

**AN INVESTIGATION INTO HUMAN PREDATION:
AN OVERLOOKED AREA OF RESEARCH**

by

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Abstract

Research on human predatory behaviour is comparatively narrow in focus as it mainly constitutes studying stalkers, whose behaviour normally has some basis in attachment. The current research aims to test changes in emotion based on a form of predation unrelated to attachment. Subjects' (N=144) affective responses to viewing a predation sequence from different points of view were obtained by completing the affect adjective checklist pre and post video. A significant main effect of gender and condition was found. When male participants viewed a male target during the predation sequence their percentage increase in composite anger score was the highest (110.17%) compared to all other groups.

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To my parents

You were right

Introduction

“Man, biologically considered, and whatever else he may be in the bargain, is simply the most formidable of all the beasts of prey; and, indeed, the only one that preys systematically on its own species”. William James

Violence is often overwhelmingly present in our world and its use as effective threat or punishment exemplifies peoples' fear of pain and death. Violence in humans is often emotionally based and the outcome of injuries can seem nonsensical and unmerited. It is often forgotten that violence has positive benefits from an evolutionary standpoint and that the violence that occurs in today's society has helped humans adapt and survive. More focus needs to be paid to the origins of violence and its ordinariness in humans as a species. This is perhaps a distasteful task as violent people are seen as different from the majority of the population. As McEllistrem (2004) notes aggression in feline research is seen as adaptive whether affectively based or predatory; both forms are part of a functional mechanism for survival and adaptability in cats. Most of the research with humans and violence focus on maladaptive psychopathology and is restricted to a subgroup of the population. That is to say, the biology of violence or the evolutionary profit that shaped this adaptive behaviour goes unrecognized as a behaviour that all humans and other species share; instead those that use violence are often seen as markedly dissimilar. In naturalistic studies of animal behaviour, a frequent precursor of aggression is predation; the search for or hunting of the prey.

The Concept of Predation-Aggression

Early psychologists and researchers recognized violence as being an integral part of what inherently makes us human; that is to say that we all possess the capacity for violence but it may be regulated in each person differently. Freud (1958) theorized that along with sexual drive an aggressive drive was present at birth and both together contribute to the development of human personality. Lorenz (1966) argued that humans did not differ from other animals when considering aggressive instincts. Further he postulated that it was the suppression of these instincts in human society that allowed the

aggression to build up, and controlling the violence that was released wasn't always possible. That is, the frustration did not have an appropriate outlet due to societal values and at times could lead to instances of explosive aggressive acts. Meloy (1998, 2000) distinguishes between two types of aggression: predatory and affective. In both the violence is purposeful; however in predatory aggression a target is chosen and the attack planned (see also: Aronson, 1992 & Kingsbury, Lambert, & Hendrickse, 1997). In contrast affective violence is a response to a real or perceived threat which may be either physical or emotional and is relatively uncontrolled. It has been suggested that the origins of predatory violence can be attributed to satisfying a basic need; namely hunting for food (Nell, 2005; Panksepp, 1998). Focusing on the evolutionary adaptation qualities, the distinction between predatory violence and affective violence becomes apparent. Part of the distinction lies in the purpose of the violence; predatory violence is used as a service of the hunt rather than as a reaction to a threat, and as such has different physiological characteristics than affective violence. In fact Nell (2005) notes that the predation sequence begins in absence of any stimulus; in a predatory attack the violence is not in response to a threat. Panksepp (1998) states that the neural circuits related to predation and violent behaviour are not only different but that they are mutually inhibitory and cannot therefore co-occur. This argument should be used as evidence that while closely interwoven, predation does not always lead to violence and therefore should be studied as a separate entity to aggressive behaviour. Other theorists have noted differing origins of aggression as being a product of learned behaviour. Most notably Bandura (1966) performed studies with children indicating that aggression and violence can be learned. This theory of learned aggression can be applied to the bimodal classification of aggression. Instrumental aggression is another category of violence where the goal of the aggressive act is reinforced by some form of reward. Instrumental violence and predatory aggression have been associated to each other as they both are goal oriented and not in reaction to a threat. Instrumental aggression is continued through the principles of operant conditioning requiring voluntary behaviour; whereas, affective aggression involves classical conditioning and reflexes. As McEllistrem (2004) points out there are problems connecting the different labels of aggression in part because they confuse the origin of the terms; instrumental aggression is based on learned

behaviour and misses the established biological basis that the definition of predatory aggression encompasses. Aside from confusing the etiology of the definitions, McEllistrem (2004) also points out that the disparity in terms can be confusing. All forms of aggression can be considered instrumental in the sense that they have a goal; that is, affective aggression may be seen as having a goal of threat removal. Current research is limited in scope on the study of human predatory behaviour; most research has focused the motive or the goal involved in the aggressive act and has formed classifications with that in mind. Research on human predatory behaviour is comparatively narrow in focus as it mainly constitutes studying stalkers, whose behaviour normally has some basis in attachment. Therefore the current research is unique in that it aims to test changes in emotion based on a form of predation unrelated to attachment.

Predation in Humans

Stalking behaviour can be seen as a more specific form of predation as it is defined loosely as the repeated following and harassment of another person (Meloy, 1998). While stalking could theoretically involve stalking of prey, it typically has a narrower definition than predation, although both involve similar behaviours. Stalking is to date the most studied form of predation in humans, with that in mind a brief review of stalking is deemed necessary. The first widely publicized case of stalking was of actress Rebecca Schaeffer by a fan, which eventually led to the actress' murder (Mullen, P., Pathe, M., & Purcell, R., 2001). Stalking began to refer to repeated privacy intrusions upon the famous and eventually was generalized to the harassment of women by previous partners and then went on to include any form of behaviour that created fear independent of the relationship between victim and stalker (Lowney & Best, 1995). In this context, stalking was viewed as an attachment-disorder (Meloy 1998), no matter how inappropriate, the attempt to generate an attached relationship might seem. Stalking behaviour may be difficult to succinctly define as most of the acts are part of normal behaviour and it is the fear that it causes in the victim that essentially defines it. Kropp, Hart, & Lyon (2002) point out that it is the criminalization of implicit threats itself that makes stalking a "new" crime; further the harassment designed to control the victim is the purpose of these behaviours (Meloy & Gothard, 1995; Davis & Chipman, 1997). A

study by Tjaden & Thoennes (1998) consisting of a representative sample of 16000 participants over the age of 18 found that the lifetime prevalence rate of stalking victimization for females was 8.1% with an annual rate of 1%. Other studies confirm that stalking is a widespread problem with rates for woman reported at 12-16% and 4-7% among men (Sheridan, Blaauw, & Davies, 2003); the difference in numbers may be questions concerning the level of fear in the victim and therefore what is labeled as stalking. The typical profile of a stalker seems to be a male who is single or divorced, and one with above average intelligence (Harmon, Rosner, & Owens, 1995; Meloy & Gothard, 1995; Mullen & Pathe, 1994; Langhinrichen-Rohling, Palatea, Cohen & Rohling, 2000). In 1995 Harmon and colleagues compared a group of stalkers to other offenders that were also being referred for psychiatric evaluations and found that only 28% of the control group had completed high school, whereas 80% of the stalking cohort had. All published studies have been conducted in industrialized countries and little is known about stalking behaviour in third world countries. Current or former romantic partners make up the largest group of stalkers (Tjaden & Thoennes, 1998; Del Ben & Fremouw, 2002; Cupach & Spitzberg, 2004) followed by acquaintances and then strangers (Canadian Centre for Justice Statistics, 2004; Garrod, Ewert, Field, & Warren, 1995; Gill & Brockman, 1996; Hall, 1998).

Emotional Arousal as a Facilitator of Aggression

There has been considerable evidence that three independent and bipolar dimensions adequately described human emotions to a variety of stimuli (Osgood, May & Miron, 1975; Osgood, Suci, & Tannenbaum, 1957; Snider & Osgood, 1969, Russell & Mehrabian, 1977). The three dimensions are described by Russell & Merhabian (1977)

- 1) Pleasure ranges from extreme pain or unhappiness to ecstasy or extreme happiness at the other end
- 2) Arousal is a continuum ranging from sleep through states of drowsiness to excitement at the opposite extreme
- 3) Dominance ranges from feelings of total lack of control to feeling influential.

Using regression equations where scores on a varying sample of affective states were predicted from scores on these three factors Russell & Mehrabian (1977) showed that these three bipolar dimensions are not only necessary but are sufficient to adequately define emotional states. Further, these values are independent

as any value on one dimension can occur simultaneously with any value on either of the other two factors. Novaco (1976) states that anger and anxiety are functions of perceptions of dominance relative to the source of provocation; that is as the perception of relative power increases anger is increased. Further, as power is decreased or a threat is perceived the individual is expected to experience anxiety.

Initially, the frustration aggression theory proposed by Dollard, Doob, Miller, Mowrer, & Sears (1939) showed a link between emotion and aggression. This theory postulated that there was an inherently biological connection between aggression and frustration due to goal blocking. In this theory frustration was defined as some inhibitory force blocking ongoing goal directed behavior, including behaviors that helped maintain sense of self (i.e. not solely survival based). In 1962, Berkowitz introduced anger as a secondary affective state between frustration and aggression; he states frustration leads to anger “which serves as a drive heightening the likelihood of aggressive behavior” (pg.22). Schachter & Singer (1962) developed the two factor theory of emotion stating that drives such as anger do not lead to drive specific behaviors, such as aggression, unless there are appropriate cues. Schachter & Singer (1962) shifted the emphasis from physiological states to the individuals’ cognitive interpretation of the situation. A random sample of 184 college students was given either an injection of epinephrine or a saline injection (placebo). Researchers told participants that they were given a new drug to test their eyesight; some subjects were told the truth about the effects of epinephrine (i.e. increase heart rate, rapid breathing), two other groups were told either false side effects (i.e. numbness) or told nothing at all. After the injections the participants waited in a room with a confederate posing as another participant, this confederate acted either playful or angry. The results showed that subjects who were misled or were unaware of the side effects of epinephrine behaved similarly to the confederate, while those that knew of the expected effects from epinephrine showed an inverse emotional pattern. These results were interpreted as suggesting that participants who were informed were able to cognitively label the physiological arousal effects of epinephrine while the uninformed could not and took cues from their surroundings (i.e. the confederate). The basic assumption of the two factor theory of emotion is that people must first experience

some physiological arousal and link it to cues in a situation before interpretations can provide the basis for identifying a particular emotion.

The focus of this research will be on the precursor to potentially aggressive behavior, predation, which is conceptualized as a broader and earlier act than stalking. This study aims to fill the void in current research which is based solely on attachment related or celebrity stalking, and test affective reactions to predation videos defined as a stealthy pursuit of another human. Using Russell & Merhabian's (1977) three factor theory of emotion, this research will attempt to provide a bridge between emotion and potential precursors to aggression. In this study levels of dominance will be varied with participants either placed in a predator's point of view (high dominance), the targets point of view (low dominance) or a control condition (neutral dominance). Arousal not physiologically measured in this current study but included on the theoretical basis proposed by Schachter & Singer (1962). Participants receive cues (visual and auditory) from the videos that according to the two factor theory of emotion would translate into a similar cognitive schema of either, predator, target or control. These environmental cues will trigger cognitive processing that will result in the labeling of specific emotions related to each pursuit sequence point of view. In order to test reactions to stalking beyond the sphere of attachment, the gender of actors in the video will be varied, a non-pursuit control will be used, and a condition from the point of view of the target will be included. It is a semantic issue that one might say stalking the enemy; however our definition of predatory behaviour is separate from how stalking is defined in social sciences and the law as it does not have a basis in attachment. This type of predatory behaviour can be seen in war situations- e.g. the film *The Enemy at the Gates* (Annaud, 2001). That is to say, the definition of stalking will be expanded past the obsessional following of an ex-partner and examined as a potential precursor to aggression. In many ways stalking can be seen as predation in the sense that a target is chosen to fulfill some purpose, from an evolutionary standpoint the action being for food but currently may be numerous intrinsic or extrinsic gains. However, stalking has attachment (no matter how inappropriate) as its goal, while predation has a survival basis. Previous research has shown a link between emotions and aggression, I aim to study the emotions that may be connected to predation that can be seen as a precursor to aggressive behavior. I tested the

null hypothesis that a cohort of university students would not significantly differ on composite emotional scales – anger, sub-anger and anxiety. Following Berkowitz (1962) and Novaco's (1976) research anger will predominate over fear as a person's feeling of power increases. Accordingly, I predict that in conditions of high dominance (predator condition) anger will be the primary emotion and in the target condition (low dominance) fear or anxiety will be present.

Participants

One hundred and forty-four undergraduate students, 72 men and 72 women were participants in the study. Ninety participants (62.5%) reported that English was their first language. The mean ages of male and female participants were 22.79 (SD=4.31) and 21.57 (SD=2.19) respectively.

Procedure

A sample of undergraduate students were randomly assigned into one of six groups corresponding to a video: Point of view (POV) predator female target, POV predator male target, POV target male predator, POV target female predator, POV control female, POV control male. All participants were asked to fill out a demographics questionnaire, the Aggression questionnaire (Buss & Perry, 1992). An initial Affect Adjective Checklist (AAC) was given to obtain a baseline measure of state levels of affect. Participants were then shown the video corresponding to their group, and immediately following the viewing filled out another AAC to obtain post video state levels. Subjects then filled out a post video questionnaire assessing the efficacy of the video as a stimulus. Participants were informed that the construct being tested was imagination. Participants were told this minor deception to ensure that they perceive the movie as if it was from their point of view and to ensure that they did not identify with the person they observe in the video. More specifically participants were told that I was testing to what extent people can get into character while watching a film; this will allow us to obtain measures of affect change for each participant as if they were placed in these hypothetical situations. The evolutionary ideology that only men were hunters has been

questioned in recent theories (Kuhn & Stiner, 2006); findings from Dutton (2007) also show that women are equally or more violent than males in intimate relationships. Because of the findings between gender and violent behaviour groups were not be gender specific (i.e. Males did get assigned to watch only female targets.) It was explicitly stated that participation was voluntary and anonymity was guaranteed. Participants were given a copy of the debriefing form with the researcher's contact information for questions or concerns about the study.

Design

This experiment was a 2 (Gender of Participant: Male, Female) x 2 (Gender of the Actor: Male, Female) x 3 (Point of View: Predator, Target, Control) between-subjects design for a total of 12 conditions.

Materials

Videos

The videos used as stimuli in this study are short films broken into three different points of view (POV) and then divided into male and female actors, accounting for six films total. All scenes are approximately the same length, are all taking in the same forest setting and vary only by genders shown and by POV. All videos start out with a blank screen for approximately 30 seconds and are then followed by 60 seconds of auditory forest stimuli. This time was included to ensure that the participants felt this was as realistic as possible. Participants viewed a scene in the forest as though it were from their own point of view (i.e. as if they were holding the camera), and will be described as the POV participant. Sound bites of forest noises, footsteps and breathing were also included and edited in to further increase authenticity of being in the forest.

In the control videos the scene is set on a forest path and the POV is set to make the viewer feel as though they are walking in the forest. Eventually POV participant passes someone on the path; this actor is either male or female accounting for the two variations of the control tapes. The scene continues with the POV participant walking down the forest path until a car on the road is reached.

In the target condition the scene is set on a forest path and the POV is set to make the viewer feel as though they are walking in the forest, they continue walking and as opposed to the control condition the speed of walking is increased. The POV participant pans back down the path that was just walked to see someone on the trail behind. This other actor is either male or female accounting for the two variations of the target condition. The scene continues with the POV participant running down the forest path and again the POV participant pans back to see the actor (either male or female) closer and chasing them. The POV participant continues running until the car on the road is reached. The scene ends with a torso shot of the actor (either male or female) who was previously chasing them. The ending of the video was left ambiguous as this study is not testing for responses to aggression or violence and is focused solely on the predation process.

In the predator videos the scene is set just off a forest path and the POV participant is set to make the participant feel as though they are hiding behind a bush. A person passes on the path and this actor is either male or female accounting for the two variations of the predator condition. The scene continues with the POV participant emerging from the bushes and following the actor. The actor turns around further up the path and sees the POV participant and starts running. The POV participant continues to follow them and picks up speed. The POV participant continues running and chasing the actor until the car on the road is reached. The actor is seen at the car attempting to open the door the POV participant reaches the actor and the scene is cut. As in the POV target condition the ending was left ambiguous.

Affect Adjective Checklist

The AAC is advantageous to use because it covers a wide range of psychological states, can be applied in many areas, is sensitive to affective state changes and maintains this sensitivity with repeated use. Further, the checklist does not pose any strain on the subjects it is administered to (Peck, Morgan, MacPherson, & Bramwell, 1984). It is commonly used and has been useful in a variety of settings including: predictions of pain responses in rehabilitation (Rosillo & Fogel, 1973), measurement of examination anxiety (Zuckerman, Lubin, Vogel, & Valerius, 1964), stress during combat and military recruits

(Datel & Lifrak, 1969), self-reports of martial violence (Arias & Beach, 1987), and most relevant to this study, anger and aggressive responding (Bushman, 2002).

The AAC consists of two standardized test sets that are composed of adjectives that provide a self-report of mood (Zuckerman & Lubin, 1965). Both state (“Today” test form) and trait (“In General” test form) evaluations are made by describing the presence and absence of emotions on a Likert scale. The subscales of the AAC tap five different emotions: anxiety, depression, hostility, positive affect, and sensation seeking. Subjects were given the state test form of the AAC both before and after viewing the video to evaluate their change in affect. Subscales of emotion were constructed including Anger (Angry, Aggressive, Hostile), Sub-Anger (Frustrated, Irritated, Annoyed) and Anxiety (Tense, Anxious, Nervous) and tested statistically. These subscales have been used in previous studies (e.g. Dutton, Webb, & Ryan, 1994).

The Aggression Questionnaire

The Aggression Questionnaire (Buss & Perry, 1992) is a self report measure of participants’ feelings and behaviours related to aggression. The Aggression Questionnaire will be administered to each participant as a baseline measure of four factors of aggression. The questionnaire is considered a trait measure of aggression because it measures aggressive attitudes that show consistency over an extended time frame. Each statement is assessed by a 5-point Likert Scale with 2 items reverse scored. The factors measured in this questionnaire are, Physical Aggression (PA), Verbal Aggression (VA), Anger (A), and Hostility (H). The physical aggression component of the questionnaire covers hurting others physically and reflects instrumental or motor aspects of aggression. Verbal aggression involves hurting others verbally instead of physically. The anger component describes the affective aspect of aggression and includes physiological arousal and the relationship of this to acting out aggression. The hostility aspect of the questionnaire is concerned with the cognitive aspect of aggression and includes feelings of ill will and injustice. The total score for aggression is derived from the sum of the four factor’s scores (Buss & Perry, 1992). The Aggression Questionnaire is a modified version of the Hostility Inventory developed by Buss and Durkee (1957). Studies conducted on the Hostility Inventory have proven that not only

had the inventory become outdated, but also that the original factor analysis of items which originally resulted in two factors, aggressiveness and hostility, showed vastly different findings when reassessed (Buss & Perry, 1992). The current Aggression Questionnaire retains the major assets of the older inventory, but it is up to date with current psychometric standards, which the Hostility Inventory lacked (Buss & Perry, 1992). The questionnaire displays a high level of internal consistency (total score = .89) and moderate-high levels of test-retest reliability (total score = .80). The Aggression Questionnaire is being translated and used in other languages such as Dutch and Spanish attesting to its reliability.

Results

Manipulation Check

To determine whether participants had understood the instructions that the videotapes were from their point of view an open ended question (Describe what you saw) was included at the end of the experiment. Responses were coded either yes or no on two factors 1) if they describe the correct point of view and 2) if they described understanding of what happened in the scene. If participants had been coded no to either factor they would have been dropped from the study; however all participants (N=144) answered received a yes coding for both factors.

Emotional Response Scales

To obtain a more consistent measure of emotional ratings specific bipolar pairs were added to produce composite scores of three predicted and relevant emotions: anger, sub-anger and anxiety (also used in Strachan & Dutton, 1992; Dutton, Webb & Ryan, 1994). Anger consisting of angry, aggressive and hostile scores; sub- anger was the total for annoyed, frustrated and irritated; finally tense, anxious and nervous were totaled for anxiety. A general emotion composite score was also calculated that included all emotions on the AAC. Pre-AAC scores for the four different emotion composite scales (anger, sub-anger, anxiety, and general emotion) were examined with t-tests to ensure that there were no pre-video differences between genders (Anger: $t(142) = 1.395$, $p = .165$; Sub-Anger: $t(142) = .347$, $p = .729$; Anxiety: $t(142) = .391$, $p = .696$; General

Emotion: $t(142) = .553, p = .581$). Men ($x = 3.2014$) and women ($x = 3.0951$) for overall affect pre-video exposure.

Testing Participants Trait Aggression

Comparison of the reported responses on the Aggression Questionnaire in this study to a sample used in a study by Buss & Perry (1992) show similar means and standard deviations across gender and aggression type. Results from the current research are shown in Table 1.

In order to determine if participants' trait hostility would affect their response on the AAC a multiple regression analysis was performed; the total score on the Aggression Questionnaire was used as the co-determinant across all conditions with respect to the four composite AAC emotions. Results showed that for all outcome scores the percent of variability due to participants overall trait aggression was minimal (Anger: $r^2 = .029$; Sub-anger: $r^2 = .021$; Anxiety: $r^2 = .004$; General Emotion: $r^2 = .033$). Further, another regression analysis was performed specifically on male participants in the POV predator condition with a male actor, as this group showed the largest increase in anger scores. This analysis showed minimal variability in anger change due to trait aggression scores on the Aggression Questionnaire (Anger: $r^2 = .012$). These results are important in determining the effectiveness of the videos as stimuli; because results showed minimal effect of trait factor aggression in post video AAC responses it can be said with confidence that all changes in emotional responding are a pure effect of viewing the videos.

MANOVA on Emotional Responses

An overall MANOVA test was conducted for all post-video composite affect scores, with gender of participant, gender of actor, and condition point of view as between subject effects. The overall multivariate test showed that a main effect of participant gender $F(4, 129) = 6.473$, and a main effect of condition point of view $F(8, 260) = 4.275$ were highly significant with $p < .001$, see Table 2. Main effect of actor gender and all two and three way interaction effects were non-significant at the .05 level;

therefore only the two significant main effects of participant gender and condition point of view were used in the follow-up analysis.

Table 3 shows the analysis at the composite emotional scale level; the anger composite score was the only score that showed significance between participants with respect to gender, $F(1,132) = 9.284, p < .003$. The most salient effect overall was that men show increased anger composite scores after viewing the video ($x=3.43, SD=1.85$) compared to females ($x=2.59, SD=1.65$).

When looking at differences between condition point of view for composite scores anger ($F(2, 132) = 7.07, p = .001$) and anxiety ($F(2,132) = 5.492, p = .005$) were both significant. Post hoc analysis using Tukeys HSD showed that there are significant differences for anger in POV Target when compared to POV Predator ($p = .027$) and POV Predator when compared to POV Control ($P = .001$). When looking at anxiety composite scores between groups there is a significant difference between POV Control and POV Target ($p = .017$). Further, there is a significant difference between POV Control and POV Predator ($p = .010$). See Tables 4-6 for sets of homogenous groups x composite emotion scale.

Emotional Response as Percent Change

Due to restrictions in post hoc tests it was not possible to determine which condition was greater than another with respect to emotion composite scores. To make the range differences more visual emotional increases are expressed as a percentage change from baseline (Pre-AAC) to Post-AAC for the composite scores. Results are shown in Table 7. Mean difference scores from Pre-AAC and Post-AAC were not used in calculation because the author was interested in looking at specific levels on the AAC which are unobtainable by simply looking at mean differences.

Discussion

Arousal, emotion and behaviour are intricately linked; this study has attempted to show an association between predatory behavior in humans and affective arousal. The relevance to human health, interpersonal relationships and clinical interventions make this a topic of great relevance to those in any field involving human behaviour. There is a

great deal of speculation regarding unmanaged emotional expression. Anger expression when unmanaged can lead to inefficient task performance (Novaco, 1976) escalation of these unmanaged emotions can create aggressive outbursts (Berkowitz, 1970; Kaplan 1975) impulsive reactions and destructive communication patterns (Mace, 1976; Novaco, 1976) and psychosomatic symptoms may develop in the individual who repeatedly suppresses anger (Holt, 1970; Lewis, 1963; Medows, 1971). It is clear that the management and understanding of emotions in a variety of contexts has a multitude of benefits for human's health and is beneficial for society. Anger and anxiety tend to manifest in overt behaviors that can affect others in negative ways; therefore understanding causes and links between these emotions are important for treatment and prevention of aggressive behaviors.

Emotion

Using the three factor theory of emotion as a theoretical basis for the design the current study varies the dimensions of arousal and dominance in the conditions. The null hypothesis was proven false as there was a significant difference found on composite emotional scales across groups. Further our research substantiates other researchers' findings such as that of Novaco's (1976). The current study found that when power levels were varied affective response changed according to our hypothesis regarding anger in some groups. That is, in high power or predator POV conditions high levels of anger composite scores were reported when the actor was male. The homogeneous subsets show the divisions across the groups, and when looking at the descriptive percentage increase scores the most noted difference in anger is in the perpetrator POV with a male actor for both male and female participants. This hypothesis did not stand however when looking at low power conditions (POV Target) there were not higher levels of reported anxiety. However, instead reactions to the video stimulus were labeled as sub-anger with increases across gender of participant and across gender of actor. The only exception to this was shown in POV Target male actor with male participant where there was a higher increase in anger. There is some theoretical basis for this anomaly in the data; anger has been shown to have a defensive function that overrides feelings of

vulnerability (Rothenberg, 1971). That is, anger can provide a sense of personal control and cut short vulnerable feelings such as anxiety and fear. Schachter & Singer's (1962) information-processing view of the attribution of emotional labels may explain why the data show a labeling of sub-anger as opposed to the hypothesized anxiety. That is participants in the POV target condition may have taken visual clues from the video and been frustrated that they were in a place of low power instead of focusing solely on the predator and labeled their emotions as anxiety based. All emotions have benefit to those that are experiencing them; however it is the behavior that follows these emotions that may be inappropriate. Anger has the potential to be constructive since it can provide a platform for communication and promote trust (L'Abate, 1977) and restore mutual empathy (Holt, 1970). Further the positive function of anger that has a survival basis and is most relevant to the current study is the basis that anger does have an energizing effect and mobilizes the individual into a protection mode of behaviour. This specific positive survival function of anger should be explored more in future research as it may explain differences seen across the groups.

Gender

In the current study the anger composite score was significantly different with respect to gender, $F(1,132) = 9.284, p < .003$. The most salient effect overall was that men show increased anger composite scores after viewing the video ($x=3.43, SD=1.85$) compared to females ($x=2.59, SD=1.65$). To break this gender difference down by condition the percentage change calculation is used to highlight the affect changes from pre stimulus to post. This descriptive statistic in the POV Predator with a male actor for male participants' anger composite score was 110.17 %. This condition also showed the highest overall change for female participants however it was only at 56.96%. In the current study men scored $x=16.63 (SD=4.93)$ on anger subscale of the Aggression Questionnaire while females showed a slightly greater mean score $x=16.81 (SD=6.03)$; therefore it can be said that there is little difference between genders when it comes to trait anger. The differences lie solely in the state emotions evoked after watching the videos. The significantly higher reported anger in males when viewing other males can

be explained by different theories all involving predatory behaviour. Hence the primary finding of this study concerns the effect of gender on the emotional response of the participant, in particular the males' responses to anger.

Because of handheld filming of the videos used in this study and the use of multimedia in general; the videos and therefore responses may be comparable to playing a videogame. The use of hand held cameras became a popular in the 1950's for its "fly on the wall" aesthetic in documentaries and became a trend in the cinema vérité movement in France (Salt, 1992). Ballard, West, & Rose (1996) conducted a study examining cardiovascular activity and hostility differences in males while playing the Mortal Kombat video game. Ballard et al. (1996) report that subjects who played Mortal Kombat as compared to those who played billiards showed greater blood pressure reactivity and hostility as measured by AAC. Further subjects who played higher levels of the video game showed increases in hostility levels. Although biological responses were not measured in the current study the increase shown in anger (110.17%) for male participants who were in the POV predator condition are comparable to the findings of Ballard et al. (1996). Males are more likely to play videogames than females (Fling, Smith, Rodrigues, Thorton et al., 1992; Dominick, 1984) and the amount of video game play was correlated with aggression. In the current study open ended questions were asked to determine what the participants thought occurred after the predation sequence in the video. In the POV predator and POV target conditions the majority of people thought that some form of violence occurred (POV target = 69%, POV predator = 75%, POV control = 4%). Although no violence or aggressive behaviour was shown in the videos the majority of participant felt that predation was a precursor to some aggressive act. Using 110 male and 140 female participants Dominick (1984) investigated the relationship between videogame play, viewing violent television, and anger and aggression. Results showed participants who watched violent television were more likely to play violent video games. Viewing violent television was significantly correlated to anger and aggressive acts. Mehrabian & Wixen (1986) found that the predominant emotional response for playing 22 common arcade games were aggression, anger and hostility. Further, researchers report that male participants only showed a higher preference for videogames that had high levels of dominance. As mentioned previously

the majority of these stalkers are male (Meloy, 1998). In fact males typically make up 90% of the perpetrators in samples of police investigation files and victim surveys (Kropp et al., 2002). Kropp et al. (2002) further says however that the second most common category is males being stalked by other male acquaintances. A possible explanation is that males tend to be more violent in same sex altercations and therefore express their anger in related situations. The statistics on the use of weapons and homicide show that more men than women use dangerous forms of physical aggression in same sex conflicts (Bjorkqvist, 1994; Campbell, 1999; Daly & Wilson, 1988). As well Archer (2004) found that males are more prone to using risky forms of aggression when compared to females.

Future Research

As this was only a preliminary study some improvements could have been made that may have increased reality of the viewings. The first issue was logistical; the videos were shown in a large theatre in part to increase the feeling of being in a forest by allowing for large screen viewing and surround sound. This however may have been a slight drawback of the study as students had to watch the video with other students in the room. Every effort was taken to ensure that the presence of other people was minimal; by keeping group viewing size below 10 and by spreading participants out in the theatre. It may have been more beneficial for the study to be run with only one participant viewing each film at a time; however as mentioned it was not logistically possible to do in a theatre. Further an increase in sample size may have shown an increase in power. Another improvement suggested would be to include some form of adult attachment questionnaire.

Often stalking is associated with maladaptive attachment qualities most often insecurely attached (Meloy, 1998). To further separate the difference between predatory behaviour and stalking, future research should include an attachment questionnaire as another co-determinant tested with a multiple regression analysis. The current study design tested emotional expression in different arousal scenarios. Novaco (1976) stated that anger and anxiety are a function of an individual's perceived or actual power; as

power increases the experience of anger increases. In the current study power levels were implied within the conditions (i.e. POV Predator as high power) in future versions of the study a question should be added after viewing the video to see if participants recognized what power level they held in the scenario. It is believed that the addition of an attachment measurement and of a perceived power measure would increase the quality of data and results of the current study.

As this study only looked at predation in the form of a target scenario it is suggested that more scenarios be developed to see if socially justified predation such as hunting, or policing elicits the same emotions after arousal. Specifying conditions that surround the anger aggression linkage is another important area that needs to be explored. Several researchers have pointed out that aggression may occur in the absence of anger and solely for the purpose of achieving a goal (Bandura, 1966; Kaufman, 1965; Pepitone, 1964). Recognizing that aggression serves differing goals is the first step towards setting the boundaries linking anger and aggressive behaviour. Classification of “prosocial” aggression, that is for some social purpose, versus the traditional form of aggression would be beneficial for this study. Conditions using prosocial aggression scenarios are hypothesized to elicit similar emotions to control scenarios in the present study or emotions on the positive end of the scale. That is to say, prosocial aggression sequences are not expected to produce levels of anger seen in target scenarios in the current study. While anger is expected and has been shown in this study to mediate hostile aggression it isn’t expected to underlie an aggressive response that had a socially sanctioned reason. To implement the differences background stories could be given for characters in the scenarios. When scripting pro-social aggression scenarios the set up would elude to any aggressive behaviour occurring after the predation sequence would be disciplinary; that is as a by product of trying to accomplish the goal of protection for another person or society or for future deterrence. This would test the hypothesis that antecedents of hostile aggression differ from those of aggressions that serve a social purpose. Another suggested scenario is to include actors that are dissimilar in varying aspects (i.e. dress and age) and therefore lower levels of empathetic arousal that participants may feel. The high degree of similarity in the current study may have increased empathy towards the target and produced lower levels of anger composite and anxiety composite than would be

expected if the actor were dissimilar from the participants. Previous researchers have had similar suggestions regarding similarity influences on vicarious emotional responses (Baron, 1971; Bandura & Rosenthal (1966); & Feshbach, 1964).

Little information is available on predatory behaviour in humans other than what is defined as stalking. Moreover, little information is available on the non-clinical stalker (Meloy, 1998) because this study used a sample from a student population it attempted to gain more of an insight into the behaviour. This study aimed to look at gender, perpetrator and victim perspectives and its connection to emotion. To the knowledge of the author there is no other study that includes both genders and perspectives of both the victim and the perpetrator in a predation situation. Because predation can be viewed in broader terms than stalking it is suggested for future research to encompass more of a broad scope of behaviour that may lead to aggression. Issues such as cyberstalking, identity theft and other forms of predation through technology call for further investigation into the emotions and precursors of the behaviour. This current study may help aid in cognitive emotional therapy of predatory behaviour, and anger related behaviour in general as the anger increase noted here in male responses may be a key factor in treatment. The theoretical basis of this study promotes the treatment perspective that a cognitive reinterpretation of threats or perceived power levels is a vital focus of treatment in conjunction with impulse behavior control.

Tables

Table 1

Means and Standard Deviations on Aggression Questionnaire

Scale	Men (n=72)		Women (n=72)	
	Mean	SD	Mean	SD
Physical	22.03	5.98	19.34	7.12
Verbal	14.79	3.83	14.51	4.23
Anger	16.63	4.93	16.81	6.03
Hostility	22.51	4.77	21.47	6.55
Total Score	75.96	12.56	72.14	19.56

Table 2

Multivariate Test Results Post AAC

Source of Variation	df	F	p
Condition	8	4.28	<.001
Gender	4	6.47	<.001
Actor Gender	4	1.38	.245
Condition*Gender	8	1.22	.289
Condition*Actor Gender	8	1.64	.114
Gender*Actor Gender	4	.35	.843
Condition*Gender*Actor Gender	8	1.51	.152

Table 3

Between Subject Effect Results Post AAC

Source of Variation		df	F	p
Condition				
	Anger	2	7.07	.001
	SubAnger	2	.18	.835
	Anxiety	2	5.49	.005
	General	2	3.28	.041
Gender				
	Anger	1	9.28	.003
	SubAnger	1	.56	.457
	Anxiety	1	2.10	.149
	General	1	.019	.913
Actor Gender				
	Anger	1	.194	.661
	SubAnger	1	2.05	.155
	Anxiety	1	.40	.528
	General	1	.42	.520

Table 4

Post Hoc Tukey's HSD Results MANOVA 1 - Anger

		N	Subset	
			1	2
Tukey HSD	POV Control	48	2.486	
	POV Target	48	2.833	
	POV Predator	48		3.708

Table 5

Post Hoc Tukey's HSD Results - Anxiety

		N	Subset	
			1	2
Tukey HSD	POV Control	48	4.076	
	POV Target	48		5.271
	POV Predator	48		5.347

Table 6

Post Hoc Tukey's HSD Results – SubAnger

	Condition	N	Subset 1
Tukey HSD	POV Control	48	4.326
	POV Target	48	4.340
	POV Predator	48	4.479

Table 7

Percent Changes in Affect Composite Scores

	POV CONTROL		POV PREDATOR		POV TARGET	
	Male	Female	Male	Female	Male	Female
Male SS	n=12	n=12	n=12	n=12	n=12	n=12
Anger	23.68	-17.09	110.17	37.30	47.27	26.76
Sub-Anger	19.71	24.79	27.55	35.93	35.59	65.59
Anxiety	31.25	-1.48	54.87	38.57	24.11	5.93
Female SS	n=12	n=12	n=12	n=12	n=12	n=12
Anger	16.92	-5.21	56.96	31.40	-10.75	23.73
Sub-Anger	10.49	-4.44	51.92	44.35	65.92	79.34
Anxiety	9.09	-6.21	46.67	81.25	38.30	50.00

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Appendices

Appendix A



The University of British Columbia
Office of Research Services
Behavioural Research Ethics Board
Suite 102, 6190 Agronomy Road,
Vancouver, B.C. V6T 1Z3

CERTIFICATE OF APPROVAL - FULL BOARD

PRINCIPAL INVESTIGATOR: Donald G. Dutton	INSTITUTION / DEPARTMENT: UBC/Arts/Psychology, Department of	UBC BREB NUMBER: H07-02236
INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT:		
Institution		Site
UBC		Vancouver (excludes UBC Hospital)
Other locations where the research will be conducted: N/A		

CO-INVESTIGATOR(S): Makenzie Chilton		
SPONSORING AGENCIES: Social Sciences and Humanities Research Council of Canada (SSHRC)		
PROJECT TITLE: An Investigation into Predatory Behaviour.		
REB MEETING DATE: April 10, 2008	CERTIFICATE EXPIRY DATE: April 10, 2009	
DOCUMENTS INCLUDED IN THIS APPROVAL:		DATE APPROVED: November 3, 2008
Document Name	Version	Date
Protocol:		
Proposal	1	January 24, 2008
Consent Forms:		
Consent Form	1	January 24, 2008
Advertisements:		
Poster	1	September 30, 2008
Questionnaire, Questionnaire Cover Letter, Tests:		
Affect Adjective Checklist	N/A	March 19, 2008
Post Video	1	January 24, 2008
Buss Perry Aggression Questionnaire	N/A	January 1, 1992
Demographics	1	January 24, 2008
Other Documents:		
POV Predator Female Actor	N/A	October 17, 2008
Deception Form	1	March 19, 2008
Debriefing Form	2	September 29, 2008
POV Control Male Actor	N/A	October 17, 2008
POV Victim Male Actor	N/A	October 17, 2008

POV Predator Male Actor	N/A	October 17, 2008
POV Control Female Actor	N/A	October 17, 2008
POV Victim Female Actor	N/A	October 17, 2008

The application for ethical review and the document(s) listed above have been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.

***Approval is issued on behalf of the Behavioural Research Ethics Board
and signed electronically by one of the following:***

Appendix B



The University of British Columbia
Office of Research Services
Behavioural Research Ethics Board
Suite 102, 6190 Agronomy Road,
Vancouver, B.C. V6T 1Z3

CERTIFICATE OF APPROVAL- MINIMAL RISK RENEWAL

PRINCIPAL INVESTIGATOR: Donald G. Dutton	DEPARTMENT: UBC/Arts/Psychology, Department of	UBC BREB NUMBER: H07-02236
INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT:		
<small>Institution</small>	<small>Site</small>	
UBC	Vancouver (excludes UBC Hospital)	
Other locations where the research will be conducted: N/A		

CO-INVESTIGATOR(S): Makenzie Chilton
SPONSORING AGENCIES: Social Sciences and Humanities Research Council of Canada (SSHRC)
PROJECT TITLE: An Investigation into Predatory Behaviour.

EXPIRY DATE OF THIS APPROVAL: March 31, 2010

APPROVAL DATE: March 31, 2009

The Annual Renewal for Study have been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.

<i>Approval is issued on behalf of the Behavioural Research Ethics Board</i>
