

Measuring Aggression in German Youth Prison—A Validation of the German Reactive-Proactive Aggression Questionnaire (RPQ) in a Sample of Incarcerated Juvenile Offenders

International Journal of
Offender Therapy and
Comparative Criminology
2022, Vol. 66(13-14) 1475–1486
© The Author(s) 2021



Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/0306624X211023923
journals.sagepub.com/home/ijo



Evelyn Heynen¹ , Peer Van der Helm^{2,3},
Geert Jan Stams³, and Jesse Roest²

Abstract

The aim of the present study was to examine construct validity and reliability of the German reactive proactive aggression questionnaire (RPQ) in a sample of delinquent boys ($N = 156$). A confirmatory factor analysis with a two-factor model of reactive and proactive aggression showed a good fit to the data. The factor structure of the original RPQ could be fully replicated in the German translation, and Cronbach's alphas were good for both subscales. Concurrent validity of the RPQ was demonstrated by significant correlations with the subscales of the inventory of callous unemotional traits. In future studies, the German RPQ can be used to assess reactive and proactive aggression in judicial and forensic psychiatric care in Germany. The present findings also provide support for the use of the RPQ in cross-cultural comparisons.

Keywords

reactive aggression, proactive aggression, German, youth detention

¹Open Universiteit, Heerlen, The Netherlands

²Hogeschool Leiden, South Holland, The Netherlands

³Universiteit van Amsterdam, Holland, The Netherlands

Corresponding Author:

Evelyn Heynen, Open Universiteit, Valkenburgerweg 177, Heerlen 6401 DL, The Netherlands.

Email: evelyn.heynen@ou.nl

The topic of aggression has frequently been addressed in scientific literature as an important risk factor for various forms of antisocial behavior, including delinquency and conduct problems (Cima & Raine, 2009; Loeber & Dishion, 1983; Raine, 2014). Already since the 1960's research has focused on the different types of aggression (Moyer, 1968) and the role of brain structures and neuro-hormones to understand human aggression, especially in the context of offending (Bass & Nussbaum, 2010; Levi et al., 2010) and psychiatric problems (Raine, 2014).

Aggression can be defined as: "*acting violently with the purpose of causing harm. This often means harming a person whereby the conduct oversteps the boundaries of what is socially acceptable. To the other party, situations like these often call upon emotions, such as fear, pain, sorrow and/or anger*" (Anderson & Bushman, 2002). Pulkinnen (1987) made a first attempt to refine the term "aggression" by distinguishing between offensive and defensive aggression. Although there has been a scientific debate whether one should distinguish between different types of aggression (Bushman & Anderson, 2001), several studies indicate that aggression is better explained if it is differentiated into its functions of reactive and proactive aggression (Dodge, 1991; Dodge & Coie, 1987; Dodge et al., 1997; Vitaro et al., 2002, 2006).

Reactive aggressive behavior is a response to a perceived threat or provocation, accompanied by feelings of anxiety and loss of control. Reactive aggression originates from frustrations and irritations within the person, and has been shown to be related to hostile intent, rejection, and negative life experiences at a young age (Dodge et al., 1997; Kempes et al., 2005; Vitaro et al., 2002), based on the frustration-aggression model (Dollard et al., 1939).

Proactive aggressive behavior is goal directed, and aims to influence others in an aversive way within a situation that is not provoked. This type of aggressive behavior is planned, instrumental and often cold-blooded, and purposefully intended to cause harm and to dominate others (Dodge, 1991; Polman et al., 2007) or to reach a certain goal or objective (Dodge & Coie, 1987). Proactive aggression has shown to be associated with delinquency (Card & Little, 2006; Fite et al., 2008; Miller & Lynam, 2006), antisocial personality traits (Cima & Raine, 2009; Raine et al., 2006), and is often present in youth designated as "callous" and "unemotional" (Asscher et al., 2011). Cima and Raine (2009) provide an overview of behavioral correlates of both reactive and proactive aggression. Raine et al. (2006) demonstrated that a two factor (reactive-proactive) model fitted their data significantly better than a one factor model, and developed the reactive proactive questionnaire (RPQ). To date the dimensions of reactive and proactive aggression, which are assessed with the RPQ, have not been tested by means of a confirmatory factor analysis in Germany, and little research has been conducted to examine these two forms of aggression in Germany in relation to delinquency and callous unemotional traits.

Callous and unemotional (CU) traits can be regarded as a compilation of cold-blooded actions and emotions, such as lack of guilt, shallow affect, lack of empathy, restriction of emotions, and the inability to take responsibility for actions and an increased risk for severe aggressive behavior (Frick et al., 2014; Frick & White, 2008; Kimonis et al., 2015; Kotler & McMahon, 2005). CU-traits can be distinguished in

feelings of callousness, uncaring and unemotional (Frick, 2004). Cima et al. (2013) demonstrated that the proactive aggression subscale was significantly and positively related to ICU total and ICU Callousness subscale scores, while the reactive aggression subscale was significantly but negatively related to the ICU scores. Both proactive and reactive aggression were unrelated to the unemotional subscale of the ICU.

It seems important (also for treatment purposes) to be able to use a reliable and accurate self-report measurement instrument to investigate and distinguish between reactive and proactive aggression. One frequently used instrument is the Reactive Proactive Aggression Questionnaire (RPQ), developed and validated by Raine et al. (2006), which has been translated into several languages (as e.g., Dutch: Cima et al., 2013; Portuguese: Pechorro et al., 2015; Italian: Fossati et al., 2009; East Asia: Fung et al., 2009; Chinese: Seah & Ang, 2008; Serbian: Dinić & Raine, 2019), and demonstrated good cross-cultural validity (Baş & Yurdabakan, 2012; Cima et al., 2013; Dinić & Raine, 2019; Fossati et al., 2009; Fung et al., 2009; Pang et al., 2013; Pechorro et al., 2015; Seah & Ang, 2008).

Raine et al. (2006) demonstrated that a two-factor model with reactive and proactive aggression gave a significantly better fit to their data than a one factor-model, and reported good reliabilities (Raine et al., 2006). Subsequent studies found similar reliability estimates across different samples and languages (e.g., Borroni et al., 2014; Cima & Raine, 2009; Seals et al., 2012), but a German translation and validation is not yet available.

The current study examined the construct validity of the German RPQ in a sample of detained German youth offenders. The replicability of the original two-factor structure will be examined (Raine et al., 2006), as well as its associations with CU-traits. Concurrent validity is demonstrated by a positive correlation between proactive aggression and CU-traits. Given results of previous research a positive correlation between the aggression subscales and CU traits is expected.

Method

Participants

The delinquent sample was recruited from inmates of a German youth prison in Nordrhein-Westfalen. A total of 156 male participants aged 17 to 25 years ($M=20.44$; $SD=1.64$) agreed to participate in the study. All prisoners lived in supervised living groups of 15 to 20 inmates. The main reason for detention was inflicting personal injury (62%), theft (44.9%), robbery/extortion (45.5%), and possession or dealing of drugs (18%; assessed by means of self-report, multiple answers were possible). Most respondents had German nationality (73%), 13% Turkish, and 14% other nationalities. Education levels were generally low: 33% did not complete any education, 45% completed the lowest level of education (German Hauptschule, lower secondary school). All adolescents voluntarily agreed to participate in this study, signed an informed consent declaration, and were told that their answers would be treated confidentially and anonymously and would be accessed only by the researchers. Ethical approval had

been obtained from the Institutional Review Board of the University of Maastricht, The Netherlands.

Instruments

Reactive Proactive Aggression Questionnaire (RPQ). To produce a German translation, the first author of this study, a bilingual native Dutch and German speaker, translated the Dutch RPQ (Cima et al., 2013) into German. The German Version was then back-translated by another Dutch and German native speaker. The original RPQ, developed by Raine and colleagues in 2006, as well as the Dutch translation, both consist of 23 items ranging on a three-point Likert type scale (from 0=*never*, 1=*sometimes*, to 2=*often*) and make a distinction between reactive aggression (11 items, e.g., “Gotten angry when frustrated”) and proactive aggression (12 items, e.g., “Vandalized something for fun”). The RPQ assesses both physically and verbally aggressive behaviors, and in the case of reactive aggression assesses anger generated in response to external stimuli (Raine et al., 2006). The original scale has shown to be a valid and reliable instrument to investigate reactive and proactive aggression with a significant proactive-reactive inter-correlation and good internal consistency (total scale: $\alpha = .90$; reactive: $\alpha = .81$; proactive: $\alpha = .84$; Raine et al., 2006; see also Cima et al., 2013).

Inventory of Callous Unemotional Traits (ICU). The ICU scale developed by Frick (2004) is a 24-item self-report measure, with four response categories ranging from 0=*not at all true* to 3=*definitely true*. The ICU consists of parent, teacher, and self-report versions. In the present study, the German version of the self-report questionnaire was used. This self-report scale has been shown to be a reliable and valid instrument to investigate CU-traits in adolescent offenders (Kimonis et al., 2008). The scale is divided into three subscales: *Callousness* (e.g., “*the feelings of others are unimportant to me*”; $\alpha = .70$), *Unemotional* (e.g., “*I hide my feelings from others*”; $\alpha = .64$), and *Uncaring* (e.g., “*I try not to hurt others' feelings*”; $\alpha = .73$; Kimonis et al., 2008). There are 12 reverse scored items (see also Essau et al., 2006; Kimonis et al., 2008). The three subscales form a higher order callous-unemotional dimension ($\alpha = .77$). The present study showed good reliabilities for the overall ICU-factor ($\alpha = .81$), and the subscales callousness ($\alpha = .72$) and uncaring ($\alpha = .76$). For the subscale unemotional, reliability was sufficient ($\alpha = .60$).

Statistical Analysis

To examine whether the translated German RPQ could replicate the two-factor structure of the original RPQ, a confirmatory factor analysis was conducted using the *Lavaan* package in the R environment (Rosseel, 2012). To account for non-normally distributed ordinal variables, the mean and variance-adjusted weighted least squares (WLSMV) estimation procedure was used (Li, 2015). The goodness of fit for the factor solution was evaluated by calculating several indices; the Comparative Fit Index

(CFI), the Tucker-Lewis Index (TLI), the Standardized Root Mean Square Residual (SRMR), and the Root Mean Square Error of Approximation (RMSEA).

For a valid model a cut-off value of $CFI > 0.90$, $TLI > 0.90$, $SRMR < 0.09$, and $RMSEA < 0.06$ is required (Kline, 2005). Calculation of *Cronbach's Alpha* and correlational analyses were conducted in SPSS version 24 to examine internal consistency reliability and subsequently test concurrent validity of the RPQ. Concurrent validity is demonstrated if reactive and proactive aggression significantly correlates with the subscales and the overall ICU in the expected direction (positive).

Results

Construct Validity and Reliability of the RPQ

A confirmatory factor analysis (CFA) of the 23 items was performed. A two-factor (reactive–proactive) model was examined because of the two-factor structure of the instrument and outcomes of previous validation studies. We exploratively examined a one-factor model, which showed a significantly worse model fit than the two-factor model. The initial model showed insufficient fit to the data: $\chi^2(230)=468.24$, $p < .001$, $CFI=.889$, $TLI=.878$, $RMSEA=.082$, $SRMR=.101$. Model fit increased by allowing residual errors of similarly worded items to correlate, such as “item 4” and “item 15,” “item 2” and “item 9,” “item 17” and “item 20,” “item 7” and “item 8,” and “item 19” and “item 22” (Brown, 2006). The final model showed a good fit to the data: $\chi^2(224)=337.51$, $p < .001$, $CFI=.947$, $TLI=.940$, $RMSEA=.057$, $SRMR=.086$. Standardized factor loadings ranged between .29 and .82 (see Table 1). The factors Reactive aggression and Proactive aggression were significantly correlated ($r=.70$, $p < .001$). The two-factor model that best fitted the data contained 11 items for reactive aggression and 12 items for proactive aggression.

Cronbach's alpha were good for reactive ($\alpha=.81$), proactive ($\alpha=.84$) aggression subscales and for the total scale ($\alpha=.90$) and comparable to previous studies.

Concurrent Validity

Pearson's correlations were computed to examine concurrent validity of the RPQ. Results indicate that reactive aggression was significantly correlated with the ICU-total, and the subscales callousness and uncaring, but not with the unemotional subscale (see Table 2). Proactive aggression was significantly correlated with ICU-total, callousness, uncaring, and unemotional (see Table 2).

Discussion

The present study investigated the validity and reliability of the two-factor (reactive and proactive) structure of the translated German RPQ in a sample of adolescent male offenders. It was expected that the German RPQ would replicate the two-factor structure (Cima et al., 2013; Pechorro et al., 2015; Raine et al., 2006) of reactive and

Table 1. Standardized Regression Weights.

Item no.	Scale/item	Scale/item German	Standardized estimates
<i>Reactive aggression</i>			
1	How often have you yelled at others when they have annoyed you	Wie oft hast Du andere Menschen angeschrien wenn Sie dich irritiert haben?	.550
3	How often have you reacted angrily when provoked by others	Wie oft bist Du wütend geworden wenn dich jemand provoziert hat?	.819
5	How often have you gotten angry when frustrated	Wie oft bist du wütend geworden wenn etwas nicht so funktioniert hat wie Du es wolltest?	.518
7	How often have you had temper tantrums	Wie oft bist du vor Wut ausgeflippt?	.812
8	How often have you damaged things because you felt mad	Wie oft hast du Dinge kaputt gemacht oder beschädigt weil du wütend warst?	.633
11	How often have you become angry or mad when you don't get your way	Wie oft bist du wütend geworden weil Du nicht das bekommen hast was Du wolltest?	.764
13	How often have you gotten angry or mad when you lost a game	Wie oft bist Du wütend geworden wenn du ein Spiel verloren hattest?	.320
14	How often have you gotten angry when others threatened you	Wie oft bist Du wütend geworden wenn Andere Dich bedroht haben?	.454
16	How often have you felt better after hitting or yelling at someone	Wie oft hast du dich besser gefühlt nachdem du jemanden angeschrien oder geschlagen hast?	.746
19	How often have you hit others to defend yourself	Wie oft hast Du Andere geschlagen um Dich selbst zu verteidigen?	.608
22	How often have you gotten angry or mad or hit others when teased	Wie oft bist Du wütend geworden oder hast Du andere geschlagen wenn Sie dich provoziert oder gemobbt haben?	.615

(continued)

Table 1. (continued)

Item no.	Scale/item	Scale/item German	Standardized estimates
<i>Proactive aggression</i>			
2	How often have you had fights with others to show who was on top	Wie oft hast du dich geprügelt um zu zeigen das du der Beste bist?	.703
4	How often have you taken things from other students	Wie oft hast Du Anderen Dinge weggenommen?	.626
6	How often have you vandalized something for fun	Wie oft hast Du nur zum Spaß etwas kaputt gemacht oder beschädigt?	.519
9	How often have you had a gang fight to be cool	Wie oft hast du dich in einer Gruppe geprügelt um cool zu sein?	.652
10	How often have you hurt others to win a game	Wie oft hast du jemand anderes verletzt um ein Spiel oder einen Wettkampf zu gewinnen?	.710
12	How often have you used physical force to get others to do what you want	Wie oft hast du körperliche Gewalt angewendet damit andere das taten was Du wolltest?	.803
15	How often have you used force to obtain money or things from others	Wie oft hast Du Andere gezwungen Dir Geld oder andere Gegenstände zu geben?	.673
17	How often have you threatened and bullied someone	Wie oft hast du jemanden gemobbt oder bedroht?	.649
18	How often have you made obscene phone calls for fun	Wie oft hast Du jemanden angerufen und zum Spaß beschimpft?	.291
20	How often have you gotten others to gang up on someone else	Wie oft hast Du Andere überredet um gemeinsam jemanden zu mobben oder zu bedrohen?	.620
21	How often have you carried a weapon to use in a fight	Wie oft hast Du eine Waffe getragen um sie in einem Streit zu benutzen?	.659
23	How often have you yelled at others so they would do things for you	Wie oft hast Du Andere angeschrien damit Sie etwas für dich tun?	.763

Table 2. Pearson Correlation for the RPQ and ICU.

	Callousness	Uncaring	Unemotional	ICU-total	Reactive aggression
Uncaring	.384**				
Unemotional	.290**	.368**			
ICU-total	.800**	.782**	.643**		
Reactive aggression	.439**	.213*	.134	.424**	
Proactive aggression	.475**	.286**	.199*	.486**	.704**

* $p < .001$. ** $p < .005$.

proactive aggression in a group of delinquent adolescents in detention. Confirmatory factor analysis supported the two-factor structure of the original RPQ (Raine et al., 2006), indicating that in the German translation there is also a distinction between the two types of aggression.

Outcomes are in line with previous research (e.g., Baker et al., 2008; Baş & Yurdabakan, 2012; Cima et al., 2013; Pechorro et al., 2015; Raine et al., 2006; Seah & Ang, 2008), and support the use of the RPQ (Kempes et al., 2005; Polman et al., 2007). The factor loading of item 18 was weak (.29), which is in line with the results of Cima et al. (2013), who found a factor loading of .31, and Raine et al. (2006), who found a factor loading of .41. Deletion of this item did not result in a better model fit. Correlations between the RPQ and its dimensions were statistically significant, and analysis of the internal consistency statistics revealed good to very good reliabilities, which is also in line with previous research (e.g., Cima et al., 2013; Pechorro et al., 2015; Raine et al., 2006).

It was expected that reactive and proactive aggression were positively related to CU-traits. Results support concurrent validity by finding correlations between the different subscales. Interestingly, proactive aggression was related to all subscales of callous unemotional traits, whereas reactive aggression was related to callousness and uncaring, but not to unemotional traits. The lack of association with unemotional is in line with findings of Pechorro et al. (2015), who also did not find a correlation between proactive aggression and unemotional traits in a sample of juvenile delinquents in Portugal. Findings of Cima et al. (2013) indicated that the proactive aggression subscale was more strongly related to the psychopathy concept. Furthermore, this study found that juveniles proactive aggression and not reactive aggression was related to psychopathic traits as measured with the ICU (Frick, 2004).

The present study has some limitations. The sample only consisted of male prisoners. As there are differences in the expression of aggression between males and females (Björkqvist, 2018), future studies should focus on a mixed sample to generalize the present findings. It would be interesting to include non-offender and criminal female samples in future research on reactive and proactive aggression in order to examine measurement invariance of the RPQ. A second limitation was that we only used self-report measures, which constitutes a risk for biased results due to social desirable

answering tendencies of the participants, and inflation of correlations due to common method variance (Podsakoff, MacKenzie, Lee, et al., 2003; Podsakoff, MacKenzie, Podsakoff, et al., 2003). Future research should also include observed aggression scales to test convergent validity. Finally, the present results were cross-sectional. Future research should be longitudinal in order to examine predictive validity.

The present findings support the two-factor structure of the translated German RPQ in juvenile delinquents and also concurrent validity and reliability. Results add to the actual body of knowledge that the RPQ is a valid instrument in different cultures, ethnic groups and samples. It was the first study to examine validity and reliability in a sample of delinquent youth in Germany. Results of the present study contribute to the valid and reliable assessment of reactive and proactive aggression by means of the RPQ in research and clinical practice.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iD

Evelyn Heynen  <https://orcid.org/0000-0002-4969-8986>

References

- Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology*, 53(1), 27–51.
- Asscher, J. J., van Vugt, E. S., Stams, G. J. J., Deković, M., Eichelsheim, V. I., & Yousfi, S. (2011). The relationship between juvenile psychopathic traits, delinquency and (violent) recidivism: A meta-analysis. *Journal of Child Psychology and Psychiatry*, 52(11), 1134–1143.
- Baker, L. A., Raine, A., Liu, J., & Jacobson, K. C. (2008). Differential genetic and environmental influences on reactive and proactive aggression in children. *Journal of Abnormal Child Psychology*, 36, 1265–1278. <https://doi.org/10.1007/s10802-008-9249-1>
- Baş, A. U., & Yurdabakan, İ. (2012). Factor structure of the reactive-proactive aggression questionnaire in Turkish children and gender, grade-level, and socioeconomic status differences in reactive and proactive aggression. *Journal of Psychoeducational Assessment*, 30, 284–297. <https://doi.org/10.1177/0734282911428892>
- Bass, S. L., & Nussbaum, D. (2010). Decision making and aggression in forensic psychiatric inpatients. *Criminal Justice and Behavior*, 37(4), 365–383.
- Björkqvist, K. (2018). Gender differences in aggression. *Current Opinion in Psychology*, 19, 39–42.
- Borroni, S., Somma, A., Andershed, H., Maffei, C., & Fossati, A. (2014). Psychopathy dimensions, Big Five traits, and dispositional aggression in adolescence: Issues of gender consistency. *Personality and Individual Differences*, 66, 199–203.

- Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. Guilford Press.
- Bushman, B. J., & Anderson, C. A. (2001). Is it time to pull the plug on the hostile versus instrumental aggression dichotomy? *Psychological Review*, 108(1), 273–279.
- Card, N. A., & Little, T. D. (2006). Proactive and reactive aggression in childhood and adolescence: A meta-analysis of differential relations with psychosocial adjustment. *International Journal of Behavioral Development*, 30(5), 466–480.
- Cima, M., & Raine, A. (2009). Distinct characteristics of psychopathy relate to different subtypes of aggression. *Personality and Individual Differences*, 47(8), 835–840. <https://doi.org/10.1016/j.paid.2009.06.031>
- Cima, M., Raine, A., Meesters, C., & Popma, A. (2013). Validation of the Dutch Reactive Proactive Questionnaire (RPQ): Differential correlates of reactive and proactive aggression from childhood to adulthood. *Aggressive Behavior*, 39(2), 99–113. <https://doi.org/10.1002/ab.21458>
- Dinić, B. M., & Raine, A. (2019). An item response theory analysis and further validation of the reactive–proactive aggression questionnaire (RPQ): The Serbian adaptation of the RPQ. *Journal of Personality Assessment*, 102, 469–479.
- Dodge, K. A. (1991). The structure and function of reactive aggression. In D. J. Pepler & K. H. Rubin (Eds.), *The development and treatment of childhood aggression* (pp. 201–218). Lawrence Erlbaum Associates.
- Dodge, K. A., & Coie, J. D. (1987). Social-information-processing factors in reactive and proactive aggression in children's peer groups. *Personality and Social Psychology Review*, 53(6), 1146–1158.
- Dodge, K. A., Lochman, J. E., Harnish, J. D., & Bates, J. E. (1997). Reactive and proactive aggression in school children and psychiatrically impaired chronically assaultive youth. *Journal of Abnormal Psychology*, 106(1), 37–51.
- Dollard, J., Miller, N. E., Doob, L. W., Mowrer, O. H., & Sears, R. R. (1939). *Frustration and aggression*. Yale University Press. <https://doi.org/10.1037/10022-000>
- Essau, C. A., Sasagawa, S., & Frick, P. J. (2006). Callous-unemotional traits in a community sample of adolescents. *Assessment*, 13(4), 454–469.
- Fite, P. J., Colder, C. R., Lochman, J. E., & Wells, K. C. (2008). Developmental trajectories of proactive and reactive aggression from fifth to ninth grade. *Journal of Clinical Child and Adolescent Psychology*, 37(2), 412–421.
- Fossati, A., Raine, A., Borroni, S., Bizzozero, A., Volpi, E., Santalucia, I., & Maffei, C. (2009). A cross-cultural study of the psychometric properties of the Reactive–Proactive Aggression Questionnaire among Italian nonclinical adolescents. *Psychological Assessment*, 21(1), 131.
- Frick, P. J. (2004). *The inventory of callous–unemotional traits*. Unpublished rating scale.
- Frick, P. J., Ray, J. V., Thornton, L. C., & Kahn, R. E. (2014). Can callous-unemotional traits enhance the understanding, diagnosis, and treatment of serious conduct problems in children and adolescents? A comprehensive review. *Psychological Bulletin*, 140(1), 1.
- Frick, P. J., & White, S. F. (2008). Research review: The importance of callous-unemotional traits for developmental models of aggressive and antisocial behavior. *Journal of Child Psychology and Psychiatry*, 49(4), 359–375.
- Fung, A. L. C., Raine, A., & Gao, Y. (2009). Cross-cultural generalizability of the reactive–proactive aggression questionnaire (RPQ). *Journal of Personality Assessment*, 91(5), 473–479.
- Kempes, M., Matthys, W., de Vries, H., & van Engeland, H. (2005). Reactive and proactive aggression in children: A review of theory, findings and the relevance for child and

- adolescent psychiatry. *European Child & Adolescent Psychiatry*, 14(1), 11–19. <https://doi.org/10.1007/s00787-005-0432-4>
- Kimonis, E. R., Fanti, K. A., Frick, P. J., Moffitt, T. E., Essau, C., Bijttebier, P., & Marsee, M. A. (2015). Using self-reported callous-unemotional traits to cross-nationally assess the DSM-5 'With Limited Prosocial Emotions' specifier. *Journal of Child Psychology and Psychiatry*, 56(11), 1249–1261.
- Kimonis, E. R., Frick, P. J., Skeem, J. L., 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. *International Journal of Law and Psychiatry*, 31(3), 241–252.
- Kline, R. B. (2005). *Principles and practice of structural equation modeling*. Guilford Press.
- Kotler, J. S., & McMahon, R. J. (2005). Child psychopathy: Theories, measurement, and relations with the development and persistence of conduct problems. *Clinical Child and Family Psychology Review*, 8(4), 291–325.
- Levi, M. D., Nussbaum, D. S., & Rich, J. B. (2010). Neuropsychological and personality characteristics of predatory, irritable, and nonviolent offenders: Support for a typology of criminal human aggression. *Criminal Justice and Behavior*, 37(6), 633–655.
- Li, C. (2015). Confirmatory factor analysis with ordinal data: Comparing robust maximum likelihood and diagonally weighted least squares. *Behavior Research Methods*, 48(3), 936–949. <https://doi.org/10.3758/s13428-015-0619-7>
- Loeber, R., & Dishion, T. (1983). Early predictors of male delinquency: A review. *Psychological Bulletin*, 94(1), 68–99.
- Miller, J. D., & Lynam, D. R. (2006). Reactive and proactive aggression: Similarities and differences. *Personality and Individual Differences*, 41(8), 1469–1480.
- Moyer, K. E. (1968). Kinds of aggression and their physiological basis. *Communications in Behavioral Biology*, 2(2), 65–87.
- Pang, J. S., Ang, R. P., Kom, D. M., Tan, S. H., & Chiang, A. Q. (2013). Patterns of reactive and proactive aggression in young adolescents in Singapore. *Social Development*, 22(4), 794–812.
- Pechorro, P., Ray, J. V., Raine, A., Maroco, J., & Gonçalves, R. A. (2015). The Reactive–Proactive Aggression Questionnaire: Validation among a Portuguese sample of incarcerated juvenile delinquents. *Journal of Interpersonal Violence*, 32(13), 1995–2017.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903.
- Podsakoff, P. M., MacKenzie, S. B., Podsakoff, N. P., & Lee, J. Y. (2003). The mismeasure of man(agement) and its implications for leadership research. *The Leadership Quarterly*, 14(6), 615–656.
- Polman, H., Orobio de Castro, B., Koops, W., van Boxtel, H., & Merk, 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. <https://doi.org/10.1007/s10802-007-9109-4>
- Pulkinnen, L. (1987). Offensive and defensive aggression in humans: A longitudinal perspective. *Aggressive Behavior*, 13, 197–212.
- Raine, A. (2014). *The anatomy of violence: The biological roots of crime*. Vintage.
- Raine, A., Dodge, K., Loeber, R., Gatzke-Kopp, L., Lynam, D., Reynolds, C., Stouthamer-Loeber, M., & Liu, J. (2006). The reactive–proactive aggression questionnaire: Differential

- correlates of reactive and proactive aggression in adolescent boys. *Aggressive Behavior*, 32(2), 159–171.
- Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48(2), 1–36.
- Seah, S. L., & Ang, R. P. (2008). Differential correlates of reactive and proactive aggression in Asian adolescents: Relations to narcissism, anxiety, schizotypal traits, and peer relations. *Aggressive Behavior*, 34(5), 553–562. <https://doi.org/10.1002/ab.20269>
- Seals, R. W., Sharp, C., Ha, C., & Michonski, J. D. (2012). The relationship between the youth psychopathic traits inventory and psychopathology in a US community sample of male youth. *Journal of Personality Assessment*, 94(3), 232–243.
- Vitaro, F., Brendgen, M., & Barker, E. D. (2006). Subtypes of aggressive behaviors: A developmental perspective. *International Journal of Behavioral Development*, 30(1), 12–19.
- 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.