

Aggression

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Glossary

Aggression Any behavior that harms another individual who is motivated to avoid such harm.

Aggression proneness Personality traits on which high scorers show a tendency to behave aggressively, exhibit high levels of anger, and show high levels of hostility.

Frustration Deprivation of an expected outcome or goal.

Hostile masculinity A set of attitudes characterized by high levels of hostility toward and distrust of women and a strong desire to control and dominate women.

Provocation An action or situation that has the potential to instigate an angry or aggressive response.

Susceptibility to provocation Personality traits on which high scorers show elevated levels of aggression under highly provoking conditions.

Definition of Aggression

Baron and Richardson (1994) define aggression as any act that harms another individual who is motivated to avoid such harm. Such a broad definition can include a wide range of behaviors from those in which no harmful stimulus is introduced – such as intentionally withholding information from another person (or other passive-aggressive behaviors) – to more overt acts of verbal and physical aggression, and at the opposite extreme, the infliction of violence.

Aggression has sometimes been divided into affective (or reactive) and instrumental aggression (see Bushman and Anderson, 2001, for a discussion). Affective aggression, as the name suggests, is aggression associated with negative affect (usually anger). Instrumental aggression is typically goal driven and is relatively devoid of affect. However, the distinction is not entirely clear-cut and as a result, some theorists have advocated abandoning the affective-instrumental distinction (e.g., Bushman and Anderson, 2001; Tedeschi and Felson, 1994).

Measuring Aggression

In the lab, aggression has typically been measured by assessing the number (e.g., Berkowitz, 1962) or intensity (e.g., Taylor, 1967) of electric shocks administered to a target individual. Alternately, intensity of blasts of noxious white noise has been used as a measure of aggression (e.g., Lindsay and Anderson, 2000). A limited number of experiments have relied on the administration of hot sauce (e.g., Lieberman *et al.*, 1999). Still others have utilized measures of verbal hostility (e.g., Berkowitz *et al.*, 1962; Kulik and Brown, 1979), point subtraction (Cherek, 1981), and play behavior (e.g., Bandura *et al.*, 1961). A variety of measures of aggression outside of the lab have been employed, including horn-honking (e.g., Baron, 1976), and personal confrontations (Harris, 1973, 1974), as well as utilizing aggression and violence data from public archives (e.g., Anderson, 1989).

Theories of Aggression

Frustration–Aggression Theory

Although space precludes an exhaustive survey of aggression theories, there are several that should be highlighted. The

Frustration–Aggression Theory emerged from the work of Dollard *et al.* (1939). The original frustration–aggression formulation postulated that frustration (the blocking of a goal-response) was a necessary antecedent of aggression, and that aggression was an inevitable consequence of frustration (Dollard *et al.*, 1939; Miller, 1941). In essence, frustration is the deprivation of some expected outcome, and particularly an outcome that the organism anticipates as pleasurable (Berkowitz, 1989). As Miller (1941) and Berkowitz (1989) contend, whether or not frustration produces an aggressive response depends upon several factors, including proximity of goal attainment and the potential for punishment of aggressive behavioral responses.

Social Learning Theory

Bandura's (1973) Social Learning Theory of aggression assumes that there are features of the environment which foster acquisition of aggressive behavioral responses, as well as their performance and maintenance. Aggressive behavior can be learned by watching someone else behave aggressively, and by imitating that person's behavior. The important thing to keep in mind is that imitation is not necessary for the behavior to be acquired – only that the person attended to the behavior that was modeled initially. Aggression can be maintained in the following ways. First, it can be rewarded. If it is positively reinforced, the response is strengthened and may be used again given the appropriate cues. Reinforcement of aggression in one situation can also increase the likelihood of aggression in other situations (principle of response generalization).

Cognitive Neoassociationist Model

The cognitive neoassociationist model proposed by Berkowitz (1993) is intended to be both a general theory of emotion and an explanation of aggressive behavior. The model suggests that whenever an aversive stimulus is encountered, the individual automatically experiences negative affect. This negative affect will trigger a variety of lower-order associations, leading to the triggering of aggression-related ('fight') and escape-related ('flight') tendencies. These tendencies include aggression and escape-related motor responses, physiological reactions, thoughts, and memories. These two

tendencies may be thought of as associative networks. Once one part of the network has been activated (e.g., motor responses), the other components are also activated. The relative strength of these two tendencies will depend on a number of factors, such as the genetic make-up of the individual, learned responses that the individual has acquired, and the situation itself. If aggression-related tendencies are stronger, the individual will experience rudimentary anger as a result of conscious and preconscious awareness of these aggression-related reactions. Similarly, if escape-related tendencies are stronger, preconscious and conscious awareness of these escape-related reactions will lead to a rudimentary fear experience. Berkowitz notes that in a sense his theory parallels the James-Lange theory of emotion. In essence, it is not the experience of anger or fear that leads to various aggression or escape-related responses, but rather the aggression or escape-related responses that produce anger or fear. Depending on the circumstances, the individual may subsequently engage in higher order cognitive processing regarding the consequences of various courses of action, the severity of the aversive stimulus, and/or the degree to which the aversive stimulus was intentionally or unintentionally induced. Although these higher order cognitions are important in Berkowitz's (1993) model, they are clearly secondary to affect. Such cognitions are not sufficient to trigger aggressive behavior by themselves, but do lead to potential decreases or increases in aggression by enabling the individual to more explicitly examine the cause(s) of the aversive stimulus, as well as potential consequences of aggressive behavior. Berkowitz emphasizes that these higher order cognitions are not necessary for aggression to occur. An individual can become aggressive without engaging in higher order cognitive processing (e.g., crimes of passion). In other words, aggressive behavior does not require a deliberative decision. In many instances individuals may engage in aggressive behavior without any awareness of why they are aggressing.

General Aggression Model

According to the General Aggression Model (GAM; Anderson and Bushman, 2002), there are many input variables that can influence the likelihood of aggressive behavior. Some are individual difference variables (e.g., trait hostility and attitudes toward violence). Others are situational variables (e.g., the presence of guns or other weapons and pain). These inputs can influence aggressive behavior through one or more of three routes: cognition (hostile thoughts, aggression scripts), affect (hostile feelings, expressive motor responses), and arousal (physiological, perceived). Variables traversing these routes can influence a person's immediate appraisal of the situation. This immediate appraisal occurs automatically, and includes an interpretation of the situation (e.g., the potential for harm and malicious intentions of target person) and an interpretation and experience of affect (e.g., anger at target person). Once an immediate appraisal of the situation has been made, reappraisal may occur. Reappraisal is a thoughtful, effortful, and conscious process in which the individual considers additional information concerning the situation, alternative behavioral responses to the situation, feasibility of the various

alternatives, and consequences of carrying out the various alternative behavioral responses. Because reappraisal is an effortful process, it is undertaken only when the individual has sufficient cognitive resources available. At the final stage in the model, the individual makes a choice to aggress or not to aggress.

Situational Antecedents of Aggression

Provocation

Theoretical formulations postulate that people are more likely to be aggressive under provoking situations compared to more neutral, nonprovoking situations (e.g., Berkowitz, 1989, 1990, 1993; Dollard *et al.*, 1939; Geen, 2001; Huesmann, 1998). In this sense, a provocation is an action or situation that potentially instigates an angry and aggressive response from the victim, at least in part because the provoking event is perceived to be intentional and malicious by the victim. Provocations may be conceptualized as either attacks, in which the person is physically assaulted, verbally insulted, or threatened; or as frustrations, in which the person is prevented from achieving a goal (Geen, 2001). Additionally, provocations vary in intensity and, as such, may differ in their potential to elicit an aggressive response (Carlson and Miller, 1988).

In laboratory experiments, provocation may be operationally defined in a number of ways, including physical provocations such as intensity, duration, or quantity of electric shocks or noise blasts received from another individual (i.e., confederate or experimenter; Bushman, 1995; Giancola and Zeichner, 1995; Taylor, 1967); point or monetary penalties during a competitive task (e.g., Bjork *et al.*, 1997; Bjork *et al.*, 2000); verbal provocations such as personal insults (e.g., Caprara *et al.*, 1986), or negative feedback about their intelligence (e.g., Caprara and Renzi, 1981); and frustrations, such as failure to complete a task (e.g., Geen, 1968), or a confederate failing to 'learn' in a learning task paradigm (e.g., Buss, 1963; Rule and Percival, 1971). In general, empirical research and literature reviews show that people are more likely to be aggressive in response to provocations, such as physical attack or verbal insult (e.g., Carlson and Miller, 1988).

Situational Cues

A number of situational cues have been found to interact with provocation to increase aggressive behavioral responses, as well as intervening variables such as anger and accessibility of aggressive cognitions (see, e.g., Carlson *et al.*, 1990). One such cue, weapons and weapon images, has been reliably found to increase aggressive behavioral responses under conditions of high provocation in lab (e.g., Berkowitz and LePage, 1967) and field (Turner *et al.*, 1975), as well as to increase accessibility of aggressive cognitions (e.g., Anderson *et al.*, 1998; Bartholow and Heinz, 2006), and affect (Boyanowsky and Griffiths, 1982).

Various violent media have also been causally linked to aggressive behavioral responses, including televised violence (e.g., Paik and Comstock, 1994), film (e.g., Berkowitz and Geen, 1966), music lyrics (Anderson *et al.*, 2003), and video games

(Anderson *et al.*, 2004). A number of variables have been shown to moderate the effects of various violent media, including realism (e.g., Geen, 1975), similarity of filmed victim to target of aggression (e.g., Berkowitz and Geen, 1966), and the extent to which those modeling violence are rewarded or punished (e.g., Bandura, 1973). Long-term effects of exposure to media violence have also been demonstrated, including increased incidence of aggressive and antisocial behavior into adulthood following exposure to televised violence in childhood (e.g., Huesmann, 1998). In addition, there is evidence that exposure to televised violence over a period of weeks can lead individuals to overestimate their likelihood of being victims of violent crime (e.g., Gerbner *et al.*, 1980), as well as increase levels of fear (Cantor, 1982), anxiety (Bryant *et al.*, 1981), and authoritarian attitudes (e.g., Gerbner *et al.*, 1982).

Environmental Influences

Heat

Archival research of geographic regions show that violent crime rates are higher for cities in warm climates (e.g., Los Angeles, Houston, and Miami) than equivalent-sized cities in cooler climates (e.g., Minneapolis, Seattle, and Chicago) even when socioeconomic and cultural factors (such as poverty) are statistically controlled for (e.g., Anderson, 1989, 2001; Anderson and Anderson, 1996, 1998). Time period studies show that violent crimes are more likely to occur during warm-weather months than on cold-weather months, and also that violent crimes tend to be more common in hot years than in cooler years and that the usual summer increase in violent crime is magnified during hotter years (Anderson *et al.*, 1997).

Lead exposure

There is increasing evidence that there is a link between lead exposure in early childhood and violence, and that a reduction in lead exposure is associated with decreases in violent behavior. Nevin (2000) found that when a lag time of 23 years was added, 90% of the variability in violent crime in the United States could be accounted for by exposure to lead emissions from gasoline-powered vehicles. Nevin (2007) subsequently conducted a cross-national analysis that largely replicated his previous findings: The curves in lead exposure were statistically linked with the curves in violent crime in the UK, West Germany, Canada, Australia, Finland, France, Italy, and New Zealand. Mielke and Zahran (2012) examined six United States cities with both good lead data and good crime data dating back to the 1950s, finding significant correlations between lead exposure and violent crime in all locations examined. Of course, in areas where lead exposure has declined slowly, violent crime has declined slowly as well (Reyes, 2007). At the neurological level, MRI scans reveal that lead exposure degrades the formation and structure of myelin, which decreases the efficiency with which neurons can communicate with each other (Brubaker *et al.*, 2009). Furthermore, there is evidence that lead exposure is associated with a decrease in neuronal density in the prefrontal area of the cerebral cortex, which is the part of the brain responsible for emotional regulation, impulse control, and reasoning (Cecil *et al.*, 2007).

Personal Antecedents of Aggression

Individual Differences

Research on personality traits related to aggression suggest at least two broad classes of traits: aggression proneness and susceptibility to provocation (Bettencourt *et al.*, 2006). Traits that fall under the category of aggression proneness, such as trait aggressiveness (Buss and Perry, 1992), are characterized by a general propensity to engage in acts of physical and verbal aggression, a proneness to anger, and a proneness to hold hostile beliefs about other people. Research shows a major effect of aggressiveness on aggressive behavior under both neutral and provoking conditions (Bjork *et al.*, 2000; Bushman, 1995). For example, in one study (Bushman, 1995), participants playing a competitive reaction time game with an opponent received noise blasts of increasing intensity (provocation level manipulation) after each trial that they lost and were in turn given the opportunity to deliver noise blasts to their opponent after each trial that they won. The results showed that participants who scored high in trait aggressiveness delivered noise blasts of higher intensity than individuals scoring low in trait aggressiveness, regardless of provocation level. In addition, high trait aggressive individuals have been shown to have chronically accessible aggression-related knowledge structures compared to low-trait aggressive individuals (Bushman, 1996). Overall, the majority of the findings suggest that those who are high in trait aggressiveness are more aggressive than those low in trait aggressiveness and that this difference is observed even when conditions are neutral and aggression is inappropriate.

Traits that fall under the category of susceptibility to provocation generally show an interaction with provocation, in which high-trait individuals only show more aggression than their low-trait peers under conditions of high provocation (Bettencourt *et al.*, 2006). One such trait is the Type A or coronary prone personality. Type A individuals typically experience feelings of irritation when provoked or frustrated (e.g., Glass *et al.*, 1974). In addition, provoked Type A individuals have been found to report a greater desire to harm a confederate (Check and Dyck, 1986). Several studies show an interaction of Type A and provocation on aggression, suggesting that Type A individuals are more aggressive than Type B individuals under provoking conditions than under neutral conditions (Carver and Glass, 1978; Muntaner *et al.*, 1989; Strube *et al.*, 1984). Another such trait, narcissism (also referred to as high, unstable self-esteem) has been shown to interact with provocation (e.g., Bushman and Baumeister, 1998). For example, Rhodewalt and Morf (1995, 1998) have found that narcissists show higher levels of anger and hostile attitudes toward others when provoked relative to their non-narcissistic peers. Bushman and Baumeister (1998) found that narcissists responded more aggressively under highly provoking conditions than their non-narcissistic peers.

In terms of stability, there is considerable evidence that aggressiveness is consistent across time in both adults and children (e.g., Eron and Huesmann, 1990; Olweus, 1979). Olweus (1979), for example, reviewed longitudinal research on aggressive behavior in children and found to be highly consistent from early childhood on through adolescence.

Eron and Huesmann's (1990) longitudinal research demonstrated that aggressive behavioral patterns remained consistent from childhood well into adulthood.

Attitudes

Individual differences in attitudes toward aggression and violence are also potential predictors of aggressive behavior. Research on the revised attitudes toward violence scale showed that it predicted both self-reported verbal and physical aggression (Anderson *et al.*, 2006). Self-report studies reveal that men who are high in hostile masculinity report that they are in acts of sexual aggression against women to a greater degree than men who are low in hostile masculinity (Malamuth *et al.*, 1995). Right-wing authoritarianism, to the extent that it measures attitudes toward authoritarian aggression, has been shown to be a predictor of higher levels of electric shock in at least one laboratory experiment (Altemeyer, 1981).

Although attitudes themselves are considered generally stable (Baron and Richardson, 1994), some short-term fluctuations in various attitudes toward violence have been detected under certain circumstances. In a longitudinal study conducted by Carnagey and Anderson (2007), the authors found evidence of an increased favorability in attitudes toward war following the 11 September 2001 terrorist attacks on the World Trade Center and the Pentagon. Crandall *et al.* (2009) demonstrated that status-quo framing influences attitudes toward torture much like with other types of attitudes. Specifically, Crandall *et al.* (2009) showed that attitudes toward torture were more favorable when torture was framed as status quo than when framed as novel. Gronke *et al.* (2010) recently published data showing that most Americans during the previous decade were willing to support the use of torture only if it was perceived to help thwart future terrorist attacks.

Gender

The research on gender differences suggests that males are somewhat more likely to show higher levels of overt physical aggression than females (e.g., Eagly and Steffen, 1986). The extent of that difference probably depends on a number of moderating factors, such as whether or not aggressive responses are required in an experimental situation or are freely chosen, and the strength of provocation (Eagly and Wood, 1991). Under conditions of high provocation, males and females are statistically equivalent on measures of verbal aggression (Bettencourt and Miller, 1996). Additionally, although males generally show more direct aggression, females tend to show more indirect aggression (Baron and Richardson, 1994; Crick (1995)).

Mental Illness

The research on mental illness and aggression (and more specifically, violent behavior) has been mixed (Stuart, 2003). However, there is data to support the assertion that those individuals who have severe mental illnesses, such as paranoid schizophrenia, are no more and no less prone to violent

behavior than individuals who are not mentally ill (Stuart, 2003). Recent evidence suggests that other factors, such as alcohol or drug use (Stuart and Arboleda-Florez, 2001; Swanson, 1994), or low socioeconomic status (Monahan *et al.*, 2001), are better indicators of the potential for violence than mental illness.

One mental illness that has been experimentally linked to aggression is clinical depression. There is some evidence that individuals who are experimentally induced to feel depressed tend to behave more aggressively than individuals who are induced to be in a neutral or positive mood (e.g., Berkowitz and Troccoli, 1990; Hynan and Grush, 1986), and that those who are placed into a tryptophan-depletion condition tend to behave more aggressively than those in a control condition (Bjork *et al.*, 2000). Examining actual psychiatric patients, Bjork *et al.* (1997) have presented some evidence that clinically depressed individuals who are highly provoked behave more aggressively than similarly provoked nondepressed individuals. However, it should be noted that Bjork *et al.* (1997) only found this effect among female participants.

Physiological Factors

Brain Damage and Aggression

Another factor that may play a role in aggressive and violent behavior is that of damage to the brain. In primates, there is some evidence that removal of the amygdala leads to a reduction in aggressive behavior (Rosvold *et al.*, 1954). In humans, there is evidence that the lesioning of the amygdala reduces violence associated with temporal lobe seizures (Mark and Ervin, 1970). There is also evidence that reduction in orbitofrontal cortex activity is associated with antisocial behavior, including violence (Davidson *et al.*, 2000). Davidson *et al.* (2000) compared violent criminals with typical research participants and observed lower orbitofrontal activity in the violent criminals. In addition, abnormalities in the autonomic nervous system may be involved in aggressive and violent behavior. Umhau *et al.* (2002) had perpetrators of domestic violence and typical research participants move from a resting to standing position, and remain standing for 5 min. In the sample of perpetrators, the expected increase in heart rate upon standing did not occur. The researchers concluded that the lack of heart rate increase was due potentially to abnormalities in the vagus nerve.

Testosterone

Numerous studies of a variety of pre-primate animal species have demonstrated that androgens, especially testosterone, facilitate aggressiveness between males (Archer, 1991). Specifically, the presence of testosterone early in the life of an animal is instrumental in establishing the biological readiness for a number of functions, including sexual and aggressive behavior (Rada *et al.*, 1976; Rubinow and Schmidt, 1996). However, although there does appear to be a causal relationship between testosterone and aggression in pre-primate species, the relationship has been difficult to demonstrate in primates (Albert *et al.*, 1993; Archer, 1991). Furthermore,

attempts to establish a relationship between testosterone and aggression in humans have been equally problematic (Archer, 1991). Several studies over the last three decades have shown a significant positive relationship between testosterone and aggression in humans (e.g., Dabbs and Morris, 1990). However, there have also been a number of notable failures to demonstrate a significant relationship (e.g., Coccaro *et al.*, 2007). Although some reviewers have concluded that there is a causal relationship between testosterone and aggression in humans (e.g., Rubin *et al.*, 1981), others have suggested that the results of this research is inconclusive (e.g., Albert *et al.*, 1993; Archer, 1991), and that psychosocial factors play a more important role in determining aggression (Benton, 1992).

Psychoactive Drugs and Aggression

There is now ample evidence from multiple experiments that alcohol consumption is causally related to increased aggression in both men (e.g., Bushman and Cooper, 1990; Giancola *et al.*, 2009) and women (e.g., Giancola *et al.*, 2009), although the effect of alcohol on aggression appears to be stronger in men (e.g., Giancola *et al.*, 2009). Other psychoactive depressants that have been causally linked to aggression include benzodiazepenes (e.g., Berman and Taylor, 1995; Gantner and Taylor, 1988) and codeine (Berman *et al.*, 1993). One substance shown to suppress the effects of provocation is tetrahydrocannabinol, the active ingredient in marijuana (e.g., Myerscough and Taylor, 1985; Taylor *et al.*, 1976). The research on central nervous system (CNS) stimulants has been quite mixed (Bushman, 1993). Although cocaine has been experimentally linked to aggression (Licata *et al.*, 1993), no evidence of a link between amphetamine ingestion and aggression has been found (e.g., Beezley *et al.*, 1987).

See also: Bullying. Children and Adolescents: Television, Computers, and Media Viewing. Depression. Intimate Partner Violence. Rape and Sexual Assault. Survivors of Mass Shooting Incidents: The Response of Mental Health. Toxins, Pollutants, and Mental Health. Video Games and Mental Health. Violent Media Effects: Theory and Evidence

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