

Title

Appetitive aggression in offending youths: Contributions of callous unemotional traits and violent cognitive patterns

Abstract

Appetitive aggression, marked by the derivation of positive affect from harming others, has been observed mostly among youths in societies experiencing extreme violence. Perpetrators report craving violence, and find the process and actual infliction of harm relishing. Because this dimension of aggression is relatively new, studies have barely examined likely psychological correlates of this phenomenon. In this study, we considered the associations between callous-unemotional (CU) traits and violence cognition with appetitive aggression in young offenders. Male youth offenders (n = 188) from 2 youth detention facilities in Northern and Niger Delta regions of Nigeria completed measures of appetitive aggression, CU traits, and violence-supportive cognition of machismo and acceptance of violence. Demographic information regarding their offences were collected from official records and corroborated with self-reports. Results showed that CU traits were related to the perpetration of appetitive aggression. Offenders high in machismo beliefs, which portray aggression as a masculine characteristic and a fitting response to threats, were more likely to report the enjoyment of aggression. There was a mediation effect of machismo thinking on the relationship between CU traits and appetitive aggression. The study concludes that CU traits and machismo thinking are associated with appetitive aggression, and invites future studies to investigate other correlates of appetitive aggression.

Keywords: appetitive aggression, callous-unemotional traits, youth offenders, machismo, psychopathy

Introduction

Systematic investigation of ultra-violent populations has largely been neglected for some time. Recent studies however have highlighted the nature and presentation of *appetitive aggression* (Hecker, Fetz, Ainamani, & Elbert, 2015; Elbert, Weierstall, & Schauer, 2010), a relatively newly abstracted pattern of aggression identified in offenders. Sometimes referred to as an *attraction to cruelty* (Weierstall, Haer, Banholzer, & Elbert, 2013), appetitive aggression is the perpetration of aggression for the purpose of experiencing violence-related enjoyment (Elbert, Weierstall, et al., 2010). In this sort of aggression, inflicting harm or violence cues prompt positive emotion. Though research into the nature of appetitive aggression is slowly growing, research into the phenomenon has largely been skewed to cover ex-combatants and the adaptive nature of cruelty in these ultraviolent settings [e.g., in the Democratic Republic of Congo (Weierstall, Castellanos, Neuner, & Elbert, 2013; Hecker, Hermenau, Maedl, Schauer, & Elbert, 2013), Burundi (Nandi, Crombach, Bambonye, Elbert, & Weierstall, 2016), or Rwanda (Weierstall, Schaal, Schalinski, Dusingizemungu, & Elbert, 2011), appetitive aggression was reported to protect combatants from post-traumatic stress symptoms]. Other psychological and even psychopathological constructs that may be associated with, or contribute to, appetitive aggression have been underrepresented in literature. Identifying correlates of appetitive aggression will therefore help to clarify its place in the aggression literature, as well as inform both theoretical and treatment models. In this study we explored if some common correlates of aggressive behaviors described in the scientific literature also predict appetitive aggression in a Nigerian sample.

Many regions of Africa, including Nigeria, have experienced high levels of community violence for decades (Foster & Brooks-Gunn, 2015). Nigeria's history of violence is often in the nature of ethnic tensions as in the agitation for an independent Biafra State in the South-East (Anti-Corruption Evidence, ACE, 2017), resource control conflicts as manifested in militancy in the Niger Delta (Obi, 2014), and political violence. There is also faith-based terrorism, as propagated by Boko Haram in the North-Eastern region of Nigeria (Celso, 2015). More recently, there are sporadic attacks and killings by nomadic Fulani

herdsmen in different parts of the country, with tensions in Benue and Kaduna States being recurrent (Chukwuorji, Ifeagwazi, & Eze, 2017). Being a very populous country (World Population Review, 2018), and in fact the most populous in Africa, the impact of the widespread violence will likely affect a large number of people in Nigeria. With the widespread conflicts often involving youths in Nigeria, studies are required to explore the phenomena underlying violence in the populace in order to inform adequate remedies.

In some sense, appetitive aggression transcends the generic instrumental-reactive aggression typology widely seen in aggression literature (e.g. Buss, 1961; McEllistrem, 2004). Aggressive behavior is often differentiated in terms of goals, motivation, emotional experience and the level of planning involved (Bjørnebekk & Howard, 2012). Appetitive aggression however is distinguished by its unique characteristic of the perpetration of aggression for the thrill, excitement, or even fun. Offenders in Rwanda who perpetrated appetitive aggression reported: “... *If I hear the sounds of bullets I wish I could be fighting. This thirst to fight is in me. It is like the thirst of a person who likes Coca Cola. The thirst will not be satisfied until the person drinks a Coke*” (interview excerpt from Elbert et al., 2013, p. 41). Also Harnisch and Pfeiffer (2018, p. 431) reported the experiences of another person who enjoyed violence, “*Yes! It is very good, it is very interesting when you see their blood.*” Existing explanations directed at developing theoretical explanations to the origin and nature of this phenomenon anchor the phenomenon on biological mechanisms connected to hunting: the pursuit and ultimate success of killing a prey is explained to be arousing, making the willingness to kill tolerable and appetitive (Elbert, Weierstall & Schauer, 2010). This explanation is extrapolated to explain hunting and killing among hominids, especially in situations of war and conflicts (Elbert, Moran, & Schauer, 2017). However, the classification of appetitive aggression in relation to other aggression related constructs require further research. More recent publications, such as the one by Harnisch and Pfeiffer (2018) examining former Ugandan child soldiers, linked appetitive aggression to cultural phenomena and other clinical constructs. Some issues discussed in this work correspond to factors highlighted in the general aggression model (GAM;

Anderson & Bushman, 2002), which recognizes the significance of traits and other personality features as well as social learning in prompting aggressive behavior.

Some studies already identify that subtle personality or circumstantial influences may define individuals who enjoy perpetrating aggression: Combatants who joined armed groups voluntarily were reported to find violence more arousing than conscripted combatants (Hecker et al., 2013). Weierstall, Castellanos et al. (2013) also found in Colombia that combatants who were forcefully demobilized had higher rates of appetitive aggression compared to those who individually demobilized. It seems plausible to argue that a disposition towards violence and/or early learning processes precede the enjoyment of violence. Among returning combatants in Burundi, experiencing familial violence predicted appetitive aggression better than war trauma (Nandi et al., 2017) suggesting that early domestic experiences or violent victimization may trigger the appeal to perpetrate and enjoy violence. In South Africa, drug use has been associated with appetitive aggression among former youth offenders (Sommer et al., 2017).

Though researchers in the area of appetitive aggression often opine that the defining features of cruelty is not limited to persons with psychopathic/pathological tendencies (e.g. Weierstall, Castellanos et al., 2013), empirical research has scarcely examined the degree to which psychopathic traits are linked or not linked to appetitive aggression. Thus our study was a pioneering attempt to examine the connection between psychopathic traits and appetitive aggression.

To perceive violence as thrilling and rewarding presents some striking semblance with characteristics that mark individuals with psychopathic traits (Ching, Daffern, & Thomas, 2014). *Psychopathy* has been identified to manifest a reduced responsivity to affective stimuli in youths (Loney, Frick, Clements, Ellis, & Kerlin, 2003) and is also linked to aggressive behavior (Frick, 2012). *Callous unemotional traits* (CU traits) are often used to describe and capture psychopathic characteristics in youths (Frick & Marsee, 2006). CU traits are a collection of risk factors for antisocial behavior that include lack of remorse/guilt, shallow affect and cruel disregard for others (Mann, Tackett, Tucker-Drob, & Harden, 2017). Persons high on CU traits are reported to manifest emotional, affective and cognitive

deficits which make them report feeling less guilt, empathy, remorse, and related emotions regarding their offences (Frick, Ray, Thornton, & Kahn, 2014; Kimonis et al., 2008). CU traits have been found to define persistent antisocial and aggressive behaviors in community and forensic samples (Frick & Dickens, 2006; Kruh, Frick, & Clements, 2005). Youths high in CU traits are more likely to expect positive outcomes from their aggressive behaviors (Pardini & Bryd, 2012). Perpetrators of appetitive aggression find aggression to be rewarding and pleasurable and hence report positive affectivity (e.g. arousal and pleasure) in inflicting and witnessing others experience pain. It could be that appetitive aggression is associated with having higher CU traits. However, Ching et al. (2014) found that psychopathy scores measured by the Psychopathy Checklist-Youth version (PCL-YV; Forth, Kosson, & Hare, 2003) were not different between *appetitively* violent youth offenders and other violent offenders. The Ching et al. unexpected finding may be explained by the fact that the study deployed a retrospective approach to coding for appetitive aggression and psychopathy and as well deployed a small sample size (n = 15). They acknowledged these shortfalls to have possibly influenced their findings. More studies that thoroughly examine the associations between psychopathic traits and appetitive aggression are therefore required.

The GAM proposes aggressive cognition to be a critical factor in understanding aggressive outcomes (Anderson & Bushman, 2002; Walker & Bowes, 2013), and features an input-route-outcome flow that portrays the process that begets aggression. The GAM posits that human aggression is largely influenced by *knowledge structures* that include attitudes and beliefs, perceptual schemata, expectation schemata and behavioral scripts (Allen, Anderson, & Bushman, 2018). Knowledge structures equally incorporate cognitive and affective components acquired via learning processes, and with repeated practice, can become automatized. The GAM also suggests that input factors such as personality/hostile traits (e.g., callous traits) could trigger or interact with aggressive scripts/cognitions (which are routes), resulting in aggressive outcomes. Nandi et al. (2016) identified that examining thinking patterns in perpetrators and victims would improve understanding of appetitive aggression. Literature on appetitive

aggression has subtly pointed to certain cognitive/thinking patterns that circumvent appetitive aggression. Weierstall, Hinsberger, Kaminer, Holtzhausner, Madikane, and Elbert (2013) hinted that the rewarding nature of violence may be ingrained in societal fabric, expressed in the nature of masculinity norms/beliefs, which in turn feed the perpetration of appetitive violence. Considering and relishing violence as a masculine characteristic have appeared in interview excerpts of persons who report enjoying aggression: “*For a man fighting is everything...*” (Elbert et al., 2013, p. 41). Currently, there is a dearth of empirical studies on aggressive cognition patterns in appetitive aggression.

A systematic review by Bowes and McMurrin (2014) identified the Maudsley Violence Questionnaire (MVQ) as one of the few tools that has good reliability and validity for assessing violent thinking and violent behavior. The MVQ explores thinking patterns that among other features consider violence to be a sign of masculinity and strength (*Machismo*) and a general acceptance of violence in everyday life (*Acceptance*). Considering that the MVQ has been found to be a good predictor of aggression/violent behavior (Bowes & McMurrin, 2014), the second aim of the current study was to examine if violence thinking styles, as measured by the MVQ, predicts appetitive aggression.

The current study

Research on appetitive aggression is growing but has largely been focused on its protective influences, especially around post-traumatic stress disorder. In this study, we explored other psychological factors associated with appetitive aggression. The GAM (Allen et al., 2018) identifies personality traits and cognitive factors that could contribute to aggressive outcomes. Callous-unemotional traits are consistently known to predict aggressive, delinquent, and violent behaviors (Docherty, Boxer, Huesmann, O’Brien, & Bushman, 2016), but no study had examined the association between CU traits and appetitive aggression. Research has also identified masculinity beliefs to possibly contribute to appetitive aggression (Weierstall, Hinsberger, et al., 2013). However, this contribution has not been examined empirically. We expected that the normative acceptance of aggressive behavior and/or thinking

patterns that morally justify aggression or consider aggression as a necessary masculine characteristic would predict appetitive aggression. We also examined if CU traits and violent thinking patterns predict appetitive aggression among youth offenders in Nigeria. The relationship between personality and aggression has been noted to be mediated by cognition (Barlett & Anderson, 2012; Bettencourt, Talley, Benjamin, & Valentine, 2006). People who are likely to be violent have more readily accessible aggressive scripts (Anderson & Bushman, 2002). Barlett and Anderson (2012) found that aggressive attitudes and emotion mediated the pathway between the Big 5 personality and aggressive behavior. However, we found no study that explored how CU traits are mediated in appetitive aggression. Hence, in addition to investigating if CU traits and aggressive cognitions predict appetitive aggression, we further probed in this study, if aggressive cognition would mediate the relationship between CU traits and appetitive aggression.

In the current study, we hypothesized that i) CU traits will predict appetitive aggression. ii) that aggressive cognitions will predict appetitive aggression and iii) that aggressive cognitions will mediate the relationship between CU traits and appetitive aggression.

Method

Participants

Participants were 188 male inmates recruited from two youth offender facilities (often called borstals) in Nigeria. One is in Delta State, located in the Niger Delta region ($n = 55$) and the other is in Kaduna State ($n = 133$), located in northern Nigeria. Both regions are considered as hotspots of violence in Nigeria. The age of participants ranged from 13 to 26 ($M = 19.62$ years, $SD = 3.31$). Only offenders with sufficient English literacy skills participated. All participants have at least attained their First School Leaving Certificate (which means that they have successfully completed their primary school education). Most of the participants (97%) were single.

The youths have been in their institutions from 4 to 30 months, with a mean stay of 13 months ($SD = 7.11$) of stay. Participants have also been arrested for between 1 and 15 times with a mean of 4

arrests (SD = 4.09). Participants were remanded in custody following court decisions and consent by their parents/guardians. Examples of committed offences include substance trade and use, (armed) robbery, cultism (which normally involves gang-related activities including a wide range of antisocial/criminal behaviors), sex offences, and militant-related disruptions (e.g. vandalizing oil pipelines, kidnappings, etc.). A large proportion of the participants (75%) admitted having witnessed violence in their communities. Some (70%) admitted that they committed their offences in a group/gang. We categorized offences into *violent offences* (such as armed robbery or murder) and *non-violent offences* (for example drug trafficking, fraud) based on recorded index offences. Most of the offenders were incarcerated for violent offences (n = 144).

Measures

Appetitive Aggression Scale (AAS): The AAS is a 15-item questionnaire for the assessment of an individual's attraction to aggression and the enjoyment of aggression perpetration. Respondents are required to indicate, on a 5-point Likert scale ranging from 0-4 (strongly disagree to strongly agree), the degree to which they subscribe to statements in the scale. Sample items include: "Do you enjoy inciting your fellows to fight? Can attacking be sexually arousing for you?; Is it exciting if you make your opponent really suffer?". Composite scores range from 0 to 60 as a measure of appetitive aggression. The AAS has been validated across several African settings including Burundi (Nandi et al., 2016), DR Congo (Weierstall, Castellanos et al., 2013), and Rwanda (Weierstall, Schaal et al., 2011). In several thousand offenders and ex-combatants, consistent reports of a single factor structure and good reliability index are documented (Weierstall & Elbert, 2011). Sommer et al. (2017) has demonstrated the AAS to be a valid instrument for the assessment of appetitive aggression in youth offender populations. With the current sample, we obtained a good reliability estimate for the AAS with a Cronbach's alpha .89.

Maudsley Violence Questionnaire (MVQ): The MVQ is a 56-item scale developed to assess beliefs and cognitions related to, and supportive of, violence (Walker, 2005). The MVQ assesses 2 dimensions of violent thinking: machismo, and acceptance of violence. ***Machismo*** (42 items) taps into beliefs that justify the use of violence as an appropriate response to threats, violence as part of being a man, feeling embarrassed from backing down from fights and considering fear as a sign of weakness. Sample item include: “*I expect real men to be violent*”. ***Acceptance of violence*** (14 items) highlights the overt enjoyment and acceptance of violence. Sample item include: “*It is OK to hit someone who threatens your partner*”. Participants respond on a 5-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree) with higher scores indicating stronger maladaptive beliefs regarding aggression. Scores for the *Machismo* and *Acceptance* subscales range from 1 to 210 and 1 to 70, respectively. Psychometric properties have been reported for the questionnaire in various studies that have included both offender and non-offender populations (Walker & Bowes, 2013; Warnok-Parkes, Gudjonsson, & Walker, 2008). We obtained a Cronbach’s alpha .93 for the MVQ scale with the sample used in this study.

Inventory of Callous Unemotional Traits (ICU): The ICU is a 24-item self-report measure designed to provide a comprehensive assessment of callous unemotional traits (Frick, 2004). The ICU was designed to more comprehensively examine the nuanced affective components of psychopathy that may serve to perpetuate chronic and severe offending. Frick (2004) identified three (3) facets of CU traits: uncaring, unemotional, and callousness. Response options on the ICU is on a four-point Likert scale ranging from 0 (not at all) to 3 (definitely true). The ICU has demonstrated its validity for assessing CU traits as well as good psychometrics properties in both forensic offender populations as well as non-criminal juvenile populations (Kimonis et al., 2008; Roose, Bijttebier, Decoene, Claes, & Frick, 2010). Sample item include: “*I do not care who I hurt to get what I want*”. The internal consistency reliability estimate of the ICU for this study was Cronbach’s alpha .71. Consistent with recent studies (Mann et al., 2017; Ray, Frick, Thornton, Steinberg, & Cauffman, 2015), we adopted a composite score for the ICU, demonstrated to be a good representation of CU-traits.

Procedure

Institutional Review Board approval was gotten from the Research and Ethics Committee, Department of Psychology, University of Nigeria, Nsukka. Approval was also obtained from the two facilities from which participants were recruited. The legal guardians of the participants provided consent for all the participants aged below 18 years. All participants signed consent forms after they had read the forms and received explanation regarding consent. Two borstal staff from each of the institutions assisted as proctors, directly assisting the participants to complete the survey forms. The first and last authors supervised data collection from the juvenile facilities. Opportunistic sampling was used in recruiting participants for the study. Participants were approached in their (borstal) hostels, informed of the study and willing participants who had adequate reading and writing skills were moved to a holding area where they completed survey forms. Participants were assured of confidentiality and informed of their freedom to withdraw from the study without any consequences. Information regarding offender data/history was crosschecked with official data for each of the respondents. Apart from a few minor questions from the participants, completing the survey forms posed no problems as respondents clearly understood the items and response patterns. Responses to the questionnaires were coded, scored and entered into a password-secured computer.

Results

Data was analyzed by the first and second authors using Statistical Package for the Social Sciences (SPSS V24). Means and standard deviations were computed for and stepwise multiple regression was used to calculate a regression model predicting appetitive aggression from callous traits and violent cognitive patterns. To control for possible confounding factors from participants' demographics such as age, length of stay in facility, number of arrests and offence types, data on these measures were built into the first model. CU traits was put in the next step, and the two dimensions of MVQ (machismo and acceptance thinking) were included in the last step. We first present the inter-

correlations between demographic variables, CU traits, violent cognitions and appetitive aggression to give context to the findings.

[Table 1]

Table 1 shows that appetitive aggression was inversely related to age ($r = -.15, p < .01$): the younger the offender, the higher the appetitive aggression. Youths whose offences were violent were more likely to score higher on appetitive aggression ($r = .24, p < .01$). Length of stay in the facility and the number of arrests were not associated with appetitive aggression. Callous traits were associated with *machismo* thinking ($r = .30, p < .001$) but not *acceptance*, showing that higher CU traits are positively associated with thinking patterns that support violence.

We present in Table 2 a multiple linear regression results for the prediction of appetitive aggression from the ICU and MVQ subscales. Age, length of stay in the facility and number of offences were included as control variables. *Offence type* was dummy-coded.

[Table 2]

Table 2 displays a 3-step multiple regression model which shows that younger *age* ($\beta = -.17, p = .002$) and *offence type* ($\beta = .26, p = .003$) were significant in predicting appetitive aggression. In the second step, CU traits were statistically significant in predicting appetitive aggression ($\beta = .27, p < .001$) suggesting that higher CU traits are associated with higher appetitive aggression. However, in adding the two subscales of the MVQ to the last step, only the Machismo subscale turned out significant in predicting appetitive aggression ($\beta = .42, p < .001$). It is important to acknowledge that CU traits did not significantly predict appetitive aggression in the last model. A mediation effect is suspected when the

inclusion of a *mediating variable* in a statistical model results in the reduction of the strength of relationship between the predictor and an outcome (Field, 2013). Analyzing for a mediation effect using Hayes (2013) PROCESS Macro, we found a significant indirect effect of CU traits on appetitive aggression through machismo thinking, $\beta = .11$ [CI: .06, .17], but not through acceptance of violence thinking. Figure 1 illustrates this relationship. The Kappa-squared ($K^2 = .14$) demonstrates that the mediation effect of machismo thinking was relatively large (Field, 2013; Preacher & Kelley, 2011).

[Figure 1]

Discussion

The findings of this study show that violence cognition and CU traits *are* related to appetitive aggression. This study is the first to examine the role of psychopathy (reflected as CU traits in youths) and violence supportive cognitions in appetitive aggression. Our findings slightly differ from the findings of Ching et al. (2014) that indicated that psychopathy does not characterize appetitive violent offenders. Nonetheless, our findings tally with Frick et al. (2014), who found global CU traits to be related to aggressive and persistent offending behaviors; and specifically, findings that youths high on CU traits expect positive outcomes from the use of aggression (Pardini & Byrd, 2012). The current research stretches further to suggest not only that CU (or psychopathic) traits are associated with aggressive behaviors, but that violence cognition mediates the association of these traits with appetitive aggression. Perhaps, methodological differences account for the disparity of our findings with findings from Ching et al. (2014) who used a retrospective approach of case file examination to identify offenders whose offences could be categorized as appetitive; used the PCL: YV to assess psychopathy from case files; and utilized a small sample (15 offenders) to examine for associations. Though we do not claim that our

methodological approach is flawless, our method offered the advantage of utilizing a specific measure of appetitive aggression and callous traits and also incorporated more participants, hence improving the generalizability of findings.

A possible explanation to the connection between CU traits and appetitive aggression could be found in Ly, von Borris, Brazil, Bulten, & Cools (2016), where offenders with psychopathic tendencies (compared to healthy controls) were reported to be less dissuaded from aversive instrumental tasks when presented with aversive affective faces. Hence the distress on the faces of others did not prevent psychopathic persons from perpetrating painful acts. Another explanation could be made from the neurobiological link between the amygdala and the prefrontal brain regions. Dysfunctions in the connections in both brain regions have been identified in psychopathic violent offenders (Volman et al., 2016) as well as in appetitive aggressors (Weierstall & Elbert, 2011), with suggestions that dysfunction in these brain regions and their connectivity may underlie improper affective processing and behaviors, and related deficits in moral socialization. Hence, bio-psychological mechanisms regulating the identification and interpretation of affective states may account for high aggression engagement and extend to appetitive aggression observed with higher CU traits. The process or mechanism with which this is possible remains to be examined. Blair (2005) in the integrated emotions theory identified individuals with psychopathic traits as able to experience a range of emotions but impaired in their ability to decipher interpersonal distress cues linked to sadness and fear; consequently, they are unable to identify cues that would dissuade them from aggressive acts (Brook, Breiman, & Kosson, 2013).

We found that *Machismo* thinking predicted appetitive aggression. This affirms the suggestion of Weierstall, Hinsberger, et al. (2013) that masculinity norms seem to support appetitive aggression. Machismo beliefs approximate hyper-masculinity (Bowes & Walker, 2013; Scheff, 2004). Those who score high on machismo beliefs view violence as important in developing or maintaining their “manliness”, or esteem as a “male”. They justify the use of violence and consider reneging from a fight as embarrassing. Walker and Bright (2009) noted the important role of “fragile” or “false-inflated” self-

esteem in violent behavior; hence aggression is deployed when men seek to protect their already fragile sense of male self-esteem or “manliness”. This suggests that holding violent supportive beliefs, particularly masculinity beliefs, and acting in accordance, could falsely reinforce the self-esteem of the perpetrator, which if considered rewarding to the individual, may facilitate the enjoyment of perpetrating aggressive acts.

Path analysis also led us to understand that machismo thinking mediated the association between CU traits and appetitive aggression. This result is consistent with suggestions that callous, unemotional, and manipulative aspects of psychopathy are linked to aggressive/violent behaviors via cognitive/thinking styles (Barlett & Anderson, 2012; Walters & DeLisi, 2015). Masculinity norms have equally been suggested to possibly play a role in fostering the perpetration of appetitive aggression especially in deprived communities (Sommer et al., 2017; Weiestall Hinsberger, et al. 2013). This mediation framework is consistent with the general aggression model (GAM; Allen, Anderson, & Bushman, 2018) that identifies cognitive processes as one of the routes through which personality factors could be linked to aggressive outcomes. Hence CU traits could at least be partially associated with appetitive aggression, possibly by activating links to cognitive patterns that consider aggression a masculine characteristic. This strengthens the perspective that violent cognitive patterns contribute to appetitive aggression.

Implications of the findings

Though this study is not the first to find a link between CU traits and aggressive behavior in general, it is premier in finding a positive link between CU traits and specifically appetitive aggression. We cannot claim with these findings that psychopathy or specifically CU traits is a defining characteristic of perpetrators of appetitive aggression, but a high level of CU traits and considering violence a masculine feature could underlie appetitive aggression perpetration. Hence rehabilitation attempts deployed in engaging youths known to perpetrate appetitive aggression especially in violence-prone regions (e.g. the Narrative Exposure Therapy for Forensic Offender Rehabilitation; Elbert, Hermnau, Hecker, Weierstall,

& Schauer, 2012) may be improved by screening for psychopathic traits and violent belief patterns among service users. Also, the MVQ (machismo) have been demonstrated to be effective in detecting changes in violence cognitions in treatment (Walker & Bright, 2009) and could be useful in therapy with appetitive aggressive youths.

Additionally, attempts to advance a theoretical model to explain the nature of appetitive aggression could benefit from including personality and cognitive factors. However, more empirical studies are needed to distinguish appetitive aggression from other types of aggression, and refine its theoretical explanation.

This study is also the first to consider appetitive aggression in Nigeria and perhaps West Africa. The country and indeed the region have been hotspots for violent conflicts especially in recent times, with certain ongoing violence such as Islamic extremists in North-Eastern Nigeria and Cameroon, the militant struggle for resource control in the Niger Delta, etc. These areas are rife with adverse socioeconomic conditions which make individuals feel socially rejected. Social rejection increases aggressive behaviors (Chester & DeWall, 2017) sometimes in revolt to the political systems and societal structures. Individuals may revolt, or be attracted to groups that promote the use of violence against perceived oppressors or agents and institutions considered attachés of the oppressor, promoting a we-them rivalry and a consequent hunt for out-group members. Indeed, unfavorable environments may facilitate the development of cruel personalities (Elbert, Schauer. et al., 2010). Early identification and intervention would be critical in mitigating the perpetration of aggression, as Elbert and Weierstall (2010) identified that the lust for man-hunting could prime the attraction to groups that perpetrate violence.

Also, the current study extends research on appetitive aggression which has largely focused on ex-combatants. Haer, Banholzer, Elbert, and Weierstall (2013) have called for extension of focus on appetitive aggression among other populations. Another potentially important observation in our findings is the negative relationship between age and appetitive aggression. Consistent with extant aggression literature (Tsorbatzoudis, Travlos, & Rodafinos, 2013), our study found an inverse relationship between age and appetitive aggression: being younger was associated with higher appetitive aggression among

offenders. This suggests that appetitive aggression decreased as individuals got older. Being of younger age (8 to 17 window) has been reported by child soldiers to be a “*window of opportunity*” when boys could be groomed into “*terrible killers*” (Elbert, Weierstall, & Schauer, 2010, p.S103).

Limitations and Suggestions for future studies

A limitation in this research is the reliance on offenders’ self-report. Because self-reports can be prone to impression management, the outcome of the current result should be taken with caution. However, Winters, Latima, and Stinchfield (2002) identified self report measures to provide the best direct information about an individual and that only a small proportion of youths produce a compromised self report.

The correlational design does not allow for causal inference between variables. We therefore cannot make firmer causal statements on the nature of the connections among the variables studied. Future studies may consider experimental designs examining how participants with higher CU traits will perform in aggressive acts linked to positive affect. Again, future studies may consider building path models to examine the pathways connecting CU traits and wider cognitive/belief patterns to appetitive aggression. This could also inform building a theoretical framework that better explains appetitive aggression.

All participants were male youth offenders, and so the findings of the current study may not be extended to older adult/female offenders. Future studies may begin to consider how CU traits relate to appetitive aggression in adult males, and with females (in both community and offender samples). The current study did not also take into consideration other facets of psychopathy such as impulsivity, manipulateness, irresponsibility, criminal versatility, unstable interpersonal relationships, early behavioral problems, etc. Other probable correlates of aggressive behaviors such as substance use, psychopathology, antisocial attitudes, employment, and education problems were not considered in this study, and so may be put in perspective by future studies.

Conclusion

We examined the relationship between CU traits, violent supportive beliefs and appetitive aggression. Results showed that CU traits and machismo thinking were predictive of appetitive aggression. Mediation analysis revealed that machismo thinking mediated the association between CU traits and appetitive aggression. We suggest that interventions designed for people disposed to enjoying aggression, especially for male youths in conflict regions, should consider identifying and addressing psychopathic traits as well as thinking styles, particularly machismo thinking, which we have found to be associated with appetitive aggression. Challenging, and restructuring violent thinking patterns, in treatment will be beneficial in the treatment of perpetrators of appetitive aggression.

Compliance with Ethical Standards

Conflict of Interest: The authors declare that they have no conflict of interest.

Ethical Approval: Approval for this study was obtained by an Institutional Review Board of the Research and Ethics Committee, Department of Psychology, University of Nigeria. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent: Informed consent was obtained for all participants involved in the study.

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Table 1: Correlation tables of inter-correlations between demographic variables, CU traits, violent cognitions and appetitive aggression

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1 AAS	30.51	9.52	-						
2 Age	19.57	3.26	-.15*	-					
3 Length of stay	13.47	7.11	.03	.09	-				
4 No of arrests	2.53	3.79	.11	.16*	.05	-			
5 Offence type (non-violent, 0 vs violent, 1)	-	-	.24**	.16*	.04	.19*	-		
6 CU traits	47.16	9.41	.22**	-.21**	-.05	-.15	-.09	-	
7 Machismo	85.47	5.77	.49***	-.45***	.08	.06	.04	.30***	-
8 Acceptance	30.75	6.46	.35***	-.46***	.00	.08	.06	.10	.66***

Note * = $p < .05$; ** $p < .01$; *** $p < .001$. The effect size for a correlation is the absolute value of r (Cohen, 1992).

Table 2. Multiple linear regression model for the prediction of Appetitive Aggression from the ICU and MVQ subscales. Age, length of stay in the facility and number of offences were included as control variables. *Offence type* was dummy-coded

Variable	Model 1			Model 2			Model 3		
	B	SE	β	B	SE	β	B	SE	β
Age	-.69	.28	-.21*	-.74	.27	-.23*	-.53	.24	-.16*
Length of stay	-.03	.11	-.02	-.05	.11	-.04	-.07	.10	-.05
No of arrests	.23	.22	.09	.33	.21	.13	.18	.19	.07
Offence type (violent vs nonviolent)	6.81	2.27	.26**	7.36	2.18	.28**	6.50	1.91	.25**
CU traits				.30	.08	.29***	.13	.08	.12
Machismo							.17	.04	.42***
Acceptance							.14	.14	.10
R ²		.32			.43			.62	
ΔR^2		.11			.19			.36	
ΔF		3.72**			12.81**			20.51***	

Note * = $p < .05$; ** $p < .01$; *** $p < .001$. $\Delta R^2 = R^2$ change; $\Delta F = F$ change.