General Aggression Model

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The study of human aggression has led to the development of many theoretical explanations. Although these theories provide excellent explanations of aggression in specific domains, they are lacking in generality. The general aggression model (GAM; Anderson & Bushman, 2002; Anderson & Carnagey, 2004; Anderson & Huesmann, 2003; DeWall, Anderson, & Bushman, 2011, 2012) is an integrative, bio-social-cognitive, developmental approach to understanding aggression that incorporates the best aspects of many domain-specific theories of aggression and takes into account a wide range of factors that affect aggression. This entry summarizes definitions of important concepts, theoretical precursors to the GAM, and the structure and function of the GAM.

The GAM has been applied to the understanding of intimate partner violence, intergroup violence, temperature effects, media violence effects, male-on-female aggression, male-on-male aggression in sexual competition, violence associated with global climate change, suicide, and personality disorders that have an aggression or violence component. It also has been used to create aggression interventions.

Concept definitions

Aggression

Aggression is defined as behavior that is intentionally carried out with the proximate goal of causing harm to another person who is motivated to avoid that harm (DeWall, Anderson, & Bushman, 2012). This definition includes three important characteristics. First, aggression is an observable behavior. Thinking about harming someone or feeling angry is not aggression—aggression requires action. Second, the aggressive behavior must be intended to harm. Accidentally bumping into someone is not considered aggression because it lacks intentionality, regardless of whatever harm occurs. Similarly, the act of giving a child a painful flu shot is not considered aggression, even though the act is intentional, because the primary intent is to protect rather than to harm. In other words, because the pain is incidental and is inherent in the protective act of giving the injection, this behavior is not considered aggression. Third, the victim must be motivated to avoid the harm. Cases of masochism, for example, where an individual derives pleasure (often sexual) from being harmed, are not considered aggression. Similarly, cases of assisted suicide of a loved one are not considered instances of aggression.

Violence

Violence is defined as aggression that has serious physical harm (e.g., injury requiring medical attention or causing death) as its ultimate goal (DeWall, Anderson, & Bushman, 2012). Actual harm does not have to occur for an action to be considered violent. For example, shooting a gun at someone but missing the target person is still considered a violent behavior. All acts of violence are considered acts of aggression but not all acts of aggression are considered violent. For example, a child pushing another child away to guard a favored toy would be considered aggressive but not violent.

Forms of aggression

Many forms of aggression exist; the most frequently identified forms are physical, verbal, and relational. Physical aggression is behavior that involves physical actions intended to harm, such as hitting, kicking, stabbing, or beating the target. It can also include intentionally damaging the target person's property, such as breaking his or her windows. Verbal aggression makes use of verbal behavior to harm the target person, such as yelling, name calling, and spreading rumors. Relational aggression is behavior that is intended to harm the target person's social relationships. It includes spreading rumors (and thus overlaps with verbal aggression), telling lies, and distributing embarrassing photos—basically any behavior that is intended to harm the target's interpersonal relationships. A less well-researched form of aggression is called *passive aggression.* This involves intentionally behaving in ways that allow harm to befall a target person, such as not inviting a person to a social event or ignoring the person in a social context that generally calls for pleasant social interactions.

Conceptual distinctions

Over time, several distinctions—many dichotomous—have arisen in the study of aggression. This section briefly describes the traditional distinctions and then describes a newer, multidimensional classification approach derived from the GAM.

Reactive versus proactive aggression

The distinction between reactive and proactive aggression subsumes many other proposed dichotomies. Reactive aggression (also known as hostile, affective, angry, impulsive, and retaliatory aggression) is considered affectively "hot," whereas proactive aggression (also known as planned, thoughtful, or instrumental aggression) is considered affectively "cold" (DeWall, Anderson, & Bushman, 2012). Reactive aggression always occurs in response to some provocation, typically is impulsive, includes feelings of anger, and is motivated primarily by a desire to harm someone, whereas proactive aggression typically is premeditated, thoughtful, unemotional, and primarily motivated by a goal other than harm, such as to gain money. The harm, though intended, is purely a means to an instrumental end.

In practice, it often is incredibly difficult (if not impossible) to categorize aggressive behavior as being either reactive or proactive aggression, because the two are highly correlated and motives are often mixed. For example, if a woman has been repeatedly abused by her partner she may feel the "heat" of anger and hatred, but, instead of retaliating impulsively and immediately, she may "coolly" plot a slow and torturous death for her abuser. This example has elements of both reactive and proactive aggression and shows how a strictly *dichotomous* approach falls short. In fact, much proactive aggression has a "hot" emotional aspect to it, making it similar to reactive aggression. Similarly, many acts of reactive aggression are responsive to other cues in the environment, such as whether or not the target person who has just insulted you is holding a handgun. This makes the reactive aggression similar to thoughtful or planned aggression.

Direct versus indirect aggression

Aggression can be direct or indirect (DeWall, Anderson, & Bushman, 2012). In direct aggression the victim is present, whereas in indirect aggression the victim is absent. For example, kicking another person is direct physical aggression, whereas slashing a person's car tires while he or she is elsewhere is indirect physical aggression. Similarly, insulting a person to their face is direct verbal aggression whereas spreading rumors behind their back is indirect verbal aggression.

Displaced and triggered displaced aggression

Aggression can also be displaced (DeWall, Anderson, & Bushman, 2012). Displaced aggression occurs when an individual aggresses against a substitute target who is innocent (i.e., not responsible for the aggressor's current desire to aggress). For example, if a woman is insulted by a coworker, she may resist the urge to aggress against that coworker and instead yell at her husband when she gets home. Triggered displaced aggression occurs when the substitute target behaves in a manner that *sets off* or *triggers* the aggression with some, usually minor offense. For example, if the woman from the previous example came home to find that her husband had not yet done the dishes as he had promised, that minor event would likely serve as a trigger for displaced aggression. Displaced aggression often occurs when the target is unavailable (e.g., not physically present), when the target is an intangible entity (e.g., heat, foul odor), or when the potential aggressor fears retaliation (e.g., being fired or physically harmed) from the primary instigating target.

Categorization with the general aggression model

To avoid the ambiguity sometimes associated with strict dichotomous approaches, the GAM distinguishes between the proximate and ultimate goals of aggression (Anderson & Carnagey, 2004). For a behavior to be considered aggression, the proximate (i.e., immediate) goal must be to harm, but the ultimate goal can vary and serves as the

broader motivation for carrying out that behavior. The ultimate goal can be reactive (e.g., to retaliate), proactive (e.g., obtaining money, sex, or goods), or a mixture of the two.

The GAM also addresses ambiguity associated with the direct vs. indirect aggression *dichotomy*. The traditional direct/indirect dichotomy confounds the visibility of the aggressive act and actor to the victim and the propinquity to the act that actually produces the harm. For example, if a jury sentences a prisoner to death, this can be considered direct aggression because the victim (the prisoner in this case) is present. However, the actual execution will take place outside a courtroom at a later date and members of the jury may not be present, making the act indirect as well. To solve this problem, aggression can be classified on the *dimensions* of visibility and propinquity. The above example would be high on visibility but low on propinquity.

Finally, one proposed solution to the problems created by strict dichotomies is to recognize that any aggressive behavior can be assessed along four key dimensions: the amount of hostile or agitated affect present; the automaticity of a specific thought, feeling, or action; how much the ultimate goal involves benefiting the aggressor versus harming the victim; and how much the aggressor considers the consequences of his or her behavior (DeWall, Anderson, & Bushman, 2011). This dimensional scheme provides researchers and clinicians with a comprehensive assessment of aggression that can be dissected to guide aggression research or interventions aimed at reducing aggression.

Theoretical precursors

The GAM was developed to integrate several domain-specific theories that have been used to explain aggression in order to provide a more comprehensive framework of aggression theory. This section covers the six main theoretical precursors, including an early version of the GAM.

Cognitive neoassociation theory

Cognitive neoassociation theory (Berkowitz, 1989, 1990) proposes that aversive events (e.g., provocations, frustrations, uncomfortable temperatures) produce negative affect, which in turn automatically stimulates thoughts, memories, expressive motor reactions, and physiological reactions associated with fight-or-flight tendencies. Fight associations give rise to feelings of anger, while flight associations give rise to feelings of fear. Any cues present during an aversive event can become associated with that event and the triggered responses. These associations are linked together in associative memory structures (Collins & Loftus, 1975). For example, the concept of *gun* could be linked to several similar aggressive concepts as well as a script for retaliation. Strong associations are developed between concepts with similar meanings (e.g., *hurt* and *harm*) and between concepts that frequently are activated simultaneously (e.g., *shoot* and *gun*). The latter idea is based on the learning principle that states that "neurons that fire together wire together." Spreading activation models further specify that the priming or activation of one concept tends to activate other linked concepts.

Higher order cognitive processes (such as appraisals and attributions) are also accounted for by cognitive neoassociation theory. With sufficient motivation, individuals can think about their feelings, make attributions about why they feel that way, and consider the possible outcomes of acting on those feelings. This process can produce a clearer experience of anger, fear, or both, and can encourage or discourage the action tendencies associated with those emotions. Cognitive neoassociation theory is especially well suited to explaining reactive aggression, but the model of priming and spreading activation is also relevant to other types of aggression.

Social learning theory

Social learning theory (Bandura, 2001; Mischel & Shoda, 1995) emphasizes that the development of aggressive behavior occurs through both direct experience and observational learning. For example, children who see someone being rewarded for acting aggressively are particularly likely to behave aggressively themselves. When social learning occurs, individuals do not just imitate what they see—they make cognitive inferences about what is observed, which can lead to changes in the beliefs and expectations that guide future social behavior. Social learning theory is well suited to explaining the acquisition and performance of aggressive behaviors and the use of proactive aggression.

Script theory

Script theory (Huesmann, 1986, 1998) serves as a more specific and detailed explanation of social learning processes. Scripts are well-rehearsed, highly associated sequences of events in a person's memory that usually involve enabling conditions, goals, action plans, and causal links (Anderson & Bushman, 2002). By definition, separate script items are linked together so strongly that they almost become a single knowledge structure in a person's memory network. A person's expectations and behaviors regarding certain social situations can be changed with just a few script rehearsals, and more frequent rehearsal increases script strength and accessibility. This occurs for two reasons: More rehearsals create more links to other concepts in memory, which increases the number of paths through which the script can be activated, and more rehearsals increase the strength of the links between concepts within the script. Thus, if a child has witnessed (live or through media) hundreds of examples of responding to a personal insult by punching the insulter, that child is likely to have a chronically accessible aggressive script about insults. Script theory excels at explaining the generalization of social learning processes as well as the automatization of complex behaviors.

Excitation transfer theory

According to excitation transfer theory (Zillmann & Bryant, 1974), physiological arousal dissipates slowly. Once an arousing event occurs (e.g., exercise), residual arousal from that event can be misattributed to a subsequent event (e.g., an argument).

If the second event incites anger, the individual is likely to feel especially angry due to the residual arousal. Moreover, if the individual labels himself or herself as angry, that person can remain angry and ready to aggress for long periods of time, even after the initial (e.g., exercise-induced) arousal has subsided.

Social interaction theory

According to social interaction theory (Tedeschi & Felson, 1994), aggression (or coercion) is a form of social influence behavior used to change the behavior of others. Following this theory, individuals decide whether or not to aggress (or coerce) based upon the expected rewards, costs, and likelihood of success. People may aggress to obtain valuable commodities (e.g., information, sex, money), to establish social and self-identities (e.g., ruthlessness, competence), or to obtain justice (e.g., defending one's honor after a personal insult). Social interaction theory is particularly well suited to explaining proactive aggression motivated by higher goals (e.g., money, power) and reactive aggression that stems from threats to self-esteem—especially the unjustifiably high self-esteem of narcissism.

General affective aggression model

Before the GAM there was the general affective aggression model (GAAM; Anderson, Anderson, & Deuser, 1996; Anderson, Deuser, & DeNeve, 1995), which served as the first attempt to integrate the theories discussed above. Because the structure of the GAAM is simply a rudimentary form of that of the GAM, details concerning the GAAM will not be presented here.

The general aggression model: An integrative approach

Although the theories described above provide excellent explanations for aggression in specific domains, they lack generality. The GAM draws from these more specific theories to create an integrative and comprehensive framework for the study of human aggression (Anderson & Bushman, 2002). The GAM improves upon previous theories as explanations for aggression in four important ways. First, it is more parsimonious than its theoretical precursors. Second, it better explains aggression based on multiple motives. Third, it provides a multidimensional classification scheme for human aggression that allows one to focus on multiple aspects influencing aggressive behavior instead of the narrow scope provided by previous theories (DeWall, Anderson, & Bushman, 2011). Fourth, it allows parents, teachers, therapists, and policymakers to make better decisions concerning child rearing by giving a broader view of developmental issues. The GAM makes no effort to improve upon its theoretical precursors as they are applied outside the domain of aggression.

The GAM adopts a knowledge structure approach that draws heavily from research on how knowledge structures affect perception, interpretation, decision making, and

action (Bargh, 1996; Collins & Loftus, 1975; Fiske & Taylor, 1991; Higgins, 1996; Wegner & Bargh, 1998). Knowledge structures: develop from experience; influence perception at multiple levels—from simple object perception to complex interpersonal perception; can become automatized with practice; can be linked to or contain affect, behaviors, and beliefs; and can influence interpretations and guide behavior. Affect is embedded in knowledge structures in three ways. First, knowledge structures contain affect *nodes* or concepts—such as anger—that are activated when relevant knowledge structures are used. Second, they contain knowledge about affect (e.g., when it is appropriate to feel angry, how anger influences behavior). Third, some scripts include affect as an *action rule*, prescribing that some behaviors should occur only if the appropriate type and level of affect is present. For example, an action rule might prescribe aggressing against another person after they have insulted you, but only if you are very angry.

Schemata and scripts are examples of important knowledge structures. Perceptual schemata influence our perceptions in many ways, ranging from the identification of objects (e.g., bed or chair) to the understanding of social events (e.g., people laughing with you vs. people laughing at you). Person schemata include our beliefs about specific people and groups of people (e.g., Barack Obama or politicians). Behavioral scripts provide people with information about how they should behave in different situations depending on the role they adopt (e.g., customer in restaurant vs. waiter in restaurant).

Proximal factors

The GAM adopts a dynamic, episodic, "person in the situation" approach to explain aggression. The model separates each episode of aggressive behavior into three phases: inputs, routes, and outcomes (see the lower portion of Figure 1). The first phase (inputs) focuses on the influence of personological and situational variables. The second phase (routes) focuses on how input variables influence affect, cognition, and arousal to create an individual's present internal state. The third phase (outcomes) focuses on how that present internal state influences appraisal and decision processes that then lead to either thoughtful or impulsive action. That action then influences the social encounter and feeds back into personological and situational variables, repeating the process. These relatively immediate, episodic processes constitute the proximal factors of the GAM. Each *episode* of the GAM serves as a learning trial that also influences distal biological and environmental modifiers, which in turn affect personality by altering knowledge structures.

Phase one: Inputs

Phase one of the GAM focuses on personological and situational input variables that increase or decrease the likelihood of aggressive behavior by influencing a person's present internal state (i.e., affect, cognitions, and arousal).
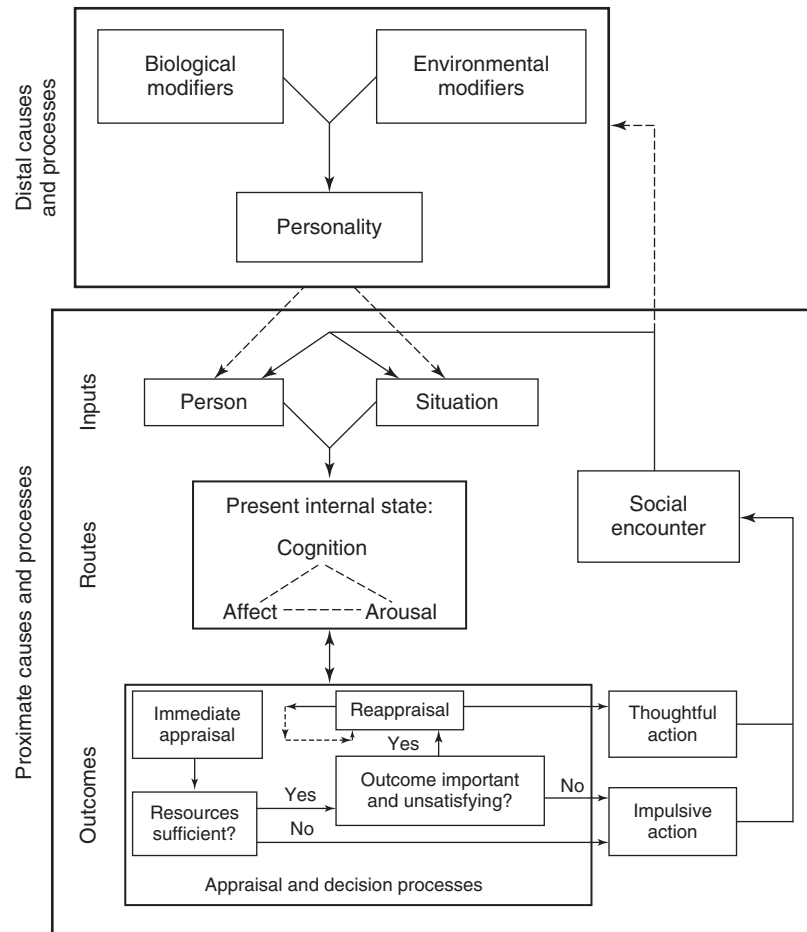
Figure 1 The general aggression model separates each episode of aggressive behavior into three phases: inputs, routes, and outcomes. Proximate causes and processes explain single episodes of aggression and are influenced by distal causes and processes. Each episode of aggression immediately influences subsequent episodes of aggression at the proximate level by altering person and situation factors. Repeated episodes of aggression also influence distal causes and processes, which can lead to personality change over time by altering knowledge structures.

Personological input variables (or person factors) are personal characteristics that influence how a person reacts in a situation. Most are relatively stable across time, situations, or both, to the extent that a person consistently uses the same scripts, schemata, and other knowledge structures (Mischel & Shoda, 1995). In this sense, personality can be considered the sum of an individual's knowledge structures. Aggressive knowledge structures predispose people toward aggression.

Person factors that serve as a risk for increased aggression include but are not limited to the following: unstable high self-esteem; narcissism; self-image; long-term goals; self-efficacy beliefs for violent and nonviolent behavior; normative beliefs about aggression, retaliation, and so on; attitudes toward violence; hostile attribution,

expectation, and perception biases; aggression scripts; dehumanization of others; cultural stereotypes; moral justifications for violence; and displacement of responsibility (Anderson & Carnagey, 2004). For example, individuals with hostile attribution, perception, and expectation biases are more likely to aggress than people without those biases. That is because such people tend to interpret ambiguous behavior in hostile ways, which makes them angry and desirous of retaliation. Similarly, people who believe that aggression is common and acceptable are more likely to aggress than those who believe aggression is uncommon and unacceptable.

Situational input variables (or situation factors) include important aspects of situations that interact with person factors to stimulate or inhibit aggression. Situation factors that serve as a risk for increased aggression include but are not limited to the following: social stress, provocation, frustration, pain and discomfort, bad moods, weapons, violent scenes, violent media, noise, temperature, threatening or fearful stimuli, exercise, and alcohol and other drugs (Anderson & Carnagey, 2004). For example, the mere presence of guns (as compared to the presence of badminton racquets and shuttlecocks) can increase the aggressive behavior of angered individuals. Similarly, people are more likely to be aggressive after being exposed to violent media (as compared to nonviolent media).

Phase two: Routes (present internal state)

The next phase of the episodic cycle focuses on the routes through which input variables influence outcomes: affect, cognition, and arousal. Together these three routes comprise an individual's present internal state, which encourages or discourages aggressive behavior by affecting appraisal and decision processes. The three routes also interactively and bidirectionally influence each other. For example, affect can influence cognitions and arousal, and cognitions and arousal can influence affect. If someone bumps into you thereby making you spill your drink, and if you decide that it was intentional, that cognitive attribution of having been intentionally harmed increases the likelihood that you will get angry, which in turn increases physiological arousal and may trigger the fight-or-flight system. One conceptual difference between the GAM and cognitive neoassociation is that the GAM does not assume that negative affect always precedes aggressive cognitions or arousal. Any state can arise first and then influence the others.

Input variables can influence mood and emotions (i.e., affect). For example, personality variables such as trait hostility are positively related to state hostility. Situational variables such as pain can increase state hostility and anger. Uncomfortable temperatures are also associated with small increases in general negative affect and large increases in aggressive affect.

Input variables can encourage hostile thoughts (i.e., cognitions). Concepts can become chronically accessible with frequent activation (as occurs with scripts), or they can be made accessible for a short time by immediate situational activation. A short-term increase in the accessibility of a concept is known as *priming*. Aggressive priming can occur after exposure to factors such as media violence. Person and

situation factors can also lead to the development of highly accessible aggressive scripts (Huesmann, 1998) and hostile attribution biases.

Input variables can increase physiological and psychological arousal (as with exercise), or decrease physiological and psychological arousal (as with alcohol). Arousal can influence aggression in three ways. First, arousal from irrelevant sources can stimulate dominant action tendencies. If an individual happens to be provoked while already in a state of high arousal, aggressive action tendencies can be strengthened. Second, arousal from irrelevant sources can be misattributed as anger, encouraging anger-motivated aggressive behavior, as in excitation transfer. Third, unusually high or low levels of arousal may be unpleasant states that encourage aggression in the same way that high temperatures or physical discomfort do.

Phase three: Outcomes

The third phase of the episodic model focuses on the outcome of the event through the examination of appraisal and decision processes that lead to thoughtful or impulsive actions. These actions then influence the social encounter, which in turn influences person and situation factors, repeating the cycle.

The initial step of the appraisal and decision process is immediate appraisal. Immediate appraisal occurs automatically—that is, spontaneously, unconsciously, and with relatively little or no effort. Person and situation factors determine the content of the immediate appraisal by changing an individual's present internal state. For example, if someone is walking and thinking aggressive thoughts and then gets splashed by a car passing through a puddle, the walker is relatively likely to interpret the splash as aggression from the driver (a person inference). If, however, the walker had been thinking about how hard it is for cars to avoid driving through puddles, the walker is much more likely to consider the splash an accidental by-product of the situation (a situational inference). Individuals with a hostile attribution bias are especially likely to automatically interpret the harmful behavior of others as intentionally aggressive.

Immediate appraisals include affective (e.g., anger), goal (e.g., retaliation), and intention (e.g., intent to retaliate) information. The selected action, however, varies greatly from person to person depending on the individual's personality (i.e., social learning history) and the current accessibility of various knowledge structures (i.e., present internal state).

After immediate appraisal occurs, action decisions are made based upon available resources. If resources (i.e., time and cognitive capacity) are sufficient, and if the outcome of the immediate appraisal is both important and unsatisfying, the person will engage in more effortful reappraisal processes, which involves seeking out alternative views of the situation. If any of the above criteria are not met, the person will carry out an impulsive action, which can be aggressive or nonaggressive depending on the content of the immediate appraisal.

The reappraisal process can go through multiple cycles before a decision is made, and any reappraisal can feed back into and change a person's present internal state. If the walker from the previous example decides that the driver *did* intend to splash him or her, the walker may ruminate about the event, leading to increased aggressive

cognition. Reappraisal leads to thoughtful actions. Such actions can be aggressive or nonaggressive.

The action that is selected and enacted then influences the social encounter. For example, if the walker impulsively decides to yell at the driver, the driver may pull over and argue with the walker—possibly inciting a physical altercation between the two. A social encounter also influences person and situation factors. Following the previous example, the walker might develop a hostile attribution bias toward drivers on rainy days that predisposes him or her toward future aggression. The walker may also choose to avoid similar situations in the future.

Distal factors

In addition to the proximal factors discussed above, biological and environmental modifiers influence an individual's personality and serve as distal factors (Anderson & Carnagey, 2004). Changes in personality feed back into the episodic model by influencing input variables. Conversely, the outcome of each episode influences biological and environmental modifiers in turn (as shown in Figure 1). Each episode of the GAM can be considered a learning trial that either stimulates or inhibits the development of aggressive knowledge structures (and thus an aggressive personality).

Biological modifiers

Biological modifiers interact with environmental modifiers to influence an individual's personality. Biological modifiers that serve as risk factors for the development of an aggressive personality include but are not limited to the following: low arousal, low serotonin, attention deficit hyperactivity disorder, hormone imbalances, and executive functioning deficits (Anderson & Carnagey, 2004). For example, there is a positive relation between testosterone and aggression. People with higher testosterone levels tend to exhibit more aggression of many types, and increases in testosterone are experienced after exerting dominance over others. Similarly, low executive functioning is related to greater aggression, with effect sizes ranging from medium to large.

Environmental modifiers

Environmental modifiers can also influence the development of an aggressive personality. Environmental modifiers that serve as risk factors include but are not limited to the following: maladaptive families and parenting, violent neighborhood, cultural norms that support violence, victimization experiences, deprivation, difficult life conditions, group conflict, fear-inducing events, lack of bystander intervention in violent encounters, diffusion of responsibility, repeated exposure to violent media, and association with antisocial peers (Anderson & Carnagey, 2004). For example, ineffective parenting and coercive family interaction styles are associated with the development of aggressive behavior in children. Additionally, ubiquitous violent media exposure can serve

as a (distal) environmental risk factor in addition to a (proximal) situational risk factor. Violent media exposure (compared to nonviolent media exposure) causes people to behave more aggressively and less prosocially (Anderson et al., 2010), and the overall effect size for this relation is larger than that for the relation between passive smoking and lung cancer, homework and academic achievement, and many other practically significant examples (Bushman & Anderson, 2001).

Impact on personality and situations

As mentioned previously, each proximate episode of the GAM can be considered a learning trial. Biological and environmental modifiers work together to distally influence each learning trial, creating biosocial interactions. These biosocial interactions shape the development of knowledge structures (Anderson & Carnagey, 2004). For example, repeated exposure to violent media encourages the learning, rehearsal, and reinforcement of aggression-related knowledge structures that can influence important aggression-related variables. Individuals may develop aggressive beliefs and attitudes (e.g., "aggression is useful and acceptable"), aggressive perceptual schemata (e.g., a tendency to interpret ambiguous actions as hostile), aggressive expectation schemata (e.g., a tendency to expect others to be hostile), or aggressive behavior scripts (e.g., "when someone makes you angry, you should hit them"), or they may become desensitized to aggression (i.e., experiencing less physical and emotional arousal in response to aggression). With sufficient development, these variables change an individual's personality, making it more aggressive. The individual's altered personality then feeds back into the proximate factors of the GAM. For example, the development of an aggressive personality may include the development of aggressive expectation schemata, which serves as an aggression-relevant person factor. Similarly, aggressive individuals are more likely to seek out situations that encourage further aggression (e.g., being around weapons or getting into arguments).

Extensions and conclusions

It is worth noting that, although the GAM was developed to understand human aggression, the same episodic, learning trial approach can be used to explain the development of nonaggressive or prosocial personalities. For instance, to reverse the above example, repeated exposure to prosocial media encourages the learning, rehearsal, and reinforcement of prosocial knowledge structures that influence important prosocial variables. Individuals may develop prosocial beliefs and attitudes (e.g., "volunteering is important and satisfying"), prosocial perceptual schemata (e.g., a tendency to perceive the best in others), prosocial expectation schemata (e.g., a tendency to expect people to be friendly, helpful, or kind), or prosocial behavior scripts (e.g., "when someone is in trouble you have an obligation to help them"), or they may remain or become sensitized to aggression and other antisocial behavior (i.e., maintaining the experience

of unpleasant physical and emotional arousal in response to aggression). Development of a prosocial personality is also likely to influence situational variables. For example, if an individual comes to believe that volunteering is important and satisfying, he or she is more likely to experience new social situations as a volunteer. Moreover, that individual is likely to interact with like-minded volunteers, which may serve to validate and strengthen prosocial knowledge structures.

In sum, the GAM shows how episodic life experiences (such as repeated media exposure) can serve as learning trials for the development of new knowledge structures and, by extension, new personalities. Each proximate learning trial influences and is influenced by distal biological and environmental modifiers, creating a cyclical process that can perpetuate itself.

Although the GAM is applicable to the study of aggression in any domain, it may be especially important for media effects research because it highlights the transformative power that media may have. If every instance of media exposure serves as a learning trial, researchers and society at large have good reason to be concerned about the prevalence of violent media in modern societies. However, there is also reason for excitement considering the positive potential for prosocial media. Thus, the knowledge structure approach of the GAM illuminates how the media may serve as a force of "good" or "evil." For example, the GAM has often been used to guide and interpret research on violent video game effects. Meta-analyses in this area have shown that violent video game play is linked to increases in aggressive affect, cognition, and behavior as well as decreases in prosocial behavior (Anderson et al., 2010; Greitemeyer & Mügge, 2014). Similarly, a modified version of the GAM, the general learning model (GLM), has been used to guide and interpret research on the effects of prosocial video games. Meta-analytic evidence has linked prosocial video game play to increases in prosocial affect, cognition, and behavior as well as decreases in aggressive affect, cognition, and behavior. Ultimately, media serve as a double-edged sword, and the developmental processes of the GAM (or GLM) can be used to explain and understand the positive and negative effects of varying content.

SEE ALSO: Content Effects: Violence in the Media; Excitation Transfer Theory; Hostile Media Effect; Media Effects: Comprehensive Theories; Personality Traits: Influence on Media Effects; Priming; Schema Theory and Mental Models; Social Learning Theory and Social Cognitive Theory

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