variables. Thus, the correlations could have been inflated due to shared method variance and the inclusion of multiple informants would have enhanced the study (Allen et al. 2004). However, self-report instruments have the advantage that the motivation for action is best known to the individual and may be obscure to other people (Raine et al. 2006). Another strength of the current study is the investigation of heterogeneity within the broad category of aggression, distinguishing between proactive and reactive aggression and between bullying and victimization. However, it is important for future studies to consider other methods of dividing aggressive behavior, such as between physical, verbal, and relational aggression. A limitation of the current study was its cross-sectional nature. Additional time points of measurement would have allowed the investigation of trajectories of change over time (Muthén and Muthén 1998–2007). Investigating how CU traits relate to changes in aggressive behavior, and linking CU traits to aggressive behavior during adolescence and adulthood should be explored by future research. Finally, for our final model to attain satisfactory fit for all three of the fit indices, we used modification indices. Thus, the correlated error terms used in the current study might be sample dependent. However, it is significant that a similar factor structure has emerged in such diverse samples as the current non-referred sample of Cypriot adolescents, non-referred German school children (Essau et al. 2006), and detained adolescents in the United States (Kimonis et al. 2008).

In conclusion, the current findings support the association between CU traits with more severe aggression, including bullying, in a cultural group that has not been the focus of research on these traits. CU traits among youth have been the focus of many studies taking place in the United States, and this is the first study being conducted in Cyprus. As such, it supports the contention that these traits are important for understanding the development of severe antisocial behavior across cultures (Essau et al. 2006; Frick and Dickens 2006). These traits have also been directly linked to psychopathic traits in adulthood (Burke et al. 2007; Lynam et al. 2007). For both of these reasons, children with these traits should be an important focus of future research to further understand the developmental processes that can lead to these behaviors (Frick andWhite 2008) and to develop effective treatment programs to reduce their risk for serious antisocial behavior and aggression (Frick 2006). Moreover, the current paper extends the association to bullying in schools and, therefore, suggests that such traits may also be important for school-based programs designed to reduce bullying.

References

Akaike, H. (1987). Factor analysis and AIC. *Psychometrika*, *52*, 317–332.

Allen, J. P., McElhaney, K. B., Kuperminc, G. P., & Jodl, K. M. (2004). Stability and change in attachment security across adolescence. *Child Development*, *75*(6), 1792–1805.

Barratt, E. S., Stanford, M. S., Dowdy, L., Liebman, M. J., & Kent, T. A. (1999). Impulsive and premeditated aggression: a factoranalysis of self reported acts. *Psychiatry Research*, *86*, 163–173.

Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology*, *1*, 185–216.

Brown, K., Atkins, M. S., Osborne, M. L., & Milnamow, M. (1996). A revised teacher rating scale for reactive and proactive aggression. *Journal of Abnormal Child Psychology*, *24*(4), 473–480.

Burke, J. D., Loeber, R., & Lahey, B. B. (2007). Adolescent Conduct Disorder and Interpersonal Callousness as Predictors of Psychopathy in Young Adults. *Journal of Clinical Child & Adolescent Psychology*, *36*, 334–346.

Camodeca, M., Goossens, F. A., Terwogt, M. M., & Schuengel, C. (2002). Bullying and victimization among school-age children: Stability and links to proactive and reactive aggression. *Social Development*, *11*(3), 332–345.

Carney, A. G., & Merrell, K. W. (2001). Bullying in schools: Perspective on understanding and preventing an international problem. *School Psychology International*, *22*(3), 364–382.

Chen, F. F., West, S. G., & Sousa, K. H. (2006). A comparison of bifactor and second-order models of quality of life. *Multivariate Behavioral Research*, *41*(2), 189–225.

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

Cornell, D. G., Warren, J., Hawk, G., Stafford, E., Oram, G., & Pine, D. (1996). Psychopathy in instrumental and reactive violent offenders. *Journal of Consulting and Clinical Psychology*, *64*, 783–790.

Crick, N. R., & Dodge, K. A (1996). Social information-processing mechanisms in reactive and proactive aggression. *Child Development*, *67*, 993–1002.

Dodge, K. A. (1991). The structure and function of reactive and proactive aggression in the development and treatment of childhood aggression. In D. J. Pepler, & K. H. Rubin (Eds.), *The development and treatment of childhood aggression* (pp. 201–218). Hillsdale, NJ: Erlbaum.

Dodge, K. A., & Coie, J. D. (1987). Social-information processing factors in reactive and proactive aggression in children's peer groups. *Journal of Personality and Social Psychology*, *52*, 1146–1158.

Edens, J. F., Campbell, J. S., & Weir, J. M. (2007). Youth psychopathy and criminal recidivism: A meta-analysis of the Psychopathy Checklist measures. *Law and Human Behavior*, *31*, 53–75.

Edens, J., Skeem, J., Cruise, K., & Cauffman, E. (2001). The assessment of juvenile psychopathy and its association with violence: A critical review. *Behavioral Sciences and the Law*, *19*, 53–80.

Enebrink, P., Andershed, H., & Langström, N. (2005). Callous-unemotional traits are associated with clinical severity in referred boys with conduct problems. *Nordic Journal of Psychiatry*, *59*, 431–440.

Espelage, D. L., Mebane, S. E., & Adams, R. S. (2004). Empathy, caring, and bullying: Toward an understanding of complex associations. In D. L. Espelage, & S. M. Swearer (Eds.), *Bullying in American schools: A social-ecological perspective on prevention and intervention* (pp. 37– 61). Mahwah, NJ: Erlbaum.

Essau, C. A., Sasagawa, S., & Frick, P. J. (2006). Callous-unemotional traits in community sample of adolescents. *Assessment*, *13*, 454–469.

Fanti, K. A. (2008). *Development and co-development of aggressive and depressive psychopathology: Infancy to early adolescence*. Saarbruecken: VDM Verlag.

Farrington, D. P.Understanding and preventing bullying. In M. Tonry, & N. Morris (Eds.), *Crime and Justice* (pp. 381–458). Chicago: Chicago University press.

Frick, P. J. (2004). *The Inventory of Callous-Unemotional Traits*. Unpublished rating scale.

Frick, P. J. (2006). Developmental pathways to conduct disorder. *Child and Adolescent Psychiatric Clinics of North America*, *15* (2), 311–331.

Frick, P. J., Bodin, S. D., & Barry, C. T. (2000). Psychopathic traits and conduct problems in community and clinic-referred samples of children: Further development of the psychopathy screening device. *Psychological Assessment*, *12*(4), 382–393.

Frick, P. J., Cornell, A. H., Barry, C. T., Bodin, S. D., & Dane, H. E. (2003). Callous-unemotional traits and conduct problems in the prediction of conduct problem severity, aggression, and self-report of delinquency. *Journal of Abnormal Child Psychology*, *31* (4), 457–470.

Frick, P. J., & Dickens, C. (2006). Current Perspectives on Conduct Disorder. *Current Psychiatry Reports*, *8*, 59–72.

Frick, P. J., & Hare, R. D. (2001). *The Antisocial Process Screening Device (APSD)*. Toronto: Multi-Health Systems.

Frick, P. J., & White, S. F. (2008). The importance of callous-unemotional traits for the development of aggressive and antisocial behavior. *Journal of Child Psychology and Psychiatry*, *49*, 359–375.

Griffin, R. S., & Gross, A. M. (2004). Childhood bullying: Current empirical findings and future directions for research. *Aggression and Violent Behavior*, *9*, 379–400.

Hilton, J. M., Desrochers, S., & Devall, E. L. (2001). Comparison of role demands, relationships, and child functioning in single-mother, single father, and intact families. *Journal of Divorce and Remarriage*, *35*(1–2), 29–56.

Hu, L., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparametrized model misspecification. *Psychological Methods*, *3*, 424–453.

Hunt, M. H., Meyers, J., Jarrett, O., & Neel, J. (2005). *Student Survey of Bullying Behavior: Preliminary Development and Results from Six Elementary Schools*. Atlanta, Georgia: Georgia State University, Center for Research on School Safety, School Climate and Classroom Management.

Kimonis, E. R., Frick, P. J., Skeem, J., Marsee, M. A., Cruise, K., Munoz, L. C., Aucoin, K. J., & Morris, A. S. (2008). Assessing callous-unemotional traits in adolescent offenders: Validation of the Inventory of Callous-Unemotional Traits. *Journal of the International Association of Psychiatry and Law*, *31*(3), 241–52.

Kline, R. B. (1998). *Principles and practice of structural equation modeling*. New York: The Guilford Press.

Kokkinos, C. M., & Panayiotou, G. (2004). Predicting bullying and victimization among early adolescents: Associations with disruptive behavior disorders. *Aggressive Behavior*, *30*, 520–533.

Kruh, I. P., Frick, P. J., & Clements, C. B. (2005). Historical and personality correlates to the violence patterns of juveniles tried as adults. *Criminal Justice and Behavior*, *32*(1), 69–96.

Leistico, A. R., Salekin, R. T., DeCoster, J., & Rogers, R. (2008). A meta-analysis relating the Hare measures of psychopathy to antisocial conduct. *Law and Human Behavior*, *32*, 28–45.

Loney, B. R., Frick, P. J., Clements, C. B., Ellis, M. L., & Kerlin, K. (2003). Callous- unemotional traits, impulsivity, and emotional processing in antisocial adolescents. *Journal of Clinical Child and Adolescent Psychology*, *32*, 66–80.

Lynam, D. R., Caspi, A., Moffitt, T. E., Loeber, R., & Stouthamer-Loeber, M. (2007). Longitudinal evidence that psychopathy scores in early adolescence predict adult psychopathy. *Journal of Abnormal Psychology*, *116*, 155–165.

Mayberry, M. L., & Espelage, D. L. (2007). Associations among empathy, social competence, & reactive/proactive aggression subtypes. *Journal of Youth and Adolescence*, *36*, 787–798.

Munoz, L. C., Frick, P. J., Kimonis, E. R., & Aucoin, K. J. (2008). Types of aggression, responsiveness to provocation, and callous-unemotional traits in detained adolescents. *Journal of Abnormal Child Psychology*, *36*, 15–28.

Muthén, L. K., & Muthén, B. O. (1998–2007). Mplus User' s Guide. Fifth Edition. Los Angeles, CA: Muthén & Muthén.

Nottelman, E. D., & Jensen, P. S. (1995). Comorbidity of disorders in children and adolescents: Developmental perspectives. In T. H. Ollendick, & R. J. Prinz (Eds.), *Advances in clinical child psychology* (vol. Vol. 17, (pp. 109–155)). New York: Plenum.

Offord, D. R., Boyle, M. H., & Racine, Y. A. (1991). The epidemiology of antisocial behavior in childhood and adolescence. In D. J. Pepler, & K. H. Rubin (Eds.), *The development and treatment of childhood aggression* (pp. 31–54). Hillsdale, NJ: Erlbaum.

Olweus, D. (1993). *Bullying at school: What we know and what we can do*. Oxford: Blackwell.

Pardini, D. A., Lochman, J. E., & Frick, P. J. (2003). Callous/unemotional traits and social cognitive processes in adjudicated youths. *Journal of the American Academy of Child and Adolescent Psychiatry*, *42*(3), 364–371.

Pelligrini, A. D., Bartini, M., & Brooks, F. (1999). School bullies, victims, and aggressive victims: Factors relating to group affiliation and victimization in early adolescence. *Journal of Educational Psychology*, *91*, 216–224.

Polman, H., Orobio de Castro, B., Koops, W., van Boxtel, H. W., & Merk, W. W. (2007). A meta- analysis of the distinction between reactive and proactive aggression in children and adolescents. *Journal of Abnormal Child Psychology*, *35*(4), 522–535.

Porter, S., & Woodworth, M. (2006). Psychopathy and aggression. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 481–494). New York: Guilford.

Poulin, F., & Boivin, M. (2000). Reactive and proactive aggression: Evidence of a two-factor model. *Psychological Assessment*, *12*, 115–122.

Price, J. M., & Dodge, K. A. (1989). Reactive and proactive aggression in childhood: Relations to peer status and social context dimension. *Journal of Abnormal Child Psychology*, *17*(4), 455–471.

Pulkkinen, L. (1996). Proactive and reactive aggression in early adolescence as precursors to anti- and prosocial behaviors in young adults. *Aggressive Behavior*, *22*, 241–257.

Raine, A., Dodge, K., Loeber, R., Gatzke-Kopp, L., Lynam, D., Raynolds, C., et al. (2006). The reactive-proactive aggression questionnaire: Differential correlated of reactive and proactive aggression in adolescent boys. *Aggressive Behavior*, *32*, 159–171.

Rigby, K. (2002). *New perspective on bullying*. London: Jessica Kingsley.

Salimivalli, C., & Nieminen, E. (2002). Proactive and reactive aggression among school bullies, victims, and bully-victims. *Aggressive Behavior*, *28*, 30–44.

Schwartz, D., Proctor, L. J., & Chicn, D. H. (2001). The aggressive victim of bullying: Emotional and behavioral dysregulation as a pathway to victimization by peers. In J. Juvonen, & S. Graham (Eds.), *Peer harassment in school The plight of the vulnerable and victimized* (pp. (147–174)). New York/London: The Guilford Press.

Seals, D., & Young, J. (2003). Bullying and victimization: prevalence and relationship to gender, grade level, ethnicity, self-esteem and depression. *Adolescence*, *38*(152), 735–747.

Solberg, M. E., Olweus, D., & Endresen, I. M. (2007). Bullies and victims at school: Are they the same pupils? *British Journal of Educational Psychology*, *77*, 441–464.

Varjas, K., Meyers, J., & Hunt, M. H. (2006). *Student Survey of Bullying Behavior -Revised 2 (SSBB-R2)*. Atlanta, Georgia: Georgia State University, Center for Research on School Safety, School Climate and Classroom Management.

Vitacco, M. J., Rogers, R., & Neuman, C. S. (2003). The anstisocial processing screening device: An examination of its construct and convergent validity. *Assessment*, *10*, 143–150.

Vitaro, F., Brendgen, M., & Tremblay, R. E. (2002). Reactively and proactively aggressive children: Antecedent and subsequent characteristics. *Journal of Child Psychology and Psychiatry*, *43* (4), 495–505.

Vitaro, F., Gendreau, P. L., Tremblay, R. E., & Oligny, P. (1998). Reactive and proactive aggression differentially predict later conduct problems. *Journal of Child Psychology and Psychiatry*, *39*, 377–385.

Youngstrom, E., Findling, R., & Calabrese, J. (2003). Who are the comorbid adolescents? Agreement between psychiatric diagnosis, youth, parent, and teacher report. *Journal of Abnormal Child Psychology*, *31*(3), 231–245.

Williamson, S., Hare, R. D., & Wong, S. (1987). Violence: Psychopaths and their victims. *Canadian Journal of Behavioural Sciences*, *19*, 454–462.