THE INFLUENCE OF ADVERSE EVENTS ON EMOTION AND EMOTION REGULATION AS RELATED TO AGGRESSIVE ACTS OF YOUTH IN THE LEGAL SYSTEM

by

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

The Influence of Adverse Events on Emotion and Emotion Regulation as Related to Aggressive Acts of Youth in the Legal System

Fueled by changes in emotional experiences and greater independence, youth in adolescence have a propensity toward risky behaviors including risky driving, unsafe sexual behaviors, illicit drug use, and criminal acts (Somerville, 2016; National Research Council, 2007; Substance Abuse and Mental Health Services Administration, 2007). Research shows that social changes that occur during adolescence correspond with increased acts of delinquency (Gibson & Davis, 2015; Warr, 2002). According to a 2022 report from the U.S. Department of Justice, it was estimated that 424,300 arrests occurred in 2020 involving persons younger than 18 years of age (Puzzanchera, 2022). Additionally, although national recidivism for juveniles in the U.S. is not tracked, a 2015 report by the Council of State Governments Justice Center found that of the 39 states that do report data on rearrests, many indicated that recidivism rates were as high as 75% within the first three years of release (Fabelo et al., 2015). Approximately 80% of youth arrested annually are reincarcerated as adults (Barnert et al., 2017). As delinquency is an ongoing concern and crisis in the United States, with many arrested youth being re-incarcerated after their release either as an adolescent or as an adult, it is vital to understand how to reduce the occurrence of delinquent behavior and recidivism among youth currently involved in the legal system (Aazami et al., 2023; Barnert et al., 2017; Craig et al., 2020; Puzzanchera, 2022).

The literature indicates that aggression and a history of criminality are two of the strongest predictors for individuals who persistently commit illegal acts (Aazami et al., 2023). Additionally, one study found that aggressive behavior, such as fighting, was most frequently identified as the reason for arrest (Kemp et al., 2017). In recent years there has been a considerable amount of research related to emotion regulation and outcomes associated with delinquent behavior and youth in the legal system (YLS), including but not limited to aggression and maltreatment (Garofalo et al., 2018; Gruhn & Compas, 2020; Hodgkinson et al., 2021; Virgin et al., 2021). Furthermore, one study conducted by Docherty and colleagues (2022) found that both initial emotion regulation skills at intake and improvement in emotion regulation skills while incarcerated were significantly linked to lower recidivism. Thus, one promising mechanism that may be incorporated into interventions for YLS is emotion regulation.

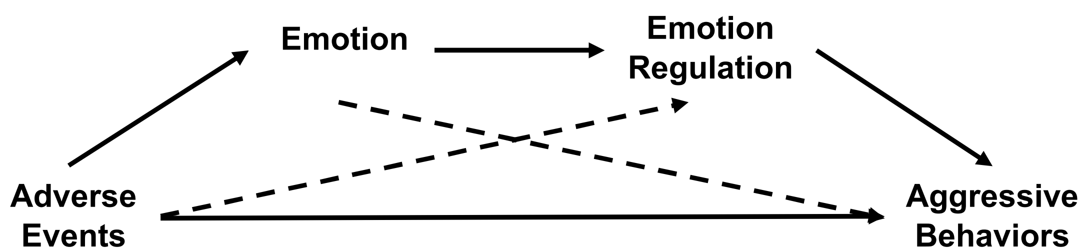
According to Gross (1998, 2014), emotion regulation refers to when individuals shape which emotions they have, when they have them, and how they express or experience these emotions. However, for interventions focused on emotion regulation to be effective among YLS, it is important to understand how specific experiences influence this particular population's capacity for engaging in emotion regulation. For instance, as higher rates of exposure to adverse events in childhood have been shown to increase risk of heavy drinking, smoking, morbid obesity, recent involvement in violence, and incarceration (Bellis et al., 2014), which have also been linked to emotion regulation (Casagrande et al., 2020; Dvorak et al., 2014; Garofalo et al., 2018a; Laws & Crewe, 2016), adverse events are types of experiences that should be considered when evaluating engagement in emotion regulation. Adverse events include physical, emotional, or sexual abuse, physical or emotional neglect, as well as household dysfunction including divorce, domestic violence, parental incarceration, mental health issues, or substance abuse. Research shows that juvenile offenders, or YLS, with higher rates of adverse events are more likely to have early onset and/or chronic offending prevalence trajectories (Baglivio et al., 2015). These individuals are also more likely to be classified as violent, serious, chronic offenders by age 18 (Fox et al., 2015). However, limited research has considered what specific forms of adverse events are the most influential to emotion regulation.

Additionally, as emotion is a critical aspect of emotion regulation, extensive prior research has been conducted on the link between emotion regulation strategies and emotion, looking at the influence of negative and positive affect (see Boemo et al., 2022 for review). Research has also considered the relationship between emotion regulation capacities to constructs of the emotional experience, such as alexithymia which captures challenges in experiencing emotions (Ditzer et al., 2023; Garofalo et al., 2018b; Preece et al., 2023). Furthermore, prior research has also found that negative affect plays a mediating role between trauma and delinquency (Maschi et al., 2008). Additionally, a more recent study found that in a sample of 25,000 juvenile offenders, ACEs had both a direct and indirect effect on recidivism with nearly half the total effect being mediated by negative emotionality (as measured by youths' tolerance for frustration, hostile interpretation, dealing with emotions, and anxiety/depression; Wolff & Baglivio, 2017). However, little to no research within the population of YLS has considered how emotion, specifically negative and positive affect, are influenced by adverse events and how that influence then impacts capacities for emotion regulation.

As research has shown a consistent association between delinquency and aggressive behavior (Aazami et al., 2023), as well as emotion regulation and aggression (Garofalo et al., 2018b; Navas-Casado et al., 2023; Roberton et al., 2012; Roberton et. al., 2014; Röll et al., 2012), it is important to understand how aggressive acts are ultimately influenced by the intertwined relationships of adverse events, emotion, and emotion regulation. Gaining insight into these relationships may illuminate the role of emotion regulation in preventing re-arrests. This study addressed these gaps in the literature by investigating how specific forms of adverse events are linked to emotion regulation, how emotion (specifically negative and positive affect) impacts emotion regulation, and how these factors work together to influence delinquent acts such as aggressive behavior, within a sample of YLS. Figure 1 represents the primary constructs examined in this study, as well as the proposed relationships among each. In Figure 1 the solid lines represent the primary relationships that were examined, whereas the dotted lines represent the direct and indirect relationships that were tested in this study. A review of each construct depicted in Figure 1, and the relevant literature surrounding the relationships among these constructs are further discussed below. As aggressive behavior is the primary outcome considered in the current study, it is important to understand where the current body of research stands in regard to aggressive behavior and the relevant concepts.

Figure 1

Illustration of relationships under investigation



Aggressive Behavior and Relevant Concepts

Historically, prior literature has found associations between childhood maltreatment (i.e., different forms of abuse and neglect) and violence (Maas et al., 2008; Malvaso et al., 2016). However, findings surrounding this complex relationship are inconsistent as violence, in addition to aggressive behavior, has included outcomes such as antisocial behaviors, criminal offenses, and perpetration of intergenerational child maltreatment. A few review articles have limited their analyses to only include actual aggressive behavior outcomes. For instance, one systematic meta-analysis of 18 studies examining the relationship between maltreatment and different kinds of physical violence against others found that child maltreatment modestly increased the risk of violence (Fitton et al., 2020). Another meta-analysis of 51 studies focusing solely on child abuse and its association to aggressive behaviors, found a positive correlation between the two, such that individuals experiencing more child abuse exhibited a high level of aggressive behavior (Ran et al., 2023). However, little to no research has examined the distinction among different forms of adverse events (i.e., abuse, neglect, and household dysfunction separately) and aggressive behaviors.

Prior research has primarily focused on the role of emotion regulation in aggressive behavior by assessing the impact of *controlling* anger (Davey et al., 2005). For instance, adolescents' difficulty regulating sadness and anger was linked to their use of relational and physical aggression (Roberton et al., 2012; Sullivan et al., 2010). However, more recent literature has established a relationship between emotion regulation *strategies* and aggressive behavior (see Navas-Casado et al., 2023 for a review). Specifically, research indicates that maladaptive strategies of emotion regulation, including rumination, were positively associated with aggressive behavior (Navas-Casado et al., 2023), whereas adaptive strategies (e.g., mindfulness) were negatively associated with difficulties in emotion regulation (Navas-Casado et al., 2023). Additionally, research has also examined how aggressive behavior was impacted by under or over regulating anger, such that both result in more aggressive behavior (Roberton et al., 2012).

As previously discussed, aggressive behavior was identified as a risk factor for delinquency (Hodgkinson et al., 2021). As there is a connection between aggressive behavior and delinquent behavior, research has expanded to evaluate the relationship between emotion, emotion regulation and aggression within the population of adolescent YLS and adult male violent offenders (Garofalo et al., 2018b; Miller et al., 2012). For instance, one historical study examined how negative affect and facets of difficulties in emotion regulation were associated with violence and risky sexual behavior among justice-involved adolescents, YLS (Miller et al., 2012). Although this study did not find significant associations between global negative affect and violence, or between difficulties in emotion regulation and violence; it did find that specific aspects of negative affect (i.e., anger) and emotion regulation difficulties (i.e., impulse control) were significant predictors (Miller et al., 2012). Additionally, a more recent study examining the mechanisms linking impulsivity, alexithymia and difficulties in emotion regulation to aggression found that difficulties in emotion regulation mediated the relationship between alexithymia (i.e., the inability to identify and describe feelings) and aggression (Garofalo et al., 2018b). As violence and more severe delinquency, including assaults, were associated with higher rates of exposure to adverse events and maltreatment (Ireland et al., 2015; Craig et al., 2020; Fox et al., 2015; Perez, Jennings, & Baglivio, 2018), it is important to understand how factors of emotion and emotion regulation can influence outcomes of aggressive behavior when accounting for adverse events experienced by YLS.

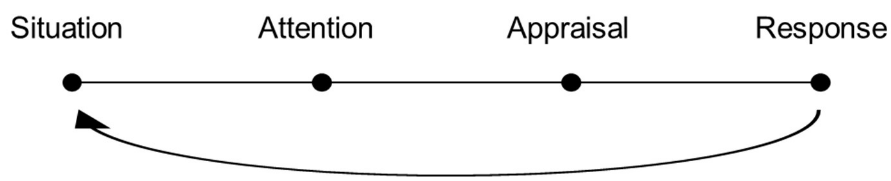
Theories of Emotion and Emotion Regulation

Emotion Generative Process

To investigate the constructs of emotion and emotion regulation, it is useful to consider the emotion generative processes model and Gross's emotion regulation process model (Gross et al., 2011; Gross, 2014). One of the challenges within emotion literature is that many different terms are used to refer emotion-related processes, or affect states (Gross, 2014). According to Gross, to organize and reduce confusion it is helpful to view *affect* as the umbrella term for different emotion-related processes including 1) *emotions* such as anger and joy, 2) *stress responses* to situations that surpass an individual's ability to cope, and 3) *moods* such as euphoria and depression (Gross, 2014). Emotions are generated when a person, situation, or combination of the two compel attention, have emotional value associated with it, and give rise to coordinated multi-system response for the ongoing person, situation, or combination (Gross et al., 2011). Emotion refers to both negative and positive affect states. Unfortunately, as prior research does not always distinguish between *affect* and *emotion*, and it typically refers to negative and positive emotion as negative and positive affect, within this study references to *affect* will refer only to the affect state of *emotion*. For a simplified schematic form of the sequence of the emotion generative processes, which constitute an emotion episode, see Figure 2 (Gross et al., 2011; Gross, 2014).

Figure 2

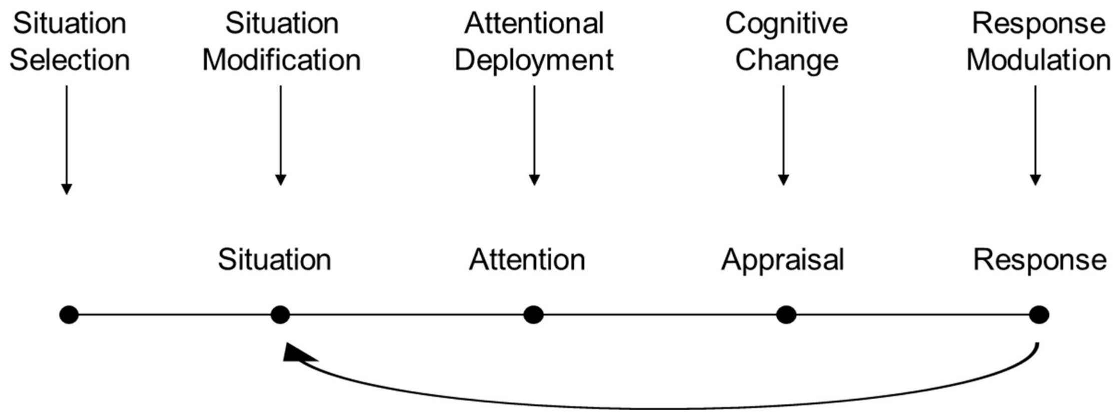
The Modal Model of Emotion (emotion-generative process)



There are many different processes, or strategies, that one can engage in to alter the trajectory of an emotion (Gross, 2014). These can range from explicit, effortful, controlled, conscious regulation to implicit, effortless, automatic, unconscious regulation (Gyurak & Ekin, 2014; Gyurak et al., 2011). Engagement in these processes to achieve one's goal, ultimately aims to change the emotion dynamics (e.g., the rise time, latency, duration, magnitude etc.), in order to offset responses in behavioral, experiential, and psychological domains (Gross, 2014). Built upon Figure 2, the process model of emotion regulation proposes that each point along the emotion generative process is an opportunity for an individual to engage in emotion regulation to modify emotion trajectory and emotion dynamics (Gross, 2014; Gross et al., 2011). See Figure 3 for an illustration of the process model of emotion regulation.

Figure 3

The Process Model of Emotion Regulation



Throughout literature, emotion regulation is defined in various ways (Kobylińska & Kusev, 2019). Some theorists argue that emotion and emotion regulation are indistinguishable interacting processes that occur in parallel (Campos et al., 2004; Kobylińska & Kusev, 2019); while other theories view emotion regulation as a separate process from emotions in which individuals aim to maximize positive emotion and minimize negative emotions (Larsen & Prizmic, 1999, Kobylińska & Kusev, 2019). However, neither of these fully capture the nuances of emotion regulation, and do not account for situations that elicit a motive to decrease the experience of positive emotion or increase negative emotions (Kobylińska & Kusev, 2019). One theory that accounts for these inconsistencies and has found traction in literature is Gross's theory of emotion regulation.

According to Gross, emotion regulation is a process in which individuals shape which emotions they have, when they have them, and how they experience or express the emotions (Gross, 2014; Gross, 1998). Gross argues there are three core features of emotion regulation: 1) *goal* - activation of a goal to modify the emotion-generating process, 2) *strategy* - engagement of the processes that are responsible for altering the emotion trajectory, and 3) *outcome* - impact on emotion dynamics (e.g., latency, duration, magnitude, and offset of responses in experiential, physiological, and/or behavioral domains; Gross, 2014). The activation of a "goal" in the emotion regulation process may be activated either intrinsically or extrinsically. Intrinsic represents emotion regulation in oneself (e.g., John Smith regulates his own emotions), while extrinsic refers to emotion regulation in someone else (e.g., John Smith regulates Jane Doe's emotions; Gross, 2014). Research surrounding this field has typically focused on intrinsic emotion regulation within adult populations, and extrinsic emotion regulation within populations of children and infants (Gross, 2014). Limited research has considered which of these forms of emotion regulation are occurring in adolescence.

Emotion Regulation Process Model

Gross conceptualizes emotion regulation through the process model of emotion regulation (see Figure 2; Gross, 1998; Gross, 2014). As previously discussed, this process model proposes that each point in the emotion generative process allows for an opportunity to engage in emotion regulation. These points include situation selection, situation modification, attentional deployment, cognitive change, and response modulation (see Figure 2; Gross, 1998; Gross, 2014). Movement from left to right, starting with situation selection and moving through to response modulation in the model represents movement through time (Gross, 2014). Emotion generation is an on-going process, as an emotional response often can change the situation that provokes the initial response in the first place (e.g., when an argument is taking place and one of the individuals starts to cry, this emotion response can change the response of the other thus influencing the situation), and thus extends beyond a single episode (Gross, 2014). The process model of emotion regulation captures this dynamic characteristic of emotion and emotion regulation through the feedback arrow (Gross, 2014).

The process of emotion regulation is initiated through a goal. This goal can vary by situation for several reasons and can be focused on either the increase or decrease of an emotional response (Gross, 2014). For example, one individual may desire an increase in positive emotions such as love or joy, another may want to decrease excitement over a new prospect to maintain a realistic mindset, while someone else may want to decrease negative emotion such as anxiety, sadness, or anger, and another individual may want to increase negative emotion in order to promote focus. Once a goal is set, the process of emotion regulation begins, and individuals engage in emotion regulation strategies to influence the outcome of the emotional experience (Gross, 2014). It is during this *strategy* component of emotion regulation in which an individual moves through the process model of emotion regulation, potentially engaging in one or more of the five points.

Situation selection is the most forward-looking emotion regulation point (Gross, 2014). This step involves an individual taking action, by selecting a situation, which is less likely (or more likely) to give rise to undesirable (or desirable) emotions (Gross, 2014; Gross & Thompson, 2007). Situation modification refers to directly modifying a physical situation to alter the situation's emotional impact (Gross, 2014; Gross & Thompson, 2007). Situation selection and situation modification help shape a particular situation to influence emotions (Gross, 2014; Gross & Thompson, 2007). However, it is not always possible or appropriate to alter a situation. Through attentional deployment and cognitive change, one may regulate emotions without altering the environment (Gross, 2014; Gross & Thompson, 2007).

Attentional deployment refers to how an individual directs their attention in a situation to influence one's emotion (Gross, 2014; Gross & Thompson, 2007). Distraction is the most common form of attention deployment, by which individuals move their attention away from the situation altogether or focus on other aspects of the situation that do not elicit the undesirable emotional response (Gross & Thompson, 2007). Distraction can also involve internal attentional shifting, by changing one's internal focus (Gross & Thompson, 2007). This can be done through eliciting thoughts or memories that are inconsistent with the undesirable emotional state (Gross & Thompson, 2007). Cognitive change attempts to alter the emotional significance of a situation by modifying how one appraises it (Gross & Thompson, 2007). This can be accomplished through either changing how one thinks about the situation, or how one thinks about their capacities for managing the demands it poses (Gross & Thompson, 2007). The fifth family of the process of emotion regulation is response modulation. This step occurs late in the emotion generative process after the response tendencies, or emotional experience, are initiated (Gross, 2014; Gross & Thompson, 2007). Regulation within this stage involves influencing experiential, physiological, or behavioral responses as directly as possible (Gross, 2014; Gross & Thompson, 2007). Examples of regulation at this point may include adaptive strategies (e.g., exercise, relaxation, meditation, etc.) or maladaptive approaches (e.g., cigarettes, alcohol, illegal and prescription drug use, food etc.; Gross & Thompson, 2007).

As difficulties in emotion regulation have been linked to arrests, researchers have stated that for YLS emotion regulation is essential to preventing recidivism (Himelstein et al., 2012; Virgin et al., 2021). However, for interventions targeting emotion regulation, to help youth better manage their emotions in and out of the legal system, is it vital to understand how experiences of adverse events impact emotions and are linked to overall difficulties in emotion regulation which may then influence aggressive behavior.

Emotion

As emotion is an essential characteristic of the human experience (Helion et al., 2019), it is important to understand how one experiences emotion, what influences experiences of emotion, and how one manages, or regulates, that emotional experience. Development of one's emotional understanding, including both perception of others' emotions and interpretations of one's own emotions, is an ongoing process that is initiated in infancy (Harris et al., 2016). As a part of these processes' language development plays an important role in the development of emotional awareness. Although non-verbal children as early as 11-months can start to interpret emotions, it is around age 2 that children start to talk about emotions (Harris et al., 2016). Prior research indicates that language not only allows children to put their feelings into words, but also enables them to discuss future emotions and revisit past emotions (Harris et al., 2016). As children develop, they become increasingly aware that how a person emotionally reacts depends on how that individual interprets a given situation, not on the situation itself. Specially, children begin to understand that the same situation can elicit a different emotional response depending on the individual's perception of the situation (Harris et al., 2016). Although one's understanding of emotion is a developmental process that generally progresses throughout childhood, it is important to consider individual differences in why children vary in their understanding of emotions. Literature on emotion indicates that family conversation plays a key role in individual differences as a driver of both linguistic competence, parental frequency in discussing emotions, as well as sensitivity and attunement, which engender heightened emotional awareness (Harris et al., 2016). Research suggests that children who grow up in homes with open discussions of emotionally charged situations will likely differ in their emotional lives than children who did not. Individual differences are important to considered when evaluating emotions and emotional awareness of persons who have experienced adverse events in childhood, as many of those events are directly linked to parental figures or caregivers.

As children progress into adolescence their experience of emotion changes. Adolescence is a critical period of development in which youth have to navigate new environmental demands that require increasingly complex decision making and independent self-regulation. It is also during this time that youth take on more responsibilities, spend less time with family members, and experience complex social realms (Somerville, 2016). Emotional cues during this period of development can strongly impact self-regulatory capacities, with social context predominately shaping adolescents' emotional experiences (Somerville, 2016). Behaviors and emotional experiences in adolescence are robust and susceptible to variability, and these emotional experiences are demonstrably unique from younger ages and adults in several ways (Somerville, 2016). For instance, youth affect states are intense and frequent, and strong affect reactions are primarily driven by social contexts. Additionally, adolescents are at risk for destructive outcomes of emotional reactivating, including less than optimal decision making in emotionally heightened contexts. Furthermore, decision-making and cognitive behavior during this period of development is susceptible to emotional influence, which is particularly strong in social or emotionally charged contexts (Somerville, 2016).

Prior research on the connection between emotion and emotion regulation emphasizes that language plays a role in altering an emotion after it is experienced (Lindquist et al., 2016). As previously discussed, as an emotional response often can change the situation that provoke the initial response in the first place, and elicit a different emotional response, which is accounted for through the feedback arrow in the process model of emotion regulation (Gross, 2014). For instance, if it is the "bottom-up" processes involved in generating an emotion, then the use of language, or labeling of emotion, in the "top-down" process involved in regulating the emotion, may be a mechanism for regulating the experience of said emotion (Lindquist et al., 2016). Thus, labeling an emotion can impact how one perceives the experience and situation.

As previously discussed, prior research has also examined how both negative and positive affect independently relate to particular cognitive emotion regulation strategies (Boemo et al., 2022). Specifically, one systematic review report that prior research showed there was large effect between the co-occurrence of negative affect and strategies of rumination, suppression, and worry, whereas there was a large effect between the co-occurrence of positive affect and reappraisal and medium effect of positive affect and acceptance (Boemo et al., 2022). This research indicates that the type of emotion, or affect, experienced impacts ones use of beneficial (i.e., reappraisal and acceptance) vs. destructive (i.e., suppression, rumination, and worry) forms of cognitive emotion regulation strategies. Additionally, one study conducted on college students found that higher rates of difficulties in emotion regulation was associated with higher levels of negative affect (Daros et al., 2020). Although research indicates that one's awareness of emotion is a rate-limiting factor crucial in successfully regulating emotions, there is a great deal to be learned about the precise role it plays engaging in emotion regulation (Gross, 2014; Barrett et al., 2001; Samson et al., 2012).

Emotion Regulation

As adults, people attempt to move through the process of emotion regulation intrinsically. However, the first three points of the emotion regulation process are commonly used extrinsically, especially from infancy into adolescence (Gross, 2014; Gross & Thompson, 2007). Although extrinsic regulation is important throughout life, it is most apparent in infancy and early childhood (Gross & Thompson, 2007). During this time, adults often attempt to regulate the emotions of children. For example, situation selection requires an appropriate understanding of the emotional response past and future situations elicit, which people typically overestimate (Gross & Thompson, 2007). Due to this inaccuracy and overestimation, situation selection often requires the perspective of others, ranging from parents to therapist (Gross & Thompson, 2007). Adults use situation selection to manage the emotional demands of children through predictable daily routines, childcare arrangements, scheduled naps and breaks, and managing the emotional climate of the family (Gross & Thompson, 2007). Additionally, adults engage in extrinsic situation modification by assisting in problem solving when a child is frustrated, or by confirming the legitimacy of an emotional response (Gross & Thompson, 2007). As the emotion regulatory process of attention deployment is one of the first processes to appear in development, adults are continually using the strategy of distraction and refocusing a child's attention away from the emotion-eliciting stimulus to regulate a child's emotional response (Gross & Thompson, 2007).

When the strategy component of the emotion regulation process is elicited intrinsically, individuals engage in a top-down process which involves perceiving things based on prior knowledge and experience. This requires one to either look forward in anticipation of a situation, modify some aspect of the situation, intentionally engage in distraction, or draw one's concentration away from emotional provoking stimuli (Gross & Thompson, 2007). It also may require prompting cognitive change which influences how a person perceives the situation and alters its emotional significance (Gross & Thompson, 2007). Or it may work to directly influence the experiential, physiological, or behavioral components of the emotional response (Gross, 2014). However, when considering intrinsic emotion regulation, it is necessary to reflect on the initial feature of the emotion regulation process, the activation of a goal.

According to Gross (2014), one direction for future research that is needed in the area of emotion regulation is understanding why people regulate their emotions as they do. Gross (2014) identifies several questions that need to be answered for this to be further understood, one of which is “what leads people to activate a goal to regulate emotion?” As it is not guaranteed that an individual will activate a goal, this is an important question to consider, especially among youth who engaged in delinquent behavior that led to incarceration. Because the severity of their behavior led to serious consequences, it begs the question: are delinquent youth engaging in the activation of a goal to modify the emotion-generating process? In other words, are YLS attempting to change their emotional response; and furthermore, are there factors that distinguish between youth who engage in a goal activation and those who do not. As discussed by Gross (2014), one possible factor may be differences in awareness of one’s own ongoing, or anticipated, emotional response. Individuals vary substantially in their ability to identify subtle emotional dynamics and represent them in a differentiated manner (Gross, 2014, Salovey & Mayer, 1990; Taylor, 1994). Some individuals are very effective as this, while others have little to no awareness of their emotional responses (Gross, 2014; Salovey & Mayer, 1990; Taylor, 1994).

Although research indicates that one’s emotional experience may influence capacities of emotion regulation, little to no research has considered the role of affect in conjunction with adverse events. As further discussed below, prior research has established a relationship between emotion regulation and adverse events (Gruhn & Compas, 2020). Additionally, YLS typically have higher rates of adverse events than the general population (Abram et al., 2004). Thus, a portion of this study will specifically look at how emotion influences the relationships between adverse events and emotion regulation within a sample of YLS.

Adverse Events

Prior studies indicate that youth who experience maltreatment (i.e., abuse and/or neglect) are not only at risk for delinquency, but that maltreatment is also a risk factor for violent self-reported delinquency and more serious forms of delinquency, such as assaults (Kelley et al., 1997; Ireland et al., 2015). Historically, research indicates that YLS are three to eight times more likely to experience adverse events compared to youth in the general population (Abram et al., 2004). The same study found that more than 90% of YLS experience at least one type of adverse event (i.e., abuse, neglect, household dysfunction; Abram et al., 2004). More recently, one study found that in a sample of 658 justice-involved youth ages 13-18, the majority (90%) had experienced multiple types of adverse events (e.g., both abuse and neglect; Dierkhising et al., 2013).

A common metric for evaluating adverse events is through the Adverse Childhood Experience scale (ACEs; Craig et al., 2020). Prior research surrounding YLS has independently examined the effects of specific types of adverse events (e.g., sexual abuse, physical abuse) and delinquency (Ireland et al., 2015; Craig et al., 2020). Recently, however, a growing body of literature has begun to analyze the cumulative impact of adverse experiences (Baglivio, 2018; Craig et al., 2020). Although there are several ways to operationalize exposure to adverse events, a methodology typically used with ACEs is based on an individual's cumulative ACE score, which is a summation of an individual's yes responses to the 10-items related to adverse events (Craig et al., 2020).

Research findings have indicated that youth with more ACEs are more likely to be involved in the juvenile justice system (Baglivio et al., 2014) and have an increased likelihood of being involved in violence compared to their YSL counterparts that report fewer ACEs (Bellis et al., 2014; Craig et al., 2020; Fox et al., 2015; Perez, Jennings, & Baglivio, 2018). Interestingly, research related to ACEs and recidivism has found that cumulative ACEs and neglect were positively associated with youth recidivism (see Astridge et al., 2023 and Yohros, 2023 for a review), whereas sexual and physical abuse were not significantly associated with increased risks of recidivism (Astridge et al., 2023). This further illustrates the complicated relationship between ACEs and delinquency.

Adverse events and Emotion Regulation

Childhood and adolescence are considered a crucial period of development for emotion regulation skills. In addition to the environment's influence on one's emotional experience, both parents and culture can influence how one regulates emotion (Gross & Thompson, 2007). A considerable amount of research indicates that parents who respond sympathetically and supportively to emotional expression, often have children who cope more adaptively with emotions and develop more positive emotion regulation capacities in the long run (Gross & Thompson, 2007). In contrast, when parents respond punitively, denigratingly, or dismissively to emotional responses, children are more likely to have negative outcomes (e.g., avoidant coping; Gross & Thompson, 2007). As parents and adults are influential in capacities of emotion regulation, suffering from abuse and neglect during the developmental periods of childhood and adolescence may interfere with the acquisition of emotion regulation skills (Riley et al., 2017; Shields & Cicchetti, 1998). For instance, nearly 80% of children that experience maltreatment display patterns of emotion regulation deficits, as compared to only 36% of children that did not experience maltreatment (Maughan & Cicchetti, 2002; Riley et al., 2017).

Research indicates that different forms of maltreatment, including abuse and neglect, were found to be associated with varying expressions of emotion regulation deficits (Riley et al., 2017). Specifically, when exposed to potentially threatening situations, such as conflict or interpersonal anger, adolescents and older children with histories of abuse frequently exhibit emotion regulation problems through high levels of arousal, reactive aggression, and difficulty in regulating their response (Cummings, Hennessy, Rabideau & Cicchetti, 2008; Riley et at., 2017; Shackman & Pollak, 2014). Physically abused individuals are particularly susceptible to reactive aggression, which is emotionally driven, connected to angry reactivity, and a high degree of sympathetic arousal (Riley et at., 2017). Additionally, in distinguishing between types of maltreatment, individuals who experienced sexual abuse in childhood exhibited lower impulse control; whereas those who experienced emotional abuse exhibited difficulties in behaving in accordance with desired goals and impulsivity (Oshri et al., 2015). Differentiating from abuse, individuals that experience maltreatment in the form of extreme emotional neglect exhibited more difficulty in identifying and distinguishing between emotions, as compared to non-maltreated individuals or physically abused individuals (Pollak et al., 2000).

With the identification of childhood adversity and more specifically maltreatment (i.e., physical, emotional, or sexual abuse, and/or physical or emotional neglect) being linked to mental health problems, there has been a surge in investigating the underlying psychological mechanisms of traumatic events (Garofalo et al., 2018b; Gruhn & Compass, 2020; Miu et al., 2022) and on identifying risk and resilience processes which are crucial for prevention (Gruhn & Compass, 2020). Research indicates that maltreatment is associated with emotional suppression, increased avoidance, and expression of negative emotions in response to stress (Gruhn & Compass, 2020). Understanding these relationships are vital, as the ways in which individuals regulate their emotions may buffer against pre-existing risk, whereas deficits or difficulties in regulating emotions may have the potential to amplify risk (Gruhn & Compass, 2020).

As previously discussed, prior research indicates there is a link between exposure to adverse events and emotion regulation, as well as adverse events and emotion (Ditzer et al., 2023; Lindquist et al., 2016; Maschi et al., 2008; Wolff & Baglivio, 2017). It also indicates that exposure to adverse events is associated with delinquency, YLS, and recidivism. However, little to no studies within YLS have examined the intricacies of how various forms of adverse events (i.e., abuse, neglect, and family dysfunction) relate to emotion regulation difficulties and consider the role that negative and positive affect play.

Current Study

The conceptual model for how adverse events were associated with emotion, emotion regulation, and aggressive behaviors were examined in the current study, as shown in Figure 1 (moving left to right). Based on the aforementioned research, it is reasonable to consider emotion regulation as a link between maltreatment and aggression. Specifically, it was expected that individuals who have experienced maltreatment will have greater difficulties in regulating their emotions (Gruhn & Compass, 2020) and thus, exhibit higher rates of aggressive behavior (Riley et at., 2017). However, a recent study using the same sample as the current study, examining the effects of a trauma-informed intervention, found that difficulties in emotion regulation did not mediate the relationship between adverse events and aggressive behaviors (i.e., assaults; Joseph, 2023).

One explanation for this unexpected result may be that different types of adverse events (i.e., abuse, neglect, and household dysfunction) should be considered separately when looking at the relationships between adverse events and factors of emotion regulation and aggressive behavior. Although prior research utilizing ACEs, as a metric for adverse events, has typically operationalized exposure based on an individual's cumulative ACE score (Craig et al., 2020), by distinguishing between abuse, neglect and family dysfunction, this study may be able to better determine the differences in how different forms of adverse events impact an individual's engagement in emotion regulation and in turn effect aggressive behavior. Additionally, this prior study did not account for how one's emotion or experience of emotions impacts capacities in emotion regulation. As prior research indicates, emotion plays an important role in emotion regulation, it is important to not only consider emotion regulation, but also emotion within the relationships of adverse events and aggressive acts. For an illustration of the conceptual models as they continue to expand based on the different aims of this study, see Figure 4.

Aim 1 of the current study examined relationships between ACEs, including the total number of ACEs experienced, as well as specific subgroups of ACEs (i.e., abuse, neglect, and household dysfunction), and outcomes. This aim considered whether within this sample of YLS, self-reported ACEs were related to emotion (i.e., positive and negative affect), difficulties in emotion regulation, and aggressive acts (e.g., reported staff and youth assaults). Bivariate analyses were used to examine the relationships among these variables as a preliminary step toward Aims 2-4, which are depicted in Figure 4. It is hypothesized that cumulative ACEs, as well as abuse (i.e., experience of either physical, sexual, and/or emotional abuse), neglect ACEs (i.e., physical neglect and/or emotional neglect), and household dysfunction ACEs are positively correlated with difficulties in emotion regulation (**H1a**) and aggressive acts (**H1b**). Additionally, the abuse and household dysfunction categories of ACEs were expected to be positively correlated with negative affect (**H1c**; Maschi et al., 2008; Wolff & Baglivio, 2017). However, in contrast and because individuals that experience neglect more difficulty in experiencing emotions (Ditzer et al., 2023), it was expected that neglect ACEs are negatively correlated with both positive and negative affect (**H1d**). Additionally, although bivariate analyses examined the relationship between positive affect and different forms of ACEs, this preliminary analysis is exploratory in that prior research is not clear as to how positive affect is linked to ACEs.

Aim 2 of the current study was to gain further insight into the relationship between ACEs and regulating emotions, as measured by difficulties in emotion regulation. Aim 2 addressed the directionality of the relationship between ACEs and difficulties in emotion regulation, such that higher reported ACEs predict greater difficulties in emotion regulation. Consistent with prior research, it was hypothesized that youths' self-reported cumulative ACEs were positively associated with youths' reported difficulties in emotion regulation (**H2**). To further examine this relationship, this study aim also explored associations between each subcategory of ACEs and the YLS self-reported difficulties in emotion regulation. Specifically, the second part of Aim 2 addressed the following research questions: Does each subcategory of ACEs positively predict difficulties in emotion regulation, or are there difference among the subcategories? The purpose of Aim 2 in this study, was to gain a more in-depth understanding of how different forms of ACEs may influence capacities for emotion regulation.

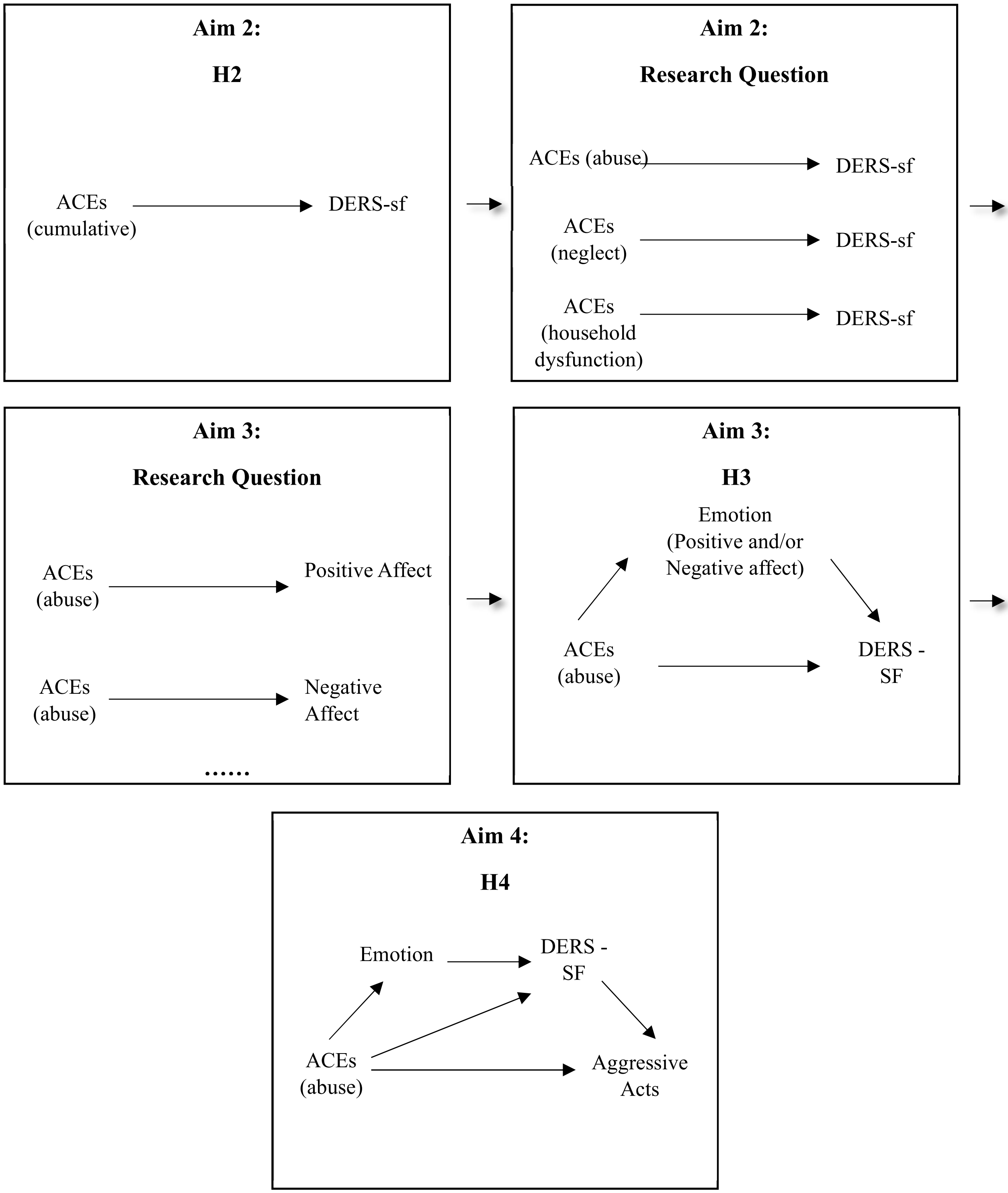
Exploratory in nature, Aim 3 of the study examined whether emotion plays a role in the relationship between the three subgroups of ACEs (i.e., abuse, neglect, and household dysfunction) and difficulties in emotion regulation. This aim was addressed in three ways. First, the relationship between emotion (i.e., positive and negative affect) and the different ACEs subgroups, as determined appropriate based on Aim 1 results, was examined. Exploratory analyses then considered the relationships between positive and negative affect and the three subgroups of ACEs. Generally, the first portion of this aim addressed the following research question: Does the relationship between ACEs and emotion differ based on subcategories of ACEs, as well as positive and negative affect? The second portion of the aim addressed the following research question: Does emotion (i.e., positive and/or negative affect) predict difficulties in emotion regulation? Relationships tested through these research questions were determined based on bivariate correlation analyses conducted in Aim 1. Lastly, Aim 3 addressed the mediating effect of emotion on the association between ACEs and dependent variables of interest including difficulties in emotion regulation. Specifically, it is hypothesized that the effect of abuse ACEs on difficulties in emotion regulation are mediated by emotion (**H3**). Whether the emotion is positive, negative, or both were determined by the results of the research questions for Aim 3. These analyses offer insight into variations between the relationships of different forms of ACEs and emotion, and how emotion mediates the relationship between ACEs and difficulties in emotion regulation. The purpose of Aim 3 was to understand how emotion influences emotion regulation when individuals have experienced different forms of adverse events.

Aim 4 of the current study was exploratory in nature, in that it examined how the aforementioned associations between the relevant constructs (i.e., subgroups of ACEs, emotion and emotion regulation) work together and are linked to aggressive acts. As previously discussed, Garofalo and colleagues (2018b) found that difficulties in emotion regulation mediated the relationship between alexithymia and aggression. Expanding upon this finding, this portion of the study focused explicitly on abuse ACEs and incorporating the role of emotion. Using a serial mediation model, it was hypothesized that emotion mediates the relationship between abuse ACEs and difficulties in emotion regulation, which in turn mediates the relationship between emotion and aggressive acts (**H4**; see Aim 4 in Figure 4). If appropriate, based on results of Aim 3, similar models were explored for ACEs of neglect and household dysfunction subgroups.

Aim 5 of the study, utilized qualitative data to provide context for quantitative results. Through this aim, this study examined youths' short answer responses related to how they respond when they are upset and how they regulate or calm themselves when upset. These short answer responses were used to gain further insight into the youths emotion regulation patterns.

Figure 4

Illustration of Models based on Aim 2 through Aim 4



Note. Only part of the research question for Aim 3 is displayed in the figure, however the illustration is the same for both the subgroups of ACEs for neglect and household dysfunction.

Methods

Participants

Data used in the current study were collected by a southern state's department of Juvenile justice (SSDJJ) from seven secure residential facilities. The term "secure residential facility" refers to a post-adjudication residential facility, either public or private, with systems in place to restrain the physical movements and/or activities of juveniles that are under lawful custody of the state. Data were collected at four different time points (waves) between July 1, 2019, to July 20, 2021. At the time data was collected for each wave, the collective population for these facilities across the different waves was 2,992 youth (i.e., Wave 1 = 838; Wave 2 = 827; Wave 614; Wave = 713). Of these individuals, facility data was available for 2,979 between the ages of 11 and 22 (M = 18.5; female *n* = 275, 9%). However, based on further examination there were 19 individuals with duplicate facility data at the second time point of data collection, resulting in 2,960 remain youth. All juvenile residents present in the seven SSDJJ secure residential facilities were given the voluntary opportunity to participate in survey data collection across four different waves, which resulted in a total of 2,399 survey responses. However, within each wave there were a number of individuals who completed the survey multiple times (within a single wave), as well as several individuals that completed the survey at different waves (e.g., in custody during multiple survey administrations). After eliminating a total of 120 survey responses for all waves, 2,279 participants remained. Individuals that completed the survey across different waves were also excluded from analyses, such that only a participant's initial survey response was included in the final cross-sectional data set. This resulted in the exclusion of 1,258 survey responses, leaving a final sample of $n = 1{,}021$ participants between the ages of 13 and 22 ($M = 18.9$; female $n = 98$, 9.6%): Wave 1 (July 1, 2019 – July 12, 2019, $n = 343$); Wave 2 (January 6, 2020 – January 21, 2020, $n = 268$); Wave 3 (January 13, 2021 – January 29, 2021, $n = 140$); Wave 4 (July 1, 2021 – July 20, 2021, $n = 270$). The participant race/ethnicity distribution was as follows: 39.2% Hispanic, 38.9% Black, 21.3% White, 0.3% Asian, and 0.3% Other. The survey was only available in English, which limited participation to only those who were fluent in the English language. The use of these data were approved by the Texas Christian University Institutional Review Board.

It should be noted that in September of 2019, after Wave 1, SSDJJ implemented the "[State de-identified] Model Intervention," to deliver more intervention-focused care and treatment by including enhanced responses to the effects of childhood adverse events (de-identified agency name, 2020). Additionally, data collection for Wave 3 was originally planned for July 2020 but was postponed due to coronavirus disease 2019 (COVID-19) that was declared a pandemic in March of 2020, and initiated national shutdowns in order to prevent spreading (Center for Disease Control and Prevention, 2023).

Procedures

Consent for youth participation in the study was given by the state, as youth were under the legal custody and care of the state while residing in the SSDJJ facilities (i.e., in loco parentis). Youth residents were offered the opportunity to participate in the study during their educational school hours and received an informational sheet on the research description. Willing participants gave assent and then the survey was administered online in the school computer lab during their educational period. Individuals that agreed to participate in the study received a "special" snack (e.g., potato chips, candy bar) in lieu of the typical snack offered (e.g., granola bar, fruit). Across the four waves, the average response rate from youth in facilities was 80%. The number of items in the survey for each wave varied slightly between 89 and 92 items.

Quantitative Measures

SSDJJ records data were obtained directly from SSDJJ through a public information request. As a part of the intake process, SSDJJ collected general demographics (e.g., sex and age) and self-reported history of experienced adverse events. Additionally, SSDJJ kept informational records of youth assaults, court hearings, risk factors (e.g., medical, mental illness, sexual behavior), and facility location. Data were de-identified prior to receipt of data for the current study, and participants were assigned a unique youth identity number.

Adverse Events

Adverse events were assessed through youths' self-reported response to the Adverse Childhood Experiences Questionnaire (ACE-Q; Felitti et al., 1998). This 10-item, yes or no response, questionnaire was designed to capture prior exposure to psychological, physical, or sexual abuse, physical or emotional neglect, and household dysfunction due to mental illness, substance abuse, domestic violence, or familial criminal behavior (Felitti et al., 1998). For each item, a "yes" response was scored as 1 point and a "no" was scored as 0 points, resulting in each participant total ACE score ranging from 0 to 10. Prior research indicates a score of 4 or more is generally considered the criteria for severe ACEs (Hughes et al., 2017). However, for the purpose of this study ACEs were scored in four different formats: 1) a sum total of all 10-items, 2) a sum of the three abuse items (Abuse ACEs), 3) a sum of the two neglect items (Neglect ACEs), and 4) sum of the five household dysfunction items (Household ACEs).

Emotion Regulation

Youth's capacity for regulating their emotions was measured through the Difficulties in Emotion Regulation Scale – Short Form (DERS-sf; Kaufman et al., 2015). Based on the original 36-item Difficulties in Emotion Regulation Scale developed by Grantz and Roamer (DERS; 2004), the DERS-sf is an 18-item questionnaire created to reduce respondent burden (Kaufman et al., 2015). Designed and developed with the intention of offering a comprehensive assessment to capture clinically relevant difficulties in emotion regulation, the tool is structured across six subscales of emotion regulation (Grantz & Roamer, 2004, Kaufman et al., 2015). The subscales include strategies (e.g., "when I'm upset, it takes me a long time to feel better"), non-acceptance (e.g., "when I'm upset, I become embarrassed for feeling that way), impulse (e.g., "when I'm upset, I become out of control"), goals (e.g., "when I'm upset, I have difficulty getting work done"), awareness (e.g., "I pay attention to how I feel.), and clarity (e.g., "I have no idea how I am feeling"). Response options for the DERS-sf utilized a 5-point Likert scale (1=*Never*, 2=*Sometimes*, 3=*About half the time*; 4=*Most of the time*; 5=*Always*). Reliability for each of the three-item DERS-sf subscales was reported by Kaufman and colleagues (2015) as acceptable with Cronbach's coefficients ranging from .79 to .91. Consistent with prior literature (Kaufman et al., 2015), internal reliability in the current study using Cronbach's ranged from acceptable to excellent for all six subscale and the total scale (i.e. strategies α = .83; non-acceptance α = .86; impulse α = .91; goals α = .82, awareness = .82; clarity α = .86; total DERS-sf α = .93)

It should be noted that to lower the reading level of the measure certain wording within the items was adapted. For instance, the question example above for the goals subscale was altered from "when I'm upset, I have difficulty getting work done" to "when I'm upset, it is hard for me to get work done." Additionally, some items of the DERS-sf were excluded at different waves to reduce respondent burden but were included in later waves. The excluded items by wave are as follows: Wave 1 excluded questions 1, 4 and 13; Wave 2 excluded 1, 4, 10 and 13; Wave 3 and Wave 4 excluded only question 13. Therefore, although the DERS overall scale and subscales are typically scored using summations, due to inconsistency in items across the 4 different waves scores for the DERS-sf were calculated by averaging the individual items in the scale. For each subscale and the entire instrument, higher scores indicated greater difficulties in regulating emotions.

Emotion

This concept was measured using 30-item, self-reported, Positive Affect and Negative Affect Schedule-Child Form (PANAS-C; Laurent et al., 1999). This questionnaire was adapted for the original adult version (Watson & Clark, 1994) to capture a child respondent's emotions over the past few weeks. Participants were prompted to read several different words and indicate the frequency they experienced the specific emotions and feelings (e.g., sad, upset, gloomy, mad, joyful, happy, proud, excited) over the past few weeks. A 5-point Likert scale was used to gauge frequency (1=*Never*; 2=*Once a week*; 3=*2-3 times a week*; 4=*4-6 times a week*; 5=*Daily*). Following PANAS-C protocol, scores for positive affect (PA or Positive Affect) were calculated by summing the raw scores (i.e., 1 to 5) for each of the 12-items that composed the PA scale. For this subscale, higher scores indicated more experience of positive affect. These items included "interested," "excited," "happy," "strong," "energetic," "calm," "cheerful," "active," "proud," "joyful," "delighted," and "lively." Similarly, the scores for negative affect (NA or Negative Affect) were calculated by summing the raw scores for the 15-items that made up the NA scale. The items in the NA scale comprised of the following: "sad," "frightened," "ashamed," "upset," "nervous," "guilty," "scared," "miserable," "jittery," "afraid," "lonely," "mad," "disgusted," "blue," "gloomy." For this subscale higher scores indicated more experience of negative affect. Laurent and colleagues (1999) reported Cronbach's alpha coefficients of .90 for the Positive Affect scale and .94 for the Negative Affect scale. Consistent with prior literature (Laurent et al., 1999), internal reliability using Cronbach's alpha for the current study was excellent for both subscales (i.e., PA α = .94; NA α = .94).

Aggressive Acts

Aggressive acts were measured both through quantitative and qualitative metrics. Aggressive acts were captured based on youth assaults on both staff and other youth within the SSDJJ facilities. As a part of the SSDJJ record data, assaults were documented by the number of assaults committed over the past 30 days, past 90 days, and over the entirety of their stay in facility differentiated by staff and youth assaults, at the time of population data collection for each of the facilities. The current study considered assaults on staff over the past 90 days (Staff Assaults Past 90), assaults on youth over the past 90 days (Youth Assaults Past 90), overall assaults on staff (Total Staff Assaults), and overall assaults on youth (Total Youth Assaults). Assault items used in analyses were determined based on Aim 1 and Aim 3 analyses.

Qualitative Measures

In addition to quantitative metrics, this study also considered qualitative metrics to gain further insight into youths' capacities for emotion regulation and aggressive acts. As a part of the survey data collected youth were asked to provide short answer responses to the following two prompts: "When you are upset (such as angry, anxious, or sad), how do you act towards others? Towards yourself? (For example, do you: cry, hit others, hurt yourself; want to be alone; talk about your problems)" and "When you are upset what do you do to calm down?" As these questions were included in the survey, participants were able to freely respond or skip the questions entirely.

Quantitative Analytical Plan

A mixed-method design including both quantitative and qualitative analyses was used in the current study. This study followed a mixed-method explanatory sequential design, in which the quantitative analyses was conducted first and followed by a qualitative analysis to help explain the findings of the quantitative analyses (Busetto et al., 2020). Data for analyses consisted of cross-sectional data from each of the four waves. Prior to conducting any analyses, all duplicate data within waves was excluded, as well as any data that captured change over time for participants. To address the aims of this study several statistical procedures were conducted using both SPSS version 29 and MPlus statistical software version 8.4 (Muthen & Muthen, 2017). Prior to conducting primary analyses, descriptive statistics were generated, and assumptions of regression were tested. Assumptions tested included normality, independence, multicollinearity, and determining whether outliers were present in the data. Preliminary analyses using Pearson correlations and analysis of variance (ANOVAs) were conducted to explore the relationships among dependent variables and five potential covariates (i.e., Age, Sex, Race/Ethnicity, Wave, and Facility). Relationships among covariates were then tested using ANOVAs and Chi-square analyses. These analyses determined that two variables (i.e., Wave and Race/Ethnicity) should be included as covariates in the primary analyses. Covariates were only included in primary models where the dependent variable was significantly associated with the particular covariate(s).

Hypotheses for Aim 1, specifically **H1a** through **H1d**, were assessed through Pearson correlation analyses, establishing the links between different ACEs (i.e., total ACEs and subgroups: abuse, neglect, and household dysfunction) and emotion, difficulties in emotion regulation variables, as well as items for aggressive acts. In general, hypotheses and research questions for Aim 2 through Aim 4 were first conducted and reported without covariates. Follow-up analyses were then conducted and reported with the appropriate covariate(s) reliant upon which dependent variable is included in the analysis. For Aim 2, a multivariate linear regression was used to assess **H2**, which examined the relationship between cumulative ACEs and difficulties in emotion regulation before and after adding the appropriate covariates. Similarly, multivariate linear regression analyses were used to address the research question for Aim 2, in evaluating the different relationships between specific subgroups of ACEs and emotion regulation. Multivariate linear regression analyses were also used to address the research questions for Aim 3, in establishing relationships between the different ACE subgroups and components of emotion (i.e., positive affect and negative affect), and the relationships between different components of emotion and difficulties in emotion regulation, without and with covariates. Based on results addressing the research questions for Aim 3, a mediation analysis was used to examine **H3**, which considers the mediating effect of emotion on the relationship between different ACE subcategories and difficulties in emotion regulation. Although hypothesis 3 specifically addresses this mediating relationship with abuse ACEs as the predictor, additional models including the other subcategories of ACEs were ran if deemed appropriate based on prior analyses (See Figure 5). Lastly, Aim 4 was addressed through an exploratory serial mediation model. Specifically, for **H4** the serial mediation analysis examined whether emotion mediated the relationship between abuse ACE and difficulties in emotion regulation, which in turn mediated the relationship between emotion and aggressive acts (See Figure 6). Similar to H3, although H4 only specifically addresses abuse ACEs, similar models were conducted for neglect and household dysfunction ACEs, if suitable based on prior analyses.

The aforementioned mediation analyses were addressed based on the four conditions outlined by Barron and Kenny (1986):

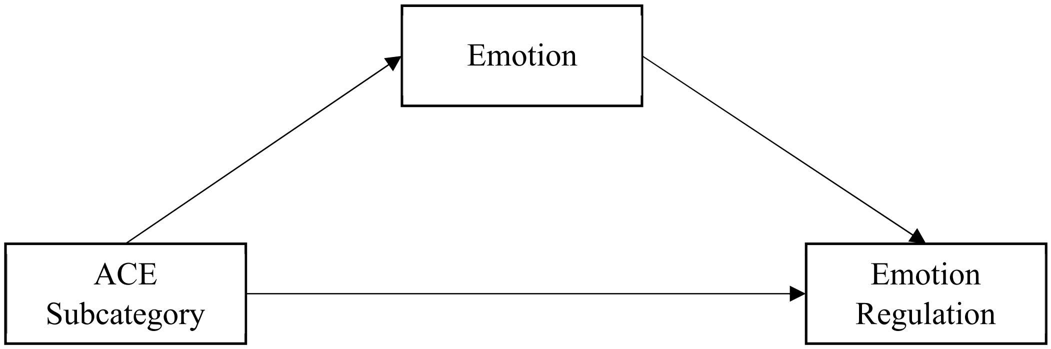
1) The total effect of the dependent variable (*DV*) on the independent variable (*IV*) must be significant (pathway *c*);
2) The effect of *DV* on the mediator *(M*) must be significant (pathway *a*);
3) The effect of *M* on *IV* controlled for *DV* must be significant (pathway *b*);
4) The effect *DV* on *IV* controlled for *M* must be smaller than the total effect of *DV* on *IV*.

For Aim 3 and Aim 4, a conclusion of mediation was only determined present if these four steps were satisfied. Thus, prior to running mediation models, regression analyses on the relevant ACE subcategories and relevant items for aggressive acts (e.g., assaults) were conducted to satisfy the first condition. Additionally, regression analyses were also conducted between difficulties in emotion regulation and the relevant assault items. Other regression analyses required to meet Barron and Kenny's conditions were addressed through Aim 2 and the first portion of Aim 3. Based on Fritz and MacKinnon (2007), the required sample size for mediation analyses when using Barron and Kenney was determined to be $N = 562$ (See Table 3 in Fritz & MacKinnon, 2007). As prior research indicated a small to medium effect size for studies of emotion regulation and emotion, as well as for ACEs and recidivism for YLS, which is linked to aggressive acts (Astridge et al., 2023; Boemo et al., 2022; Fitton et al., 2020), this study cautiously used a small effect size when determining necessary power.

Built upon prior analyses, **H3** and **H4** were conducted through exploratory analyses using appropriate variables determined through significant relationships identified in both Aim 2 and Aim 3. Analyses for **H3** and **H4** were conducted using structural equation modeling (SEM) in Mplus to build out the different mediation analyses using maximum likelihood as the estimator. Additionally, the conditional effects 95% confidence intervals (CIs) were attained using a bootstrap method based on 5,000 iterations. Analyses using SEM allow for the incorporation of latent variables. If latent variables were to be included in the models, as determined by prior analyses, a two-step process would occur prior to examining mediation results. These would include two sequential steps: 1) the testing measurement models for each latent variable using Confirmatory Factor Analysis (CFA), and 2) testing the structural models. The purpose of the CFA would be to test the validity of the latent variables using the criteria for goodness of fit, including consideration for RMSEA, CFI, TLI, and SRMR. Criteria for goodness of fit would include values of less than .05 for both RMSEA and SRMR, as well as values greater than .90 for CFI and TLI (Hu & Bentler, 1999; Yanosky et al., 2013). The second step was to examine the structural model by considering the relationships between observed variables and any latent variables, while also examining the direct and indirect effects among the predictor variables and outcome variable. Possible latent variables included emotion (i.e., both positive and negative affect) and aggressive acts (i.e., all staff assaults, all youth assaults, staff 90-day assaults, and youth 90-day assaults). If latent variables were determined to be inappropriate, prior analyses would not include CFA, but would still consider the goodness of fit for the structural model, if the model is not fully saturated.

Figure 5

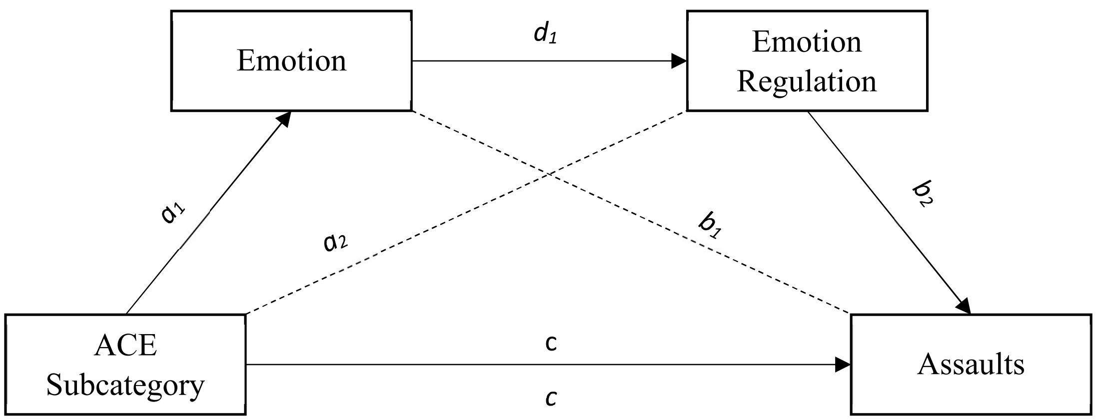
Proposed Mediation Model(s) for Aim 3



Note. The model above depicts the analysis based on observable variables for emotion rather than latent variables.

Figure 6

Proposed Serial Mediation Model(s) for Aim 4



Note. The model above depicts the analysis based on observable variables for emotion and assaults rather than latent variables.

Qualitative Procedures

Qualitative analyses were conducted on participant responses to the two short answer prompts based on descriptive qualitative coding methodology (Sandelowski, 2000) related to emotions, emotional experiences, emotion regulation and aggressive acts. Of the 1,021 individuals that participated in the cross-sectional design of the current study, 859 youth responded in some way to one or more of the two survey questions. Two coders were used to analyze all 859 responses (i.e., primary coder and secondary coder). After reviewing 5% of the responses, a codebook was developed by the primary coder, and was expanded during training based on discussion and consensus between coders. The codebook included 11 primary codes with secondary codes ranging from one to eight codes within each primary code. The final 11 primary codes used included: Aggressive Behavior, Self-harm, Cry, Isolation, Thought Patterns, Communication, Regulating Calming Strategies, Neutral Calming Strategies, Maladaptive Calming Strategies, Actively Engaging in Emotion Regulation, and Other (See Appendix for summary of primary and secondary codes).

Once the codebook was developed and the secondary coder was trained on the codebook, the primary coder and secondary coder used 100 participant responses to achieve inter-rater reliability. This portion of data was broken up into two segments, each having 50 participant responses in order for reliability to be assessed at two different time points. After the primary and secondary coder independently coded the first segment of 50 responses, inter-rater reliability of 81% was achieved based on primary codes, meeting the threshold of 80% reliability (O’Connor & Joffe, 2020; Landis & Koch, 1977). Immediately following this first time point of achieving reliability iterations to the codebook were made. Thus, the second segment of 50 was independently coded, in which 86% inter-rater reliability was achieved. After inter-rater reliability of 86% was achieved, all the remaining participant responses were divided equally between the two coders and coded independently. The qualitative coding procedures discussed above align with recommendations by O’Connor and Joffe (2020).

All youth statements included here and in the results section were left as direct quotes, to maintain the integrity of the qualitative data. Any misspellings or grammatical errors are true to the original youth responses. It should be noted that although youth responses were generally short, most responses were coded with one or more primary codes. For instance, one youth stated that "[Question 1 response] when i'm upset i seclude myself, i 2 cry, hit things, and yell. [Q2 response] when im upset i write, color, read, draw, and listen to some music to calm myself down." This entire response, including both questions, was coded as one data segment and was assigned 4 different primary codes (i.e., Aggressive Behavior, Cry, Isolation, and Regulating Calming Strategies). While another youth provided a much shorter response "[Question 1 response] cuss, be alone [Q2 response] basketball, music," which was assigned 3 different primary codes (i.e., Aggressive Behavior, Isolation, and Regulating Calming Strategies). Additionally, some individuals responded to the first question using numbers from 1 to 5, referring to the options and order listed in the example (one referred to "cry," two for "hit others," three for "hurt yourself," four for "want to be alone," and five for "talk about your problems." These numbered responses were coded using the corresponding primary and secondary codes. Lastly, any youth response that indicated self-harm or suicidal ideation were addressed internally by SSDJJ facility staff and followed an internal protocol designed to ensure the youth's health and safety.

Quantitative Results

Descriptive Statistics

As previously discussed, duplicate data within each wave and participant data collected at multiple time points were eliminated from the dataset used for all of the current study analyses. This resulted in a total of $N = 1{,}021$ participants between the ages of 13 and 22 $(M = 18.9)$, with the majority of individuals being male (89.7%) and either of Black (38.9%) or Hispanic (39.2%) Race/Ethnicity. The following table summarizes the descriptive statistics of the relevant concepts for this study.

Table 1

Descriptive Statistics of Background Characteristics and Relevant Concepts

	n	Range	*M* (*SD*)
Age	954	13 - 22	18.86 (1.95)
Total ACEs	847	0 - 10	3.52 (2.47)
Abuse (ACEs)	847	0 - 3	0.72 (0.97)
Neglect (ACEs)	847	0 - 2	0.49 (0.69)
Household (ACE)	847	0 - 5	2.31 (1.39)
DERS-sf	981	1 - 5	2.39 (0.99)
Negative Affect (NA)	830	15 - 75	33.68 (15.69)
Positive Affect (PA)	856	12 - 60	34.68 (14.01)
Staff Assaults Past 90	954	0 - 13	0.36 (1.01)
Youth Assaults Past 90	954	0 - 9	0.69 (1.19)
Total Staff Assaults	954	0 - 43	1.00 (3.05)
Total Youth Assaults	954	0 - 23	1.86 (2.95)

Note. M = mean, SD = standard deviation, ACEs = Adverse Childhood Experiences, DERS-sf = Difficulties in Emotion Regulation – Short Form, Staff Assaults Past 90 = assaults on staff over the past 90 days, Youth Assaults Past 90 = assaults on youth over the past 90 days, Total Staff Assaults = overall assaults on staff, Total Youth Assaults = overall assaults on youth.

Covariate Tests

The associations between potential dependent variables (including DERS-sf, PA, NA, Staff Assaults Past 90, Youth Assaults Past 90, Total Staff Assaults, and Total Youth Assaults) and potential covariate variables (i.e., Age, Sex, Race/Ethnicity, Wave, Facility) were explored. Results of Pearson's correlation indicated that Age correlated with both difficulties in emotion regulation and positive affect. The relationships between the four categorical variables including

Sex, Race/Ethnicity, Wave and Facility and the potential dependent variables were then tested using separate ANOVAs and chi-square tests.

Results indicated a significant difference among DERS-sf and two categorical covariates including Sex, $F(1, 921) = 7.19$, $p = .007$, and Wave, $F(3, 977) = 6.31$, $p \leq .001$. Follow-up tests using Bonferroni's correction indicated that reported DERS-sf were lower for males versus females and were lower at Wave 1 as compared to all other waves. Negative Affect differed by Sex $F(1,783) = 12.75$, $p \leq .001$, Race/Ethnicity, $F(4, 788) = 6.12$, $p \leq .001$, and Facility, $F(6, 778) = 2.43$, $p = .025$. Follow-up tests using Bonferroni's correction indicated that Negative Affect was significantly higher: for females than males, for white individuals versus Black and Hispanic Race/Ethnicity individuals, and for individuals at Facility 4 versus Facility 1. Positive Affect differed by Wave, $F(1, 852) = 11.46$, $p \leq .001$, and Facility, $F(6, 798) = 4.23$, $p \leq .001$. Follow-up test indicated that reported Positive Affect was significantly lower at Wave 1 as compared to all other waves, and at Facility 1 as compared to facilities in 2, 3, 4 and 6.

Additionally, all potential assault dependent variables differed by Facility, $Fs(1, 921) \leq 4.84$, $p \leq .039$, and Wave, Fs$(3, 950) \leq 22.02$, ps $\leq .001$, with the exception of Staff Assaults Past 90 days, which did not differ by Wave. Follow-up tests for the covariate Facility indicated that Facility 1 had significantly higher rates of assaults at for Staff Assaults Past 90 as compared to four other facilities (i.e., Facility 2, Facility 3, Facility 4, & Facility 7). Additionally, Facility 7 was significantly lower in Youth Assaults Past 90 as compared to both Facility 1 and Facility 4, for Total Staff Assaults compared to Facility 1, and for Total Youth Assaults compared to four other facilities (i.e., Facility 1, Facility 2, Facility 3, and Facility 4). Follow-up test for the covariate Wave indicated that: Youth Assaults Past 90 were higher at Wave 2 than all other waves; Total Staff Assaults were higher at Waves 1 and 3 versus Wave and Wave 4; and Total Youth Assaults were higher at Wave 1 than all other waves, as well as Wave 3 was higher than Wave 4.

Additional analyses of chi-squared and ANOVAs found significant relationships among the potential covariates. ANOVAs between Age and other potential covariates determined that Age was associated with Wave, $F(3,950) = 726.35$, $p \leq .001$, Race/Ethnicity, $F(4, 948) = 3.38$, $p = .009$, and Sex, $F(1, 952) = 11.13$, $p \leq .001$. Furthermore, chi-square analyses found that Facility was also significantly related to Wave, X^2 (18, $n = 954$) = 305.96, $p \leq .001$, Race/Ethnicity, X^2 (24, $n = 953$) = 53.16, $p \leq .001$, and Sex, X^2 (6, $n = 954$) = 642.13, $p \leq .001$. Additionally, there was a significant association between Wave and Sex, X^2 (3, $n = 954$) = 8.08, $p = .044$. There was no significant link between Wave and Race/Ethnicity ($p = .197$). Based on these results, Age, Facility, and Sex were not included as covariates in the primary analyses discussed below, as these three variables correlated with both Wave and Race/Ethnicity. Thus, primary analyses for the current study included only Wave and Race/Ethnicity as covariates.

The Wave variable was dummy coded with Wave 1 serving as the reference group, based on results of Bonferroni adjustments for multiple comparisons that indicated the differences between waves varied across the dependent variables. Race/Ethnicity was dummy coded as a dichotomous variable with White serving as the reference group and all other (i.e., Asian, Black, Hispanic, Others) Race/Ethnicity coded as 1. This was done due to Bonferroni adjustments indicating that regardless of the dependent variable, significance was driven based on White verse Hispanic and Black categories.

Assumption Tests

All tests of regression assumptions were conducted using SPSS Version 26. Normality of the error terms was assumed under Central Limit Theorem based on the reasonably large sample

($N = 1{,}021$) for the current study (Field, 2015). Independence was tested using Durbin-Watson test with values greater than 1 and less than 3 indicating the assumption was not violated (Durbin & Watson, 1950). Multicollinearity was assessed by examining the condition indices, where values lower than 10 indicated multicollinearity was not present (Kim, 2019). Lastly, using Cook's distance no outliers were evident among the relevant variables (Cook, 1977).

Aim 1 - Correlation Analyses

Aim 1 of the current study examined the correlations of cumulative ACEs, as well as subcategories of ACEs, and variables of emotion, difficulties in emotion regulation, and assaults (outcome variables). The goal of this aim was to understand whether different forms were consistently or inconsistently correlated with these outcome variables. To address this Aim, Person's correlations were conducted on the variables of interest (see Table 2). As expected, based on H1a, Total ACEs were positively correlated with difficulties in emotion regulation ($p < .05$). Similarly, both the Abuse and Household ACEs subcategories also had significant positive correlations with difficulties in emotion regulation (ps $< .05$). Neglect ACEs were only marginally correlated with DERS-sf and Total Youth Assaults (ps $\leq .095$). Neglect ACEs were not significantly correlated with DERS-sf, nor were they correlated with any of the variables of interest.

Table 2

Pearson's Correlations for Cumulative ACEs and Variables of Interest

	Total ACEs	Abuse ACEs	Neglect ACEs	House-hold ACEs	DERS -sf	PA	NA	Staff Assaults Past 90	Youth Assaults Past 90	Total Staff Assaults	Total Youth Assaults
Total ACEs	1										
Abuse ACEs	.79**	1									
Neglect ACEs	.74**	.51**	1								
Household ACEs	.86**	.45**	.46**	1							
DERS-sf	.10**	.11**	.06†	.07*	1						
PA	.06	.02	.02	.07*	.30**	1					
NA	.12**	.14*	.07	.08*	.53**	.38**	1				
Staff Assaults Past 90	.00	.02	-.02	.00	.02	-.06	.00	1			
Youth Assaults Past 90	.06†	.01	.02	.10*	.08*	.01	.07	.31**	1		
Total Staff Assaults	.07*	.09*	.05	.05	-.00	-.01	.08*	.64**	.17**	1	
Total Youth Assaults	.07*	.05	.06†	.06	.01	-.06	.07*	.35**	.52**	.57**	1

Note. ** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed). † Correlation is marginally significant at the 0.10 level (2-tailed).

Hypothesis H1b was partial confirmed as total ACEs had a significant positive correlation with both Total Staff Assaults and Total Youth Assaults (*p*s < .05). Additionally, Abuse ACEs was positively correlated with Total Staff Assaults, and Household ACEs were positively correlated with Youth Assaults Past 90 (*p*s < .05). However, there were no significant correlations between any of the ACE variables and Staff Assaults Past 90. Additionally, Abuse ACEs were not linked to either Youth Assaults Past 90 or Total Youth Assaults. While Total ACEs were only marginally correlated with Youth Assaults Past 90 (p = .066).

Aim 2 - Regression Analyses

To address Aim 2, several multivariate linear regression analyses were conducted to further examine the relationships among ACEs and DERS-sf (i.e., difficulties in emotion regulation). Results discussed below, are reported first without the covariate included in the analysis and then with the inclusion of the covariate. Preliminary covariate tests, previously discussed, determined Wave should be included as a covariate in all analyses with DERS-sf as the dependent variable.

Results of a linear regression indicated that Total ACEs positively predicted DERS-sf (b = .04 [*SE* = .01], t = 2.82, p = .005). Significance was still maintained with the inclusion of the covariate Wave (b = .04 [*SE* = .01], t = 2.61, p = .009). Similarly, Abuse ACEs also positively predicted DERS-sf (b = .11 [*SE* = .04], t = 3.12, p = .002), and the relationship was maintained when Wave was included in the model (b = .11 [*SE* = .04], t = 3.09, p = .002). In contrast, although Household ACEs was a positive predictor of DERS-sf (b = .05 [*SE* = .03], t = 2.00, p = .045), when the covariate of Wave was included in the model, the association was non-significant (b = .04 [*SE* = .03], t = 1.62, p = .107). See Table 3 for a full summary of relationships. Regression analyses were not conducted on neglect ACEs as bivariate correlations indicated there was no existing link between neglect and challenges in emotion regulation.

Table 3

Aim 2 – Statistical Results for ACEs and Difficulties in Emotion Regulation

n = 821	b	SE	t	p
Total ACEs (only)	0.04	0.01	2.82	.005
Total ACEs (covariates)	0.04	0.01	2.61	.009
Wave 2	0.28	0.09	3.39	≤ .001
Wave 3	0.28	0.11	2.65	.008
Wave 4	0.25	0.09	2.65	.008
Abuse ACEs (only)	0.11	0.04	3.12	.002
Abuse ACEs (covariates)	0.11	0.04	3.09	.002
Wave 2	0.29	0.09	3.46	≤ .001
Wave 3	0.29	0.11	2.74	.006
Wave 4	0.26	0.09	2.78	.005
Household ACEs (only)	0.05	0.03	2.00	.045
Household ACEs (covariates)	0.04	0.03	1.62	.107
Wave 2	0.29	0.09	3.40	≤ .001
Wave 3	0.27	0.11	2.56	.011
Wave 4	0.24	0.09	2.62	.009

Note. ACEs = Adverse Childhood Experiences. Covariates included the four different waves with Wave 1, serving as the reference group.

Aim 3 – Regression Analyses and Mediation Analyses

Aim 3 was addressed through several analyses using two different types of methods: multivariate linear regressions and SEM mediation. All results discussed below are reported first without the covariate(s) in the analyses and then with the inclusion of the covariate(s). Based on preliminary covariate tests, analyses that included Negative Affect or Positive affect as the dependent variable included both Wave and Race/Ethnicity as covariates. Multivariate linear regressions were used to answer the two research questions for Aim 3: Does the relationship between ACEs and emotion differ based on subcategories of ACEs, as well as positive and negative affect; and Does emotion (i.e., positive and/or negative affect) predict difficulties in emotion regulation?

Based on correlation results from Aim 1, three regression analyses were conducted to address the first research question. Results showed a significant positive relationship between Abuse ACEs and Negative Affect ($b = 2.32$ [$SE = .61$], $t = 3.82$, $p \leq .001$), regardless of whether covariates of Wave and Race/Ethnicity were included in the model ($b = 1.97$ [$SE = .61$], $t = 3.23$, $p = .001$). Household ACEs was also a positive predictor of Negative Affect ($b = 0.90$ [$SE = .43$], $t = 2.10$, $p = .036$). However, when covariates were added to the model the relationship was only marginally significant ($b = .83$ [$SE = .43$], $t = 1.95$, $p = .052$). Similarly, Household ACEs were also a positive predictor of Positive Affect ($b = 0.74$ [$SE = .38$], $t = 1.97$, $p = .049$), but the relationship did not sustain significance when covariates were added to the model ($b = 0.46$ [$SE = .37$], $t = 1.23$, $p = .220$). See Table 4 for a summary of statistical findings for Aim 3 research question 1.

Table 4

Aim 3 – Statistical Results for ACEs and Emotion

	b	*SE*	*t*	*p*
Abuse ACEs (only) → NA (*n* = 688)	2.32	0.61	3.82	≤ .001
Abuse ACEs (covariates) → NA	1.97	0.61	3.23	.001
Wave 2	0.19	1.50	0.13	.899
Wave 3	-4.01	1.81	-2.21	.027
Wave 4	0.92	1.61	0.57	.568
Race/Ethnicity	-4.46	1.42	-3.15	.002
Household ACEs (only) → NA (*n* = 688)	0.90	0.43	2.10	.036
Household ACEs (covariates) → NA	0.83	0.43	1.95	.052
Wave 2	0.04	1.51	0.03	.978
Wave 3	-4.49	1.83	-2.45	.014
Wave 4	0.61	1.63	0.37	.710
Race/Ethnicity	-4.94	1.41	-3.50	≤ .001
Household ACEs (only) → PA (*n* = 709)	0.74	0.38	1.97	.049
Household ACEs (covariates) → PA	0.46	0.37	1.23	.220
Wave 2	5.22	1.32	3.95	≤ .001
Wave 3	7.48	1.60	4.69	≤ .001
Wave 4	4.77	1.44	3.32	≤ .001
Race/Ethnicity	-2.31	1.25	-1.85	.065

Note. ACEs = Adverse Childhood Experiences, NA = Negative Affect, PA = Positive Affect.

Covariates included the four different waves, with Wave 1 serving as the reference group, and

Race/Ethnicity which was dummy coded as a dichotomous variable with White serving as the reference group and all other Race/Ethnicity coded as 1.

Aim 1 correlations indicated an association between DERS-sf and both affect components. Based on preliminary covariate tests, analyses that included DERS-sf as a dependent variable include Wave as a covariate. Regression analyses were conducted to further examine these relationships and address the second question of Aim 3: Does positive and/or negative affect predict difficulties in emotion regulation? Results showed that both Positive (b = 0.02 [SE = .00], t = 9.40, $p \leq .001$) and Negative Affect (b = 0.03 [SE = .00], t = 17.83, $p \leq .001$) were positive predictors of DERS-sf, regardless of whether or not the covariate was included in the model (bs ≤ 0.03 [SEs ≤ .00], ts ≤ 18.28, ps ≤ .001; see Table 5).

Table 5

Aim 3 – Statistical Results for Emotion and Difficulties in Emotion Regulation

	b	*SE*	*t*	*p*
PA (only) → DERS-sf (*n* = 842)	0.02	.00	9.04	≤ .001
PA (covariates) → DERS-sf	0.02	.00	8.36	≤ .001
Wave 2	0.21	0.09	2.35	.019
Wave 3	0.21	0.10	2.01	.045
Wave 4	0.16	0.09	1.82	.070
NA (only) → DERS-sf (*n* = 974)	0.03	0.00	17.83	≤ .001
NA (covariates) → DERS-sf	0.03	0.00	18.28	≤ .001
Wave 2	0.28	0.08	3.62	≤ .001
Wave 3	0.49	0.09	5.23	≤ .001
Wave 4	0.25	0.08	3.20	.001

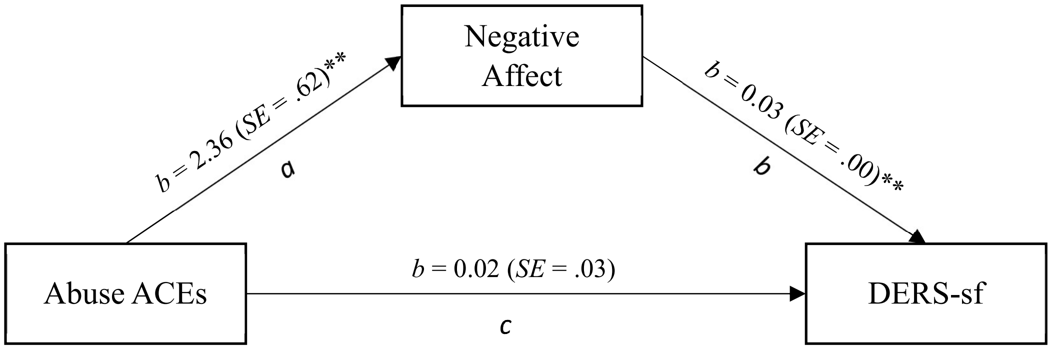
Note. PA = Positive Affect, DERS-sf = Difficulties in Emotion Regulation – Short Form, NA = Negative Affect. Covariates included the four different waves with Wave 1, serving as the reference group.

Lastly, based on prior analyses, three separate mediation analyses were conducted to examine the mediating effect of affect. The first mediation analysis assessed whether negative affect mediated the relationship of Abuse ACEs and difficulties in emotion regulation (H3). See Figure 7 for a path model. Similar to prior analyses all mediation models are reported first without the inclusion of covariate(s) and then are reported with the inclusion of the covariate(s). Preliminary covariate tests determined that both Wave and Race/Ethnicity should be included as covariates when Neglect Affect and DERS-sf are included in the model as either mediators or dependent variables.

The results revealed a significant effect of Abuse ACEs on Negative Affect (*a* path), $b = 2.361$ ($SE = .62$), $t = 3.80$, $p \leq .001$, with reported negative affect increasing as reported types of abuse increased. There was also a significant relationship between Negative Affect and DERS-sf (*b* path), $b = 0.03$ ($SE = .00$), $t = 12.81$, $p \leq .001$, in that as Negative Affect increased DERS-sf also increased. Furthermore, confidence intervals suggested there was an indirect effect of Negative Affect on the relationship between reported Abuse ACEs and DERS-sf (c path; $b = 0.02$ [SE = .03] $t = 0.62$, $p = .538$; CI: 0.038, 0.118). Consistent with the results above, when covariates of Wave and Race/Ethnicity were included in the model, significance was still found for both *a* ($b = 2.03$ [$SE = .64$], $t = 3.19$, $p = .001$) and *b* paths ($b = 0.03$ [$SE = .00$], $t = 13.10$, $p \leq .001$), with confidence intervals suggesting an indirect effect of Negative Affect on Abuse ACEs and DERS-sf (c path; b = 0.02 [SE = .03] $t = 0.47$, $p = .640$; CI: 0.027, 0.109).

Figure 7

Path Model of Negative Affect on Abuse and Difficulties in Emotion Regulation

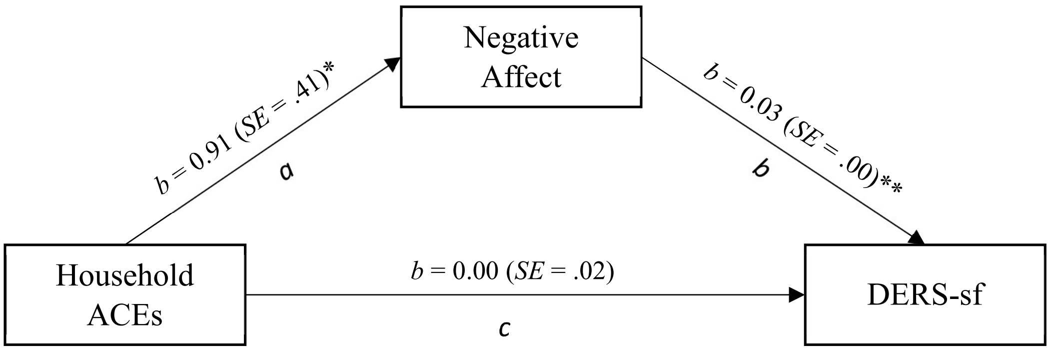


Note. Results depicted in the above model do not include covariates. * Indicates significance at $p \leq .05$, ** indicates significance at $p \leq .01$.

The second mediation analysis, deemed appropriate based prior results, assessed whether Negative Affect mediated the relationship between Household ACEs and DERS-sf. See Figure 8 for a path model of this mediation analysis. The results showed a significant effect of Household ACEs on Negative Affect (*a* path), $b = 0.91$ ($SE = .41$), $t = 2.20$, $p = .028$, with Negative Affect increasing as reported types of Household ACEs increased. Similar to the first mediation analysis, there was also a significant relationship between Negative Affect and DERS-sf (*b* path), $b = 0.03$ ($SE = .00$), $t = 12.89$, $p \leq .001$. Additionally, confidence intervals suggested there was an indirect effect of Negative Affect on the relationship between reported Household ACEs and DERS-sf (c path; $b = 0.02$ [SE = .03] $t = 0.47$, $p = .905$; CI: 0.004, 0.057). Furthermore, consistent with results above, when covariates for Wave and Race/Ethnicity were included in the model significance was still found for both *a* ($b = 0.85$ [$SE = .42$], $t = 2.01$, $p = .045$) and *b* paths ($b = 0.03$ [$SE = .00$], $t = 13.21$, $p \leq .001$), with confidence intervals still suggesting an indirect of Negative Affect on Abuse ACEs and DERS-sf (c path; $b = -0.01$ [SE = .02] $t = -0.50$, $p = .615$; CI: 0.001, 0.057).

Figure 8

Path Model of Negative Affect on Household Dysfunction and Difficulties in Emotion Regulation



Note. Results depicted in the above model do not include covariates. * Indicates significance at $p \leq .05$, ** indicates significance at $p \leq .01$.

Lastly, a third mediation analysis was conducted to examine whether Positive Affect mediated the relationship between Household ACEs and DERS-sf. Results of this mediation analysis indicated there was no significant association between Household ACEs and Negative Affect (*a* path; $p = .058$), while controlling for DERS-sf, and CI of the 5,000 iterations indicated no indirect effect (-.001, .043). Thus, there was no mediating effect of Positive Affect on Household ACEs and DERS-sf.

Aim 4 – Exploratory Serial Mediation Analyses

Aim 4 was addressed through a final exploratory serial mediation analysis. Based on prior analyses conducted in Aim 3, it was determined that one serial mediation model was appropriate with Household ACEs as the form of ACEs, Negative Affect as the emotion, and Youth Assaults Past 90 as the assaults variable used in the analysis. This model included both Negative Affect and DERS-sf as mediators of the relationship between the independent variable of Household ACEs, and the dependent variable Youth Assaults Past 90. Consistent with results previously reported, this serial mediation analysis was conducted first without covariates and then with covariates. As determined by preliminary covariate tests both Wave and Race/Ethnicity were included in the final model as covariates.

As correlation analyses in Aim 1 indicated that Household ACEs and DERS-sf were each separately linked to Youth Assaults Past 90, this form of assault was chosen for this final exploratory analysis. To confirm the predictive relationships between Household ACEs and Youth Assaults Past 90 days, as well as DERS-sf and Youth Assaults Past 90, two multivariate linear regression analyses were conducted. Results confirmed that Household ACEs was a positive predictor of Youth Assaults Past 90 (b = 0.09 [SE = .03], t = 2.91, p = .004), regardless of the covariates Wave and Race/Ethnicity being included in the model (b = 0.08 [SE = .03], t = 2.67, p = .008). Similarly, results also showed that DERS-sf was also a positive predictor of Youth Assaults Past 90 without (b = 0.09 [SE = .04], t = 2.29, p = .023) and with the covariate of Wave included in the model (b = 0.08 [SE = .04], t = 2.07, p = .039). Thus, it was deemed appropriate to run a serial mediation analysis testing the mediating effects of Negative Affect and DERS-sf on Household ACEs and Youth Assaults Past 90.

Results of the serial mediation model revealed a significant positive relationship between Household ACEs and Negative Affect, with greater number of ACEs predicting higher rates of Negative Affect. Youth's experiences of Negative Affect were positively linked to DERS-sf, which indicated that when youth experienced more Negative Affect they reported greater difficulties in regulating emotions. DERS-sf was in turn associated with increased rates of assaults on youth in the past 90 days. Furthermore, the condition effects at 95% CIs with 5,000 iterations on the data indicated there was an indirect mediating effect of Negative Affect on Household ACEs and DERS-sf (b = 0.03, [SE = .01], t = 2.24, p = .025; CIs: .003, .056), as well as an indirect effect of DERS-sf on Negative Affect and Youth Assaults Past 90 ($b = 0.03$, [$SE = .00$], $t = 1.96$, $p = .050$; CIs: .000, .007). Overall, results of the model confirmed that serial mediation occurred with an indirect effect of both Negative Affect and DERS-sf on the relationship between Household ACEs and Youth Assaults Past 90 ($b = 0.03$, [$SE = .00$], $t = 1.41$, $p = 0.158$; CIs: .000, .008). See Table 6 for a summary of the direct path inferential statistics, Table 7 for a summary of indirect effects, and Figure 9 for the serial mediation path model.

Table 6

Inferential Statistics of Direct Effects for Serial Mediation Model

	b	*SE*	*t*	*p*
Household ACEs → NA (a_1 path)	0.90	0.41	2.21	.027
NA → DERS-sf (d path)	0.03	0.00	12.58	≤ .001
Household ACEs → DERS-sf (a_2 path)	0.00	0.02	0.10	.921
NA → Youth Assaults Past 90 (b_1 path)	0.00	0.00	0.24	.809
DERS-sf → Youth Assaults Past 90 (b_2 path)	0.10	0.05	1.98	.047
Household ACEs → Youth Assaults Past 90 (c path)	0.08	0.03	2.62	.009

Note. Direct effects paths are depicted in Figure 9. ACEs = Adverse Childhood Experiences, NA = Negative Affect, DERS-sf = Difficulties in Emotion Regulation – Short Form.

Table 7

Indirect Effects for Serial Mediation Model

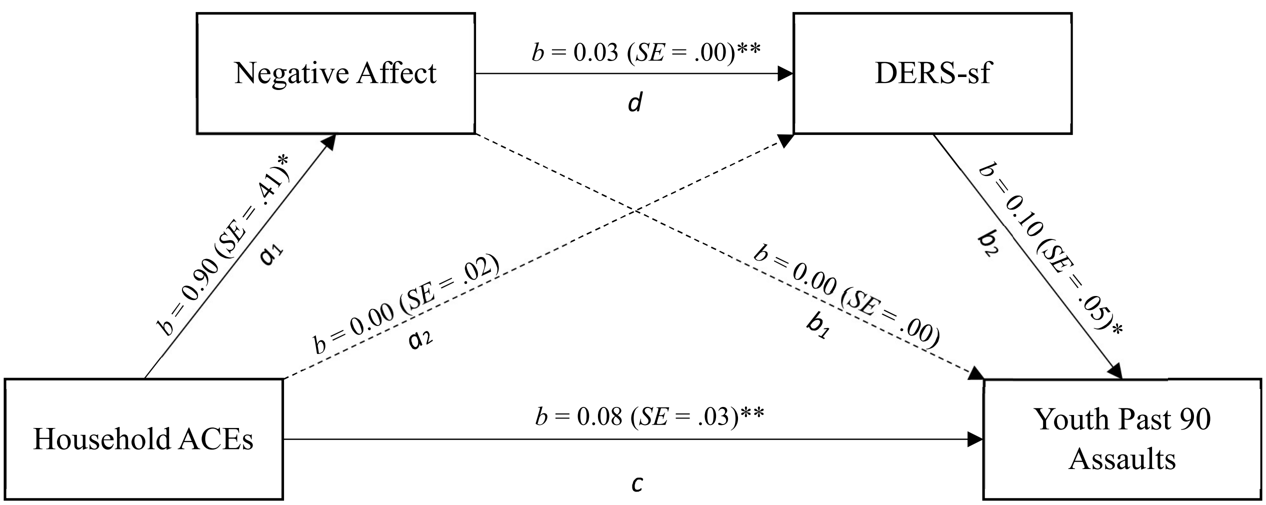
			95% CI	
	b	*SE*	*Lower*	*Upper*
Household ACEs → NA → DERS-sf	0.03	0.01	0.000	0.056
NA → DERS-sf → Youth Assaults Past 90	0.00	0.00	0.000	0.007
Household ACEs → NA → DERS-sf → Youth Assaults Past 90	0.00	0.00	0.000	0.008

Note. ACEs = Adverse Childhood Experiences, NA = Negative Affect,

DERS-sf = Difficulties in Emotion Regulation – Short Form.

Figure 9

Serial Mediation Path Model



Note. Results depicted in the above model do not include covariates. Only significant relationships are depicted. * Indicates significance at $p \leq .05$, ** indicates significance at $p \leq .01$.

However, when covariates for Wave and Race/Ethnicity were included in the model, the relationship between DERS-sf and Youth Assaults Past 90 was no longer significant ($b = 0.08$, [$SE = .04$], $t = 1.79$, $p = .074$). All other relationships held significance, see Table 8 for a summary of inferential statistics of the direct effects. Results still indicated an indirect effect of Negative Affect on Household ACEs and DERS-sf (b = 0.03, [SE = .01], t = 2.02, p = .043; CIs: .000, .056). However, the indirect effect of DERS-sf on Negative Affect and Youth Assaults Past 90 (b = 0.00, [SE = .00], t = 1.77, p = .077; CIs: .000, .007) and the overall model of serial mediation were non-significant (b = 0.00, [SE = .00], t = 1.28, p = .202; CIs: -.001,.007). See Table 9 for a summary of the indirect effects statistics.

Table 8

Inferential Statistics of Direct Effects for Serial Mediation Model with Covariates

	b	SE	t	p
Household ACEs → NA (a_1 path)	0.85	0.42	2.00	.045
Wave 2	-0.21	1.53	-0.14	.891
Wave 3	-4.80	1.62	-2.96	.003
Wave 4	0.65	1.61	0.40	.686
Race/Ethnicity	-4.70	1.38	-3.41	.001
NA → DERS-sf (d path)	0.03	0.00	12.87	≤ .001
Household ACEs → DERS-sf (a_2 path)	-0.01	0.02	-0.51	.608
Wave 2	0.29	0.08	3.54	≤ .001
Wave 3	0.41	0.09	4.30	≤ .001
Wave 4	0.18	0.08	2.28	.023
Race/Ethnicity	-0.05	0.08	-0.61	.544
NA → Youth Assaults Past 90 (b_1 path)	0.00	0.00	0.12	.904
DERS-sf → Youth Assaults Past 90 (b_2 path)	0.09	0.05	1.79	.074
Household ACEs → Youth Assaults Past 90 (c path)	0.08	0.03	2.39	.017
Wave 2	0.41	0.11	3.64	≤ .001
Wave 3	-0.18	0.10	-1.85	.064
Wave 4	-0.08	0.10	-0.74	.462
Race/Ethnicity	-0.05	0.10	-0.52	.604

Note. ACEs = Adverse Childhood Experiences, NA = Negative Affect,

DERS-sf = Difficulties in Emotion Regulation – Short Form. Covariates included the four different waves, with Wave 1 serving as the reference group, and Race/Ethnicity which was dummy coded as a dichotomous variable with White serving as the reference group and all other Race/Ethnicity coded as 1.

Table 9

Indirect Effects for Serial Mediation Model with Covariates

			95% CI	
	b	*SE*	*Lower*	*Upper*
Household ACEs → NA →DERS-sf	0.03	0.01	0.000	0.056
NA → DERS-sf →Youth Assaults Past 90	0.00	0.00	0.000	0.007
Household ACEs → NA →DERS-sf	0.00	0.00	-0.001	0.007

Note. ACEs = Adverse Childhood Experiences, NA = Negative Affect, DERS-sf = Difficulties in Emotion Regulation – Short Form.

Qualitative Results

As previously discussed, qualitive data for the current study were obtained through two questions in the overall survey of youth. The two short answer questions were coded as one response and worded as follows: "When you are upset (such as angry, anxious, or sad), how do you act towards others? Towards yourself? (For example, do you: cry, hit others, hurt yourself; want to be alone; talk about your problems)" and "When you are upset what do you do to calm down?" The following section provides a descriptive overview of each 11 primary codes, corresponding definitions, subsumed secondary codes, and quotes given by the participants for the different types of codes.

Aggressive Behavior

The primary code of Aggressive Behavior was defined as any response that indicated the individual was physically or verbally aggressive, such that the individual indicated they were likely to attack or confront someone or something when upset. This code consisted of four secondary codes including: *Physical aggression toward others*, *Physical aggression toward objects*, *Verbal aggression*, and *Loss of control*. Of the 859 responses, 177 (20%) were coded as one or more of the secondary Aggressive Behavior codes. Although youth answers could fall within multiple subcategories, over 50% (n = 97) of these responses were coded as *Physical aggression toward others*. Responses that were coded as *Physical aggression toward others* included statements of "I fight," "punch off on someone," "hit others," or "I become physically aggressive." *Verbal aggression* was used to code any indication that the youth engaged in verbal altercations. Such responses included, but were not limited to, "be rude," "I tell them to leave me the f*** alone," "cuss," "cuss out staff," "start argument," or "talk shit." Roughly 8% (n = 65) of the overall sample were coded under *Verbal aggression*. *Physical aggression toward objects* was used to code any response that indicated the youth took out their aggression on a non-animate object such as "I hit things," "hit walls," "destroy things," "punch stuff" or "throw stuff." Responses that were less specific such as "explode," "buck the dorm," "flip out," "take my anger out on others," or "misbehave" were coded as *Loss of control.* Combined, 3-5% of total responses were coded as *Loss of control* (n = 27) or *Physical aggression toward Objects* (n = 42).

Self-harm and Cry

Self-harm was defined as any language within the response that indicated the individual attempts to harm themselves when upset. There were no secondary codes within Self-harm. Of the 859 participant responses, only 34 indicated engagement in some form of self-harm. Responses included specific forms of self-harm, such as "I cut myself," "I will hit my self," "tie ligatures," "I try to kill myself," as well as less specific indications like "I hurt myself" or "self-harm." Cry was also a primary code that did not have any subsumed secondary codes. The definition was straightforward in that any answer that indicated they cried when upset or when trying to calm themselves was included (any statement with the word "cry"). These included, "When I am upset I cry," "I cry in my room," "I cry," "cry it all out," or just "cry."). Although there were higher rates of responses falling within Cry that Self-harm, only 7% (*n* = 63) of individuals indicated they cried when upset.

Isolation

The primary code of Isolation referred to individuals' preference for being in a place or situation that is separate from others. Three secondary codes were subsumed within isolation: *Keep to themselves*, *Self-isolation*, and F*acility isolation*. Both *Keep to themselves* and *Self-isolation* included statements where the participant indicated they attempted to remove themselves from the situation that upset them. However, *Self-isolation* was used when the individual indicated they wanted to be alone, isolate themselves, or go to their cell or room. Some example responses include "I want to be alone," "stay in my cell," "I isolate myself," and "go into my room." Separately, *Keep to themselves* was used when the participant indicated that they removed themselves from the situation, person, or just kept to themselves. Examples of responses included in this secondary code were "[I] stop talking to the person who caused those feelings," "I remove my self from the situation," "[I] keep to myself," "remove myself from others," "I ignore them," and "stay to my self." Lastly, *Facility isolation* included any indication that isolation occurred due to the youth being restrained or put in isolation by staff at the facility, for instance, "Go to security," "taken away," "catch restraints," or "get restrained." Although in general youth responses fell within several different primary and secondary codes, responses were coded under Isolation more than any other primary code. Roughly 45% (*n* = 395) of youth indicated that when upset, or when they tried to calm themselves, they attempted to isolate themselves or have the facility isolate them. Within Isolation, the majority of individual responses fell under the secondary code *Self-isolation* (72%, n = 285).

Thought Patterns

The fifth primary code was Thought Patterns which was defined as any indication of a thought processes, excluding thoughts that were generated as a distraction in order to calm oneself. This primary code consisted of six secondary codes including *Shutdown/uncommunicative*, *Angry/Mad with self or others*, *Difficulty understanding why they feel they way they do*, *Rumination/thinking*, *Think about self-harm*, and *Does not get upset*. Overall, there were 156 (18%) individuals whose responses were categorized into this primary code.

Shutdown/uncommunicative was used to code any response that indicated the individual would not talk to others when they became upset. These included responses such as “I don’t talk,” “I don’t communicate with others…,” “I don’t let people know how I am feeling,” and “I don’t feel like talking about these problems cause yall don’t care anyway idk.” Although responses could be coded with several secondary codes, the majority of the responses that fell within the primary code of Thought Patterns were coded into the subcategory of *Shutdown/uncommunicative* (47%, n = 74). The secondary code, *Angry/Mad with self or others*, included any indication of the youth being mad at themselves or others. Responses included singular answers such as “mad” “I get mad” “I cuss myself out,” “I just get made” to more lengthy replies like “when I am upset I usually become upset at other people.” This subcategory had the second highest number of responses coded under this primary code (n = 38).

Difficulty understanding why they feel they way they do was used mostly when individuals stated “I don’t know” when responding to the first question (i.e., When you are upset [such as angry, anxious, or sad], how do you act towards others? Towards yourself?) and made up 12% (n = 18) of the response within Thought Patterns. As many of the responses were short, it was difficult to decipher whether “thinking” was a beneficial exercise. Thus, the secondary code of *Rumination/thinking* including participant responses such as “talk to my self,” “I sulk and brood,” “think,” and “think about what just happened.” This secondary code made up about 18% (n = 28) of the responses coded within the primary code Thought Patterns. The secondary code of *Think about self-harm* was used anytime an individual indicated they thought about harming themselves, these did not include when individuals indicated they engaged in self-harm. There was very limited indication of thinking about self-harm (n = 7). The last secondary code for Thought Patterns was *Does not get upset* which was used to group responses where the youth indicated they did not get upset. Example responses included “I don’t get upset,” “no I actually get calmer,” “I got no problems,” and “I don’t get mad.” There were also only a limited number of responses that fell within this subcategory (n = 7).

Communication

Communication included any response that indicated the youth attempted to talk about being upset or to someone when they were upset. There were three subcategories within this primary code: *Talk to family/outside/friends*, *Talk to staff or a professional,* and *Talk to someone*. Overall, 22% (n = 192) of participant answers fell within the primary code of communication with those responses being evenly distributed over all three subcodes of communication. The secondary code of *Talk to family/outside/friends* was used to code any participant response that indicated the individual attempted to talk to family or friends that were not in the facility with them. These included answers such as “get on the phone,” “use the blue phone,” “I talk to my mom or dad or girlfriend,” or “talk to family members.” Similarly, *Talk to staff or a professional* was used anytime the youth explicitly stated that they would talk to staff, a therapist, or some other professional. These statements were fairly straight forward with the youth stating "staff" explicitly, or naming the staff member or professional. The last secondary code within communication, *Talk to someone*, captured any statements where the youth indicated they talked to at least one person. The responses could be specific where the youth referred to a friend in facility, such as "talk to my bestfriend. Or one of my peers I could trust," or very broad where the youth just made statements similar to "talk about problems," "talk it out," or "talk to someone about it."

Regulating Calming Strategies

Regulating Calming Strategies referred to any response where the youth indicated they use a positive or beneficial strategy to calm themselves when upset (Gross & Thompson, 2007). These strategies were subcategorized into *Exercise*, *Seek out pressure*, *Meditate*, *Deep breathing*, *Self-regulate*, *Creative activity*, and *Mentally stimulating activity*. Roughly 40% (n = 354) of youth responses fell within one or more of these subcategories, making the primary code of Regulating Calming Strategies the second most used primary code. The secondary code *Exercise* was used to flag any response where the youth attempted to engage in some form of physical activity. This included but was not limited to statements like "workout," "exercise," "walk," "pace," or "do something active." *Seek out pressure* was used when youth indicated they would squeeze or clench their fists, do push-ups, use a stress ball, hug someone (or something), or use pressure points. *Meditate* was only used when the youth specifically used the word meditate. Deep breathing was used if the youth indicated they did deep breathing, counted to ten, or just breathe. Similarly, *Self-regulate* was coded when youth either stated that they "regulate" or "self-regulate," as well as if they employ "coping skills." *Creative activity* included a variety of activities, such as reading, journaling, rapping, writing music, listening to music, drawing, or coloring. Lastly, *Mentally stimulating activity* was used to code any response that indicated the individual engaged in puzzles, games, or playing cards. Of all the secondary codes for Regulating Calming Strategies, engaging in a *Creative activity* was coded the most, with 215 youth responses including some form of creative outlet. The second most used strategy was exercise (n = 77) and then deep breathing (n = 55). The other instances of calming strategies within this primary code were relatively low with 23 responses or less being coded for each.

Neutral Calming Strategies

Neutral Calming Strategies were defined as strategies the youth engaged in to calm themselves that were considered neither an effective nor ineffective strategy in an attempt to regulate their emotions (Gross & Thompson, 2007). Similar to regulating strategies, there were several secondary codes for neutral calming strategies including *Think about something else*, *Sleep*, *Media outlet*, *Eating*, and *Do nothing*. Roughly 26% (n = 230) of participants indicated they used a calming strategy that qualified as neutral, with the majority of responses falling under thinking about something else, sleep, and do nothing. *Think about something else* was used to code any statements that indicated the youth attempted to think about anything that was not related to the situation that upset them. *Sleep* was used only when the youth explicitly stated that they would "sleep" as a means of calming down. Responses that were coded as *Media outlet* were limited, and included reference to watching "tv" or "videos," as well as playing video games. There were a limited number of responses that indicated the youth would eat to calm down, which were coded as *Eating*. Lastly, the secondary code of *Do nothing* was used to code responses where the individual referenced not doing anything to attempt to calm down when upset. These included responses similar to “chill,” “I just let it slide,” “nothing,” “I just wait till it is over,” or “ignore the situation.”

Maladaptive Calming Strategies

Maladaptive Calming Strategies referred to destructive coping mechanisms of engaging in risky behaviors such as substance use (Gross & Thompson, 2007). Secondary codes were intended to differentiate between tobacco, alcohol and substance use. However, there were only a limited number of responses that indicated substance use. Thus, only the secondary code of *Drug use* was needed. Youth responses that fell within *Drug use* include smoking weed or references to other explicit drugs. There were no answers that indicated youth smoked cigarettes or drank alcohol when upset. However, as these youth are incarcerated youth who indicated substance use are likely not reflecting on how they currently calm themselves, but rather how they calmed themselves when not in facility. Furthermore, responses of substance use are likely not an accurate reflection of these youths’ general substance use in states of heightened emotion, as all other youth were likely responding based on what they can access and do while in facility.

Actively Engaging in Emotion Regulation

Actively Engaging in Emotion Regulation was defined as a youth response that indicated they attempted to implement some form of emotion regulation. This primary code originally consisted of five secondary codes based on the DERS scale including *Acceptance of emotional response*, *Impulse control*, *Emotional awareness*, *Access emotion regulation strategies*, *Emotion clarity*, and *Goal-oriented focus*. However, based on responses, only *Impulse control*, *Emotional awareness*, *Access emotion regulation strategies* were applicable. *Impulse control* was used when youths’ answer indicated that they attempted to remove themselves from the situation to refrain from doing something harmful, such as engaging in a physical altercation. Example responses include “I try to move myself away so nothing won’t turn into a fight or something more,” “I stay in my room so I don’t have to hurt people,” or “when I get mad I tend to isolate myself so I do not make the situation worse.”

Answers to the prompt were coded as *Emotional awareness* when they indicated the youth was reflective and thought about their emotions and how to move forward with them. For instance, one youth stated, “When I’m upset I just stay to myself and think about how I could change the way I’m feeling.” Another indicated that they talk to themselves to sort their feelings out. While another response that was coded under *Emotional awareness* was “I act the same towards others and myself because I know what im upset at or who im upset with.” Others indicated that they “work” on their problems and fix them. The last secondary code within the primary code of emotion regulation was *Access emotion regulation strategies*. Youth responses fell within this subcategory if they acknowledged seeking out specific strategies in order to feel better, and included some reflection or specifically listed strategies that have been created for them by facilities. Responses included were any mention of going to the “calming room,” using “fidget toys” or engaging in “coping skills.” Of the 859 youth responses only 71 (8%) were coded with the primary code of Actively Engaging in Emotion Regulation with the majority being coded under the secondary code of *Impulse control*. Additionally, only 8 of the responses fell within both *Impulse control* and *Emotional awareness*, and only 4 responses overlapped with both *Impulse control* and *Access emotion regulation strategies*. Some of these youth responses seem to be headed in a positive direction for emotion regulation. For instance, one youth response to both questions was as follows: “I like to talk to them before I take it out of hand. And when I get out of hand I ask for some help by staff so they help me not get into trouble. Normally, in the free I sit there and listen to music to calm myself down or I talk to my mom or data or girlfriend." Another stated, "When I'm upset I just stay to myself and think about how I could change the way I'm feeling. I just breath and separate myself from the problem which usually helps me." However, some of the youths' responses that fell within the primary code of emotion regulation still seemed to have significant challenges with regulation. For instance, one youth stated,

> "I act quiet so I can control my anger and not flash out at anyone, which is really hard for me because whoever is talking trash thinks I'm a b**** or a p**** because I don't go and talk trash back and try to fight. I stay quit and ignore the situation and just think about how I'm controlling myself, and I just say to myself that I'm actually trying to work on my self control and my behavioral issues, so I can get my treatment done faster and actually practice what is expected of me so that I can be re-integrated back into the free."

While another stated,

> "When I am upset usually I cry and stay to myself and try not to hurt myself or other because I have done it before. I really love to talk about my problems most of all but trust is a big issues for me. When I am upset and I feel the need to calm down I usually close my eyes and think about good things that happen to myself or others."

These quotes are examples of the difficulties some of these youth still struggle with in their abilities to regulate their emotions.

Other

The last primary code was for all other types of responses. Of the total 859 responses, 213 were coded under the primary code Other. This primary code largely captured responses that were difficult to interpret, due to the lack of information provided by the youth in their answers.

This primary code included the following eight secondary codes: *Random numbers/letters*; *One word response*; *Desire to go home*; *Lack of help from staff and others*; *Response indicates youth does not cry*, *hit others*, *hurt themselves*, *want to be alone*; or *talk about their problems*; *Unrelated/Incoherent response*, *Sexually explicit*, and *Spanish*. Roughly 4% of the 859 responses appeared to be random keyboard strokes that included letters and numbers, these answers were coded within *Random numbers/letters.* Other youth responses only included one word when responding to either the first or second question, any answer that was a statement of "yes" was too vague to interpret and was coded under *One word response*. However, one-word responses to the first question (i.e., When you are upset [such as angry, anxious, or sad], how do you act towards others? Towards yourself? [For example, do you: cry, hit others, hurt yourself; want to be alone; talk about your problems]) that were "no," "N/A," or "nope" were coded under *Response indicates youth does not cry*, *hit others*, *hurt themselves*, *want to be alone*; or *talk about their problems.* This subcategory was the largest within the primary code Other with roughly 13% (n = 117) of the responses falling under this code. The subcategory *Lack of help from staff and others* was used to code a small number of responses which indicated that staff or others were unhelpful in situations when the youth were upset. Responses that were either unrelated to the prompt or incoherent (n = 22) were coded under *Unrelated/Incoherent* response. Lastly, there were a few answers that were either sexually explicit, in Spanish, or indicated a desire to go home, which were coded into the corresponding secondary codes.

Co-occurrence of Aggressive Behavior and Regulating Calming Strategies

As previously mentioned, many of the answers provided by youth were coded under several different codes, with many responses being coded under multiple primary and secondary codes. As the current study is focused on the outcomes of emotion regulation and aggressive behavior, a further examination of the overlap between the primary codes Aggressive Behavior and Regulating Calming Strategies was considered. In this context overlap refers to youth responses that were coded with both primary codes. For example, one youth stated, "[Question 1] hit others [Question 2] workout," and another stated "[Question 1 YEAH I FIGHT WHEN IM SAD OR MAD [Question 2] RAP IM MY HEAD." Both of these statements were coded with the primary codes Aggressive Behavior and Regulating Calming Strategies. It should be noted that based on how questions were asked there is no way to determine if the actions of the youth stated in their response occur simultaneously.

Almost half (42%, n = 75) of the 177 responses coded under Aggressive Behavior were also coded under Regulating Calming Strategies. Of the different secondary codes for Regulating Calming Strategies, Creative Activity was coded the most for individuals of all types of aggressive behavior, followed by Exercise and Deep breathing. Although it is not clear, the overlap between these two primary codes may indicate that even though these individuals use positive strategies for calming themselves when upset, these strategies may not be enough to effectively restrain these youth from engaging in aggressive behaviors. However, the descriptive information obtained through these qualitative responses provides no indication of frequency or timing of applying calming strategies. Thus, individuals who express aggressive behavior may be applying these strategies after they have already succumbed to an aggressive act, may not employ the strategy every time they are upset, may use different ones for different situations, or may have just listed all things they have done at one point in time and don't necessarily use them in the same situation or encounter. In contrast, of the 354 responses that were coded under Regulating Calming Strategies, only 75 overlapped with Aggressive Behavior, which may mean that these youth may or may not respond in the same manner every time they are upset and can engage in both positive and negative strategies of emotion regulation.

Discussion

Delinquency among youth in the United States is an on-going concern as several hundred thousand youth are arrested and detained each year (Aazami et al., 2023, Barnert et al., 2017, Craig et al., 2020, Puzzanchera, 2022). Prior research indicates that aggressive behavior, such as fighting, is one of the leading reasons for re-arrest (Kemp et al., 2017), and histories of maltreatment increases risk for violent and more serious forms of delinquency including assaults (Kelley et al., 1997; Ireland et al., 2015). As recent literature has linked emotion regulation to aggression, maltreatment and recidivism (Docherty et al., 2022; Garofalo et al., 2018; Gruhn & Compas, 2020; Hodgkinson et al., 2021; Virgin et al., 2021), emotion regulation is promising area of focus for interventions with YLS attempting to reduce recidivism and aggressive behavior. The current study sought to examine the nuances between relationships among different forms of adverse events (i.e., abuse ACEs, neglect ACEs, and household ACEs) and emotion (i.e., negative and positive affect) as they relate to difficulties in emotion regulation and aggressive acts within a sample of YLS.

Aims 1 & 2: Relationships among Key Variables and ACEs Link to Emotion Regulation

Hypotheses for Aim 1 were mostly satisfied through results of bivariate correlations that indicated all forms of ACEs, with the exception of neglect ACEs, had significant positive associations with difficulties in emotion regulation, as well as some form of the facility-tracked assaults. Additionally, both abuse ACEs and household dysfunction ACEs were positively linked to negative affect, and household dysfunction was also linked to positive affect. Unexpectedly, no significant correlations were found between neglect ACEs and any other variables. Overall results of Aim 2 analyses indicated that cumulative ACEs, as well as abuse and household dysfunction ACEs, positively predicted difficulties in emotion regulation. However, the inclusion of wave as a covariate resulted in a statistically significant relationship only for abuse ACEs.

Results for Aim 1 and Aim 2 are consistent with prior research, such that relationships between adverse events, emotion regulation difficulties, and aggression have historically been linked together (Davey et al., 2005; Maas et al., 2008; Malvaso et al., 2016; Maughan & Cicchetti, 2002; Riley et al., 2017; Roberton et al., 2012; Sullivan et al., 2010). Specifically, prior literature indicates that maltreatment (i.e. abuse and neglect) is linked to challenges in emotion regulation (Maughan & Cicchetti, 2002; Riley et al., 2017). However, as prior research has typically combined abuse and neglect ACEs when examining maltreatment, this study considered neglect ACEs independently from abuse ACEs. As these two different forms of ACEs were separately evaluated, this study was able to extend prior knowledge as results of Aim 1 found no significant relationships between neglect and difficulties in emotion regulation. Additionally, prior literature linking emotion regulation to aggression has typically focused more on controlling anger (Davey et al., 2005; Roberton et al., 2012; Sullivan et al., 2010), whereas this study looked at the direct relationship between assaults and emotion regulation difficulties. Similarly, prior research has struggled to tie ACEs directly to aggressive acts such as assaults, but rather has focused more on violence, antisocial behavior, criminal offenses, and intergenerational child maltreatment (Maas et al., 2008; Malvaso et al., 2016). The results of the current study give further insight into how different types of assaults were related to different forms of ACEs. For instance, abuse ACEs were linked to assaults on staff, whereas household dysfunction ACEs were linked to assaults on youth. These results may provide some initial insight into how experiencing different forms of adverse events might trigger aggressive acts toward different figures. For instance, future studies should consider whether individuals who have experienced abuse are more likely to be violent and perform aggressive acts on adults (e.g., individuals in positions of authority) rather than youth. As most often a child's abuser is a parent, stepparent, or other caregiver (National Children's Alliance, 2023), adolescents with abuse histories may target their aggression toward figures that are similar to their abuser whether in power or in stature. In contrast, as prior research has linked adverse events and chaotic home environments with anti-social behavior and delinquency (Bonner et al., 2020; Marsh et al, 2020); youth that experience household dysfunction ACEs may use anger or violence as a mean of controlling the chaos in their environment.

Aim 3: Relationships among Emotion and Key Variables

Results of Aim 3 indicated that two subgroups of ACEs, abuse and household dysfunction, both positively predicted negative affect. Interestingly, household dysfunction was also a positive predictor of positive affect. This indicates that individuals that experience household dysfunction experience higher rates of both positive and negative affect. Furthermore, neglect was not significantly associated with either negative nor positive affect. Aim 3 results also found that both positive and negative affect were each a positive predictor of difficulties in emotion regulation. Mediation analyses confirmed **H3** in that negative affect mediated the relationship between abuse ACEs and difficulties in emotion regulation, as well as the association between household dysfunction ACEs and difficulties in emotion regulation. The results showed that as experiences in abuse ACEs increased so did negative affect, which was then associated with increased difficulties in emotion regulation. Similar results were found for household dysfunction. However, when covariates for wave and race were included, the model was no longer significant.

Results are consistent with prior research in that adverse events have been linked to negative affect (Maschi et al., 2008; Wolff & Baglivio, 2017) and adds to prior literature by identifying different relationships among the subgroups of ACEs and emotion. Furthermore, this study expanded known relationships to emotion regulation, documenting that the relationship between abuse ACEs and difficulties in emotion regulation was mediated by negative affect. This may indicate that capacities for emotion regulation in youth that experienced abuse are highly influenced by their experience of negative emotions, such that abuse increases one's experience of negative emotion which in turn makes regulating one's emotions more difficult.

Aim 4: Serial Mediation Effects of Emotion and Emotion Regulation

Aim 4 of the current study was designed to enable further insight into the relationship between different forms of adverse events and aggressive acts. The primary focus was to evaluate whether emotion and emotion regulation played a role in this relationship. To determine which form of ACEs may be considered for this Aim, results of prior analyses needed to establish existing relationships between the specific form of ACEs and emotion, as well as with a type of assault. This type of assault also needed to be predicted by emotion regulation, and the specific emotion needed to predict emotion regulation. Prior results for Aim 1 through Aim 3 linked both abuse ACEs and household dysfunction ACEs to the emotion negative affect and established a predictive relationship between negative affect and emotion regulation difficulties. However, as indicated in Aim 1 results, emotion regulation difficulties were only significantly associated with one type of assaults (i.e., youth assaults over the past 90 days). As the only form of ACEs also linked to this type of assault was household dysfunction, further analyses incorporating abuse ACEs was not appropriate. Thus, a serial mediation model exploring the mediating indirect effects of negative affect and difficulties in emotion regulation on the relationship between household dysfunction and youth assaults in the past 90 days was conducted. Initial results found that serial mediation occurred in the model, such that household dysfunction predicted higher rates of negative affect which in turn predicted higher difficulties in emotion regulation, and ultimately lead to increased rates of youth assaults over the past 90 days. However, when the covariates of wave and race were added, the overall model was no longer statistically significant. Although there were still significant relationships between household dysfunction and negative affect, as well as between negative affect and emotion regulation; there was no longer a significant relationship between difficulties in emotion regulation and youth assaults over the last 90 days.

Although results did not confirm **H4**, these findings are still useful in considering potential future directions and provide insight into these entwined relationships. For instance, further consideration should be taken in understanding the implications of adding the wave and race covariates to the model. As previously mentioned, during the collection of the data used in this study ongoing implementation of a trauma-informed intervention was occurring, which started after Wave 1. As one of the foci of this intervention was to improve emotion regulation, the lack of significance between emotion regulation difficulties and assaults may be tied to youth improvement, changes in how facility staff responded to youth dysregulation, heightened awareness around emotion regulation, etc., which may have contributed to differential rates of assaults.

Another consideration for future studies is to further examine the role of race. For example, race and ethnicity are associated with higher rates of incarceration, experiences of adverse events, and difficulties in emotion regulation (Ghandnoosh, 2023; Maguire-Jack et al., 2020; Sacks & Murphey, 2018; Weiss et al., 2022). Additionally, research has also found that Black, Indigenous, people of color with higher rates of ACEs reported more negative effects on mental health than their white counterparts (LaBrenz et al., 2020). This prior research indicates there are meaningful differences between racial groups for many of the concepts considered in this study. Thus, future research should consider how the relationships addressed in this study differ between BIPOC (i.e., black, indigenous, and other people of color) and white youth. Additionally, as racial disparities have roots in historical trauma and systemic racism impacts stretch across social economic status, education, and poverty, these factors should be considered in future data collection (American Psychological Association, n.d.; Murry et al, 2024).

Although interventions for youth outside of YLS, have begun to integrate emotion regulation (see Eadeh et al., 2021 and Moltrecht et al., 2021 for reviews), it is important to understand how certain experiences of YLS impact their capacities for emotion regulation in order for these interventions to be highly effective. For instance, research indicates that YLS are three to eight times more likely than the general population to experience adverse events, and the majority experience multiple types (Abram et al., 2004). Additionally, prior literature indicates that different forms of adverse events impact capacities for emotion regulation (Hodgkinson et al., 2021; Gruhn & Compas, 2020; Miu et al., 2022; Oshri et al., 2015; Pollak et al., 2000; Riley et al., 2017); and it is also understood that emotion, or one's experience of emotion, plays a key role in emotion regulation capacities (Boemo et al., 2022; Daros et al., 2020; Gross, 2014; Lindquist et al., 2016). Results of the current study give new insight into the critical understanding of capacities in emotion regulation in two ways: 1) how these capacities of emotion regulation are associated with different forms of ACEs and emotion, and 2) how emotion regulation interacts with aggressive acts within facility, like assaults. Finding from this study provide novel information for researcher implementing intervention with YLS, specifically for intervention that incorporate emotion regulation as mechanism for decreasing aggressive behaviors and recidivism.

Descriptive Review of Youth Strategy Engagement

Finally, to gain further insight into these youth's capacities for emotion regulation, this study examined two short answer responses related to emotion regulation. Overall, a descriptive qualitative review of the two relevant survey questions indicated that when these YIL were upset they tended to desire isolation (n = 395, 45%), engage in communication (n = 192, 22%), respond with aggressive behaviors (n = 177, 20%), and have thought patterns (n = 156, 18%). Additionally, in order to calm themselves, the youth primarily stated that they engaged in regulating (n = 354, 40%) or neutral calming strategies (n = 230, 26%), with only 8% (n = 71) of youth reporting active engagement in emotion regulation. Although definitive conclusions cannot be drawn with the qualitative data obtained due to its lack of nuance in how responses were collected (i.e., written survey responses), the majority of youth reported more than one primary strategy (code categories). Furthermore, although isolation and communication can be beneficial when used appropriately, these strategies can also be destructive, depending on the context or youth's mindset. A nuanced understanding of how strategies were used is beyond the scope of this study.

One helpful way to think about the descriptive qualitative results is through the lens of Gross's Emotion Regulation Process Model. Recalling the three core features of the model (i.e., goal activation, strategy, and outcome) gives better understanding to how these youth engage in emotion regulation based on their reflective qualitative responses (see Figure 3). For instance, youth responses that fell within actively engaging in emotion regulation, specifically under the secondary code: i*mpulse control*, included statements where the youth generally indicated that they attempted to remove themselves from the situation in order to avoid making the situation worse or hurting someone. For those coded within e*motional awareness,* they made statements of intention to cognitively change the way they were feeling, while other youth indicated they actively sought out strategies that the facility had provided in order to calm themselves (i.e., *access emotion regulation strategies*). Through these responses one can see that youth attempted to engage in goal activation (i.e., activate a goal to modify the emotion-generative process), as they attempted to change their state of response. Additionally, these youth also indicated that they employed a strategy (i.e., engage in processes that alter the emotion trajectory), which for these individuals occurred through response modification (e.g., "coping skills," "breathe" or going to the "calming room"), situation modification (e.g., "I try to move myself away so nothing won't turn into a fight or something"), or cognitive change (e.g., …[I] think about how I could change the way I'm feeling). Lastly, some, although not all, individuals within the primary code of actively engaging in emotion regulation indicated that their goal activation and strategy engagement resulted in an outcome that impacted their emotional dynamics (i.e., latency, duration, magnitude, and offset of responses in experiential, physiological, and/or behavioral domains), which youth indicated occurred through acknowledging a positive change (e.g., "When I'm upset I just stay to myself and think about how I could change the way I'm feeling. I just breathe and separate myself from the problem **which usually helps me**").

However, for youth responses that did not fall within actively engaging in emotion regulation, it is less clear whether these youth actually engage in goal activation, and whether the results of employing a strategy actually changed the outcome of their emotional dynamics. For instance, the majority of youth indicated that they engaged in either regulating calming strategies or neutral calming strategies. These calming strategies, for the most part, fall within response modification on Gross's Emotion Regulation Process Model, with adaptive (i.e., exercise, relaxation, meditation, etc.) and maladaptive strategies (e.g., cigarettes, alcohol, illegal or prescription drug use, food etc.) influencing experiential, physiological, or behavioral responses (Gross, 2014; Gross & Thompson, 2007). Additionally, almost half the youth reported that they attempted to isolate from the initial situation. This specific code would include the feedback arrow in Gross's model (as it is occurring after the initial response) and situation selection as the individuals are either intrinsically (i.e., through self) or extrinsically (i.e., through staff) engaging in an emotion regulation strategy by removing themselves from the situation. Although based on the qualitative responses it would appear that many of the youth are engaging strategy (the second core feature of Gross's Emotion Regulation Process Model), it is not clear that these youth are engaging in goal activation or gaining outcomes as a result of their strategy use. Thus, according to Gross (2014), the majority of these youth may not be fully engaging in emotion regulation if they are not engaging in goal activation, for goal activation starts the process of modifying the emotion-generative process and without it one does not see a change (Gross & Thompson, 2007). To fully answer this question and to better understand emotion regulation within this sample and other YLS, deeper qualitative work is needed.

For instance, obtaining qualitative data through semi-structured interviews would enable researchers to gain better insights into when and how these youth actually implement emotion regulation strategies, what their goal is in initiating these strategies, and how the strategies impact their emotional response and dynamics. Specifically, more in-depth analyses would enable the examination of whether the use of regulating calming strategies actually decreases aggressive acts for individuals prone to aggressive behavior. The current qualitative data cannot provide insight into when these individuals use the calming strategies and whether they are simultaneously occurring with aggressive behavior. Yet, the indication that these youth are aware of beneficial strategies that can help calm them draws attention to the possibility that these youth may not engage, or want to engage, in aggressive behavior every time they are upset. Rather these youth may be reenacting the trauma they have experienced by spontaneously reacting with a fight/flight/freeze response, which can often be mis-interpreted as willful disobedience, but in actuality is a self-protective survival behavior (Henry et al., 2007). As such these youth are not responding out of volition but often unconsciously. Yet, if these children are attempting to engage in calming strategies prior to giving into an aggressive response, their response may indicate a need that they are trying to express or get met. Thus, although the qualitative data analyzed in the current study provided some initial insight into these YLS processes of emotion regulation, more in-depth qualitative data should be collected in the future.

Qualitative descriptive analyses were also helpful in gaining further insight into some of the quantitative findings. Although many of the youth in this sample indicated use and or access to several strategies that can reduce the heightened immediate experience of emotion (i.e., response modification), very few individuals fell within the primary code group of actively engaging in emotion regulation. This finding is in contrast to the quantitative data collected, which indicated that difficulties in emotion regulation scores were lower than 50% with an average of 2.39 out 5. As previously discussed, categorization of individuals into the primary code of active engagement in emotion regulation was based on responses that indicated awareness of one's emotional state, any attempt to control impulsive reactions, and/or indication the individual sought out more structured existing strategies that facilitate regulation. In addition to the consideration that no clear conclusion can be drawn from the qualitative descriptive data, one potential cause for the differences among reported quantitative scores and qualitatively coded scores, may be a shift in the youths' understanding of emotion regulation and emotional awareness. For instance, covariate test on the quantitative data indicated that youth at Wave 1 had significantly lower scores of difficulties in emotion regulation than at any other wave. As the facilities began to implement a trauma-informed intervention after Wave 1, these findings suggest that youth reported greater difficulties in emotion regulation, which could have been the result of the intervention giving them a more heightened understanding of their emotions and how they regulate them. Thus, this may indicate that although the goal of interventions may typically focus on reducing difficulties in emotion regulation decrease, before a decrease occurs, there may first be an increase.

Limitations and Future Directions

While the current study provides promising evidence for consideration of the nuanced relationships among different forms of adverse events, emotion, difficulties in emotion regulation and aggressive acts, the generalizability of these findings is limited by several factors, which future studies should attempt to address. Based on the cross-sectional design of the current study no causality can be concluded from the current findings. As causality cannot be determined, future studies should examine how change over time impacts these relationships. For instance, by capturing change over time for youth over several different waves, or time points, future research can use multilevel modeling across waves to better understand how the trauma, or adverse events, the youth experienced prior to the incarceration impacts their emotions and how those emotions then impact capacities of emotion regulation. Additionally, although YLS are a protected population, the current study can be used as a catalyst for the need to obtain more incremental data from youth. For instance, emotion is typically captured based on a participant's daily emotional experience (Boemo et al., 2022; Daros et al., 2020; Rothenberg et al., 2019). Obtaining more incremental data methodologies of ecological momentary assessment for both emotion and emotion regulation will provide greater insight into the true functionality of these two critical concepts.

Additionally, future studies should expand this current study by including metrics to better test Gross's Emotion Regulation Process Model. As the majority of research testing Gross's model is within the strategy of cognitive change (Gross, 2014; Gross & Thompson, 2007), there is need for studies testing the other strategies (i.e., situation selection, situation modification, attentional deployment, and response modification). Future research incorporating these strategies might attempt to capture a daily dairy response in which the individual responds to a questionnaire, in line with the Emotion Regulation Process Model, when they have a heightened emotional response. This type of study would provide insight into a youth actual strategy use and engagement in the core features of emotion regulation.

Another limitation of the current study is in regard to the measures utilized in this study. ACE-Q may be a limiting measurement of adverse events as it only assesses whether an event happened or not and does not account for the occurrence frequency of the events. Thus, future efforts should incorporate measures of adverse events that capture occurrence frequency of the different adverse events. Additionally, as prior research indicates that individuals who experience extreme emotional neglect exhibit more challenges in identifying and distinguishing between emotions (Pollak et al., 2000), future research should examine the relationship between neglect ACEs and one's emotional experience more thoroughly. As the current study found no significant associations between neglect ACEs and emotion or emotion regulation, these additional studies may want to consider incorporating more nuanced constructs and measures of neglect and emotion. One potential construct to consider for emotion is alexithymia, since such measures tend to capture a greater spectrum of the emotional experience more thoroughly than the frequency at which negative and positive affect are experienced (Garofalo et al., 2018b). Additionally, although DERS has been psychometrically tested with adolescents (Weinber & Klonsky, 2009), comprehension of this measure for YLS may differ from a general sample of youth, or adolescents, with psychological disorders, as youth who have received psychological assessment may be more reflective in their assessment of their emotion regulation capacities.

Additionally, measurements of aggressive behavior are another area that future investigations may want to consider. As assaults do not necessarily align with all forms of aggression, it may be beneficial to include a measure that captures both physical and verbal aggression. For instance, one study using a trauma-informed intervention, which measured physical aggression through events involving imminent risk and minor incidents including verbal aggression, found that although there was a reduction in physical aggression in the children there was an increase in verbal aggression (Purvis et al., 2012). Rates of verbal aggression still indicate difficulties in emotion regulation. However, this form of aggression has fewer potential health and safety risks and can signal an effort to modulate behavior, which can be tested if captured through change over time. Furthermore, as the current study only captured assaults that occurred while in facility, future studies many want to capture youths' frequency of engaging in physical altercations prior to entering facility. This may be beneficial to capture as youth may not engage in altercations as frequently while in facility as they do outside the facility, due to the salience of the direct consequences that can occur in facility.

Lastly, the result of the current study may not generalize to YLS across different states and facilities. As previously mentioned, SSDJJ began the implementation of a trauma-informed intervention after data from Wave 1 was collected (de-identified agency name, 2020). Similarly, as COVID-19 occurred in the spring of 2020, survey data collected at Wave 3 and Wave 4 may have included residual effects of the pandemic. Both the implementation of the "[State de-identified] Model Intervention" and COVID-19 may have potentially impact data collected on emotion and emotion regulation, as part of the intervention targeted self-regulation and research indicates that COVID-19 had a negative impact on youths' mental health (see Panchal et al., 2023 for review). Additionally, as previously discussed, the covariate of wave was significantly associated with the mediators and dependent variables in the current study. Thus, in consideration of both the implementation of the aforementioned trauma-informed intervention and COVID-19, future research should examine how wave interacts with the relationships established in this study more closely.

Conclusion

Insights gained through this study expand the current body of literature to better understanding the nuances of how different adverse events are linked to emotion, emotion regulation and aggressive acts. Results of this study highlighted similarities between different form of ACEs, such that both abuse and household dysfunction are associated with negative affect, difficulties in emotion regulation, and certain types of assaults, while also bringing attention to important distinctions among forms of adverse events (e.g., neglect was not significantly linked to any of the constructs assessed). Additionally, the current study offers initial insights into whether these youth engage in goal activation for emotion regulation processes, and how youths' strategies of regulating emotions when upset inform quantitative findings. Through these results, this study lays important groundwork for the direction of future research in emotion regulation and provides relevant information for trauma-informed interventions focused on improving emotion regulation, reducing acts of aggression, and lowering rates of recidivism.

Appendix

Summary of Descriptive Primary and Secondary Codes

Primary Codes	Secondary Codes
Aggressive Behavior	*Physical Aggression toward Objects*
	Verbal aggression
	Physical Aggression toward others
	Loss of control / Act out
Self-harm	*Self-harm*
Cry	*Cry*
Isolation	*Keep to themselves*
	Self-isolation
	Facility isolation
Thought Patterns	*Difficulty understanding why they feel they way they do*
	Rumination/think
	Angry/Mad with Self or Others
	Shut down/uncommunicative
	Think about self-harm

	Does not get upset
Communication	*Talk to family/outside/friends*
	Talk to staff or professional
	Talk to someone
Regulating Calming Strategies	*Exercise*
	Seek out pressure
	Meditate
	Deep breathing
	Self-regulate
	Creative Activity
	Mentally Stimulating Activity
Neutral Calming Strategies	*Think about something else*
	Sleep
	Media outlet
	Eating
	Do nothing
Maladaptive Calming Strategies	*Smoking cigarettes*

	Drink alcohol
	Drug use
Actively Engaging in Emotion Regulation	*Acceptance of emotional response*
	Impulse control
	Emotional awareness
	Access emotion regulation strategies
	Emotion clarity
Other	*Random numbers/letters*
	One word response
	Desire to go home
	Lack of help from staff and others
	Response indicates youth does not cry, hit others, hurt yourself; want to be alone; talk about your problems
	Unrelated/Unknown response/incoherent
	Sexually explicit
	Spanish

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ABSTRACT

THE INFLUENCE OF ADVERSE EVENTS ON EMOTION AND EMOTION REGULATION AS RELATED TO AGGRESSIVE ACTS OF YOUTH IN THE LEGAL SYSTEM

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Youth in adolescence are prone to risky behaviors including unsafe sexual behaviors, risky driving, illicit drug use, increased acts of delinquency and criminal conduct. With hundreds of thousands of youth under the age of 18 being arrest annually and recidivism rates reaching up to 75%, understanding what mechanisms can reduce occurrences of delinquent behavior and recidivism among youth in the legal system (YLS) is vital. One possible mechanism for improving these outcomes is emotion regulation, which is influenced by emotion. However, as YLS are more likely to experience adverse events than the general population, it is necessary to understand how these events interact with emotion and emotion regulation. Utilizing data collected by a department of juvenile justice located in a southern state, the current study used a mixed method cross-section design to address the nuanced relationships among different forms of adverse event (i.e., abuse, neglect, and household dysfunction) and emotion (i.e., negative and positive affect), difficulties in emotion regulation, and aggressive acts. Bivariate correlations, linear regressions, mediation regressions, and serial mediation regression analyses were used to address four primary aims of the study, which examined the different relationships among the aforementioned concepts. Findings from the current study highlighted both similarities and important distinctions among different forms of adverse events in childhood and the associations to emotion, emotion regulation and assaults. Results showed that both childhood abuse and

household dysfunction were linked to negative affect and difficulties in emotion regulation, as well as at least one type of assaults, while no significant relationships were found among neglect and other constructs. Furthermore, this study also provides initial descriptive insights into youths' engagement in goal activation for emotion regulation processes, and how the youths' knowledge of regulating strategies informs the quantitative results. Findings from this study expand current literature on emotion regulation and are informative for future research, as well as interventions focused on reducing aggressive acts as well as recidivism.