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Miscommunication in Interpersonal Interactions Exacerbates Perceived Levels of Aggression in Children with Autism

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Abstract- Applying various findings in the field of autism research to the regulatory flexibility model (*Bonanno* et al., 2013) showcases how children with autism might face dificulties in regulating their emotions, and how that might result in the high rates of aggression (*Green* et al., 2000) seen with children in autism as compared to children with intellectual disabilities and neurotypical children. We look at how this might impact extrinsic and intrinsic, response independent and response dependent interactions with others.

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I. Introduction

This study looks to relate the hostile attribution bias present in children with autism spectrum disorder (ASD) and link it to the regulatory flexibility model (*Bonanno* et al., 2013), to understand better the emotion regulation process that goes through autistic children and ultimately try tofind out why children with ASD are perceived to display more aggressiveness than their typically developing peers (*Mazefsky* et al., 2013; *Samson* et al., 2015). This knowledge is critical in better understanding children with ASD and providing better care.

I hypothesize that autistic individuals will have difficulty understanding social cues and enacting reappraisal as an emotion regulation strategy. Their misunderstandings will lead to an inflexible emotion regulation model becoming more rigid as the regulatory flexibility model moves on. Finally, this will make them more prone to choose idiosyncratic emotion regulation strategies, ultimately leading to aggression, all because of misunderstanding/miscommunication.

First, I will examine the current understanding of autism, summarize the diagnostic criteria, and define how I will deal with outdated diagnoses/terms such as Asperger's or "high-functioning." Then I will apply that knowledge and previous research to create a model of how individuals with autism face stressors using the regulatory flexibility model. I will talk about interpersonal regulation, andfinally, I will apply this knowledge to literature that deals with hostile attribution bias in children with ASD.

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II. Definition of Autism

Autism Spectrum Disorder (ASD) is an increasingly common neurodevelopmental condition that occurs in 1 in 44 children (*Centers for Disease Control and Prevention,* 2022). The DSM 5 diagnoses autism in people who have "persistent deficits in social communication and social interaction across multiple contexts," "restricted, repetitive patterns of behavior, interests, or activities," and sensory deficits (*American Psychiatric Association,* 2022).

The deficits in social communication extend to difficulties communicating and engaging in back-to-back conversations. They might also have deficits in nonverbal communication, for example, lack of facial expressions and abnormalities in eye contact and body language. Repetitive behaviors might be similar to an adherence to schedule (and distress at changes) but also can be highly restricted and fixated interests. Sensory deficits mean that people with autism might be more sensitive to loud noises or certain textures (*American Psychiatric Association,* 2022). 71-80% of people with autism also have a co-occurring condition, such as intellectual disability, anxiety, or verbal apraxia (*Leyfer* et al., 2006), but they might beoverdiagnosed. A study of 35 low-support adolescents with ASD found that the majority (~60%) of prior diagnoses were not supported by a psychiatric interview modified to take the ASD-related impairment into account (*Mazefsky* et al., 2012). However, this research failed to have control groups, or test for other psychiatric ailments, so it is possible that this procedure is reasonable.

Autism is diagnosed four times more often in males than females (*Simantov* et al., 2021). The analysis of the reasons for and accounting for this are outside the scope of this study. However, this fact remains useful while examining behavioral differences in aggression across genders.

Autism exists on a spectrum, with people showing different levels of behavior. Tim might have difficulty keeping eye contact and become upset with changes in their schedule but have a large friend group and have the same type of autism as Jenna, who finds it difficult to venture out to public spaces due to her aversion to loud noises and has difficulty communicating with people outside her immediate family. The variety of

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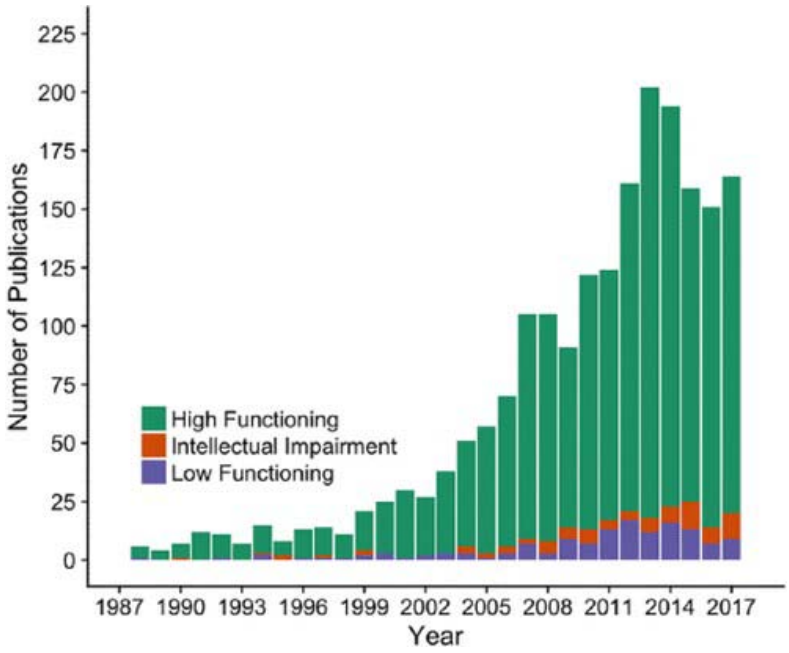
experiences has led to terms such as "Asperger's syndrome," which was discontinued and incorporated into the Autism Spectrum family in 2013.

In many ways, Asperger's has been replaced by the term "high-functioning autism," which is a misnomer as it does not correspond with intelligence, just societal competence (*Alvares* 2020). However, most studies increasingly focus on individuals with high-functioning autism. Alvares found that most publications focused/relied on high-functioning individuals on the spectrum. A graph from her article is below. As we examine studies and try to make generalizations, this fact is important to note, as what we conclude might not apply to everyone on the spectrum.



The term "high-functioning" also presents a negative connotation for those who have "low-functioning autism." For this paper, I will treat studies of participants with Asperger's as individuals with ASD and use the terms low support autism and high support autism instead of the terms high-functioning or low-functioning autism.

III. Aggression and Autism

Emotion dysregulation is not a core feature of ASD but is hypothesized to cause irritability, poor anger control, temper tantrums, self-injurious behavior, aggression, and mood dysregulation (*Samson* et al., 2014). Idiosyncratic strategies such as avoidance, venting, or crying are used more frequently by children with ASD (*Samson* et al., 2012).

Individuals with autism are significantly more self-injurious than those without ASD, especially those with intellectual disabilities (*Kaartinen* et al., 2012; *Green* et al., 2000, *McClintock* et al., 2003; *Tsakanikos* et al., 2007). Individuals with autism might be overrepresented among violent adult offenders, and aggression in childhood is a strong predictor of the use of antipsychotic medications and seeking psychiatric services in adulthood (*Tsakanikos* et al., 2007). Aggressive behavior is seen in 35-50% of autistic children and is the strongest predictor of parental stress and the number one reason for seeking treatment.

Kaartinen (*2014*) found that dysfunctional emotion regulation was principally associated with impulsive reactions to a real or perceived threat. She found that boys with autism were significantly more aggressive than their typically developing counterparts when faced with minor attacks. Aggression was measured using a Pulkkinen aggression machine, and the participants displayed aggression in a video game. Deficits in emotion regulation are prevalent in children with autism and may result in anger or anxiety being experienced more frequently and intensively than in TD children (*Mazefsky* et al., 2013; *Kirst* et al., 2021), leading to anger in some cases. Inaccurate interpretations of social situations promote aggressive behaviors, also known as the hostile attribution bias. The hostile attribution bias occurs when individuals are more likely to interpret ambiguous situations as hostile rather than harmless.

IV. The Regulatory Flexibility Model and Emotion Regulation

Emotion regulation is required to process emotions and act within the context of the situation. It is the processing of external/internal stimuli and the subsequent actions that maintain wellbeing (*Mazefsky* et al., 2013). The two main emotion regulation strategies are reappraisal and suppression. Reappraisal is reevaluating the situation and being able to think about

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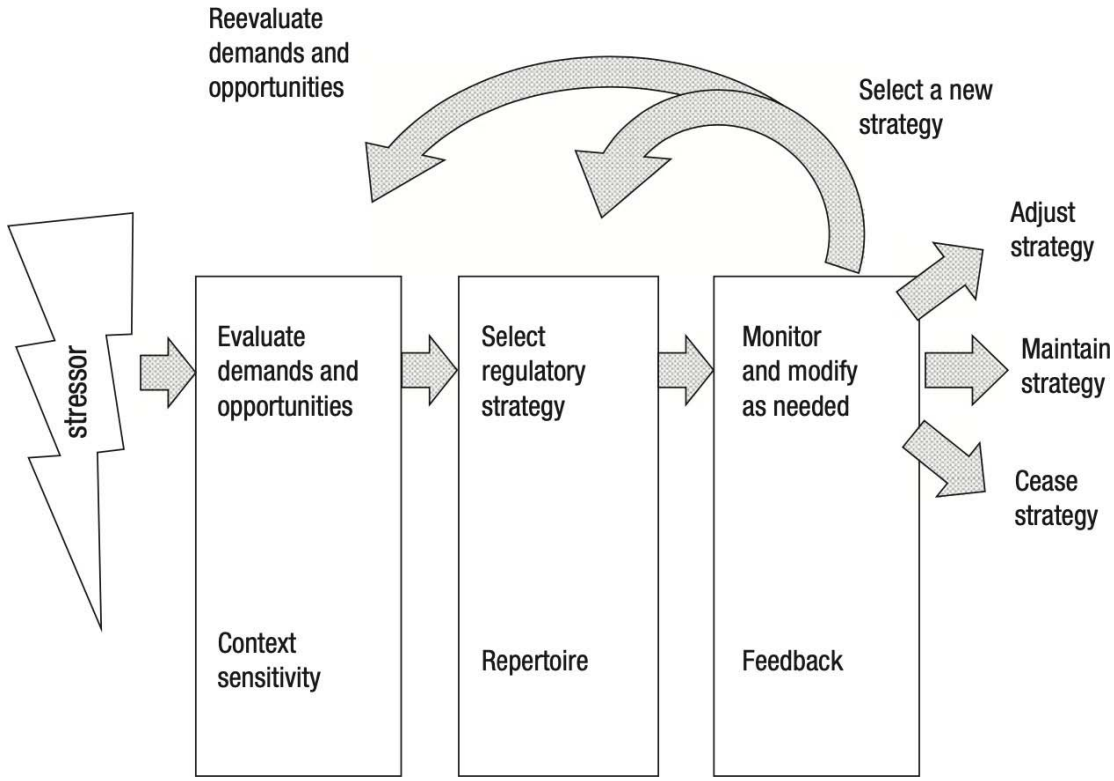
the situation differently to change its impact. In comparison, suppression inhibits the behavior of the emotion (*Gross*, 2001). There is also expressive suppression which is inhibiting the facial expressions associated with the emotion.

Keeping in mind the variety of different behaviors people with autism display and the unique way their mind works, it is reasonable to assume that the typical regulatory flexibility model (image below) by Bonanno and Burton (*2013*) looks different for them. There will be individual differences between people in the spectrum, just as there are individual differences in neurotypical people. However, I suggest there will be some common differences in people with autism. In this section, I will describe the model and hypothesize how the model would look different to those with an autism spectrum disorder.



a) Context Sensitivity

The regulatory flexibility model starts when a person faces a stressor. The first step they do is to evaluate it according to the context it is present. The efficacy of any behavior or strategy will tend to depend on context. This evaluation occurs over a background of ongoing appraisal processes involving general monitoring of goals (*Carver & Scheier*, 1982), mood and affect (*Russell & Barrett,* 1999), motivation (*Ryan & Deci,* 2000), and social interactions (*Taylor, Wayment, & Carrillo,* 1996). The perception is only as accurate as the context allows, and that is why there is room for flexibility as the model progresses. The individual evaluates the demands and opportunities in the situational context to find the ideal regulatory strategy.

People who are more sensitive to a context will be able to deploy more emotion regulation strategies later on as they can sense the feedback more acutely. In contrast, people who are less sensitive to the context will have less flexibility in their emotion regulation (*Bonnano* et al., 2013). People with autism are more likely to be in the latter group as they are less skilled at dealing with social situations and often lack the emotional insight to identify the strategy required.

Prior research has found that autistic individuals show a less positive and a more negative affect (*Samson* et al., 2012) which also impacts their context sensitivity. Their overuse of maladaptive emotion regulation strategies that are universally applied suggests poor motivation for ER and poor emotional insight and self-monitoring (*Mazefsky* et al., 2013). People with autism might also have differences in information processing and heightened sensitivity to environmental influences (e.g, sensory sensitivity, resistance to change), which might also affect context processing and make the emotions felt more intense (Mazefsky et al., 2013). A study by Keating (*2021*) looking at the differences between autistic individuals and non-autistic individuals in recognizing emotions and controlled alexithymia (difficulty in identifying and describing emotions), found that autistic participants were significantly less effective at recognizing anger, and recognized it more often than TD participants. The study made participants interact with expressions seen on a

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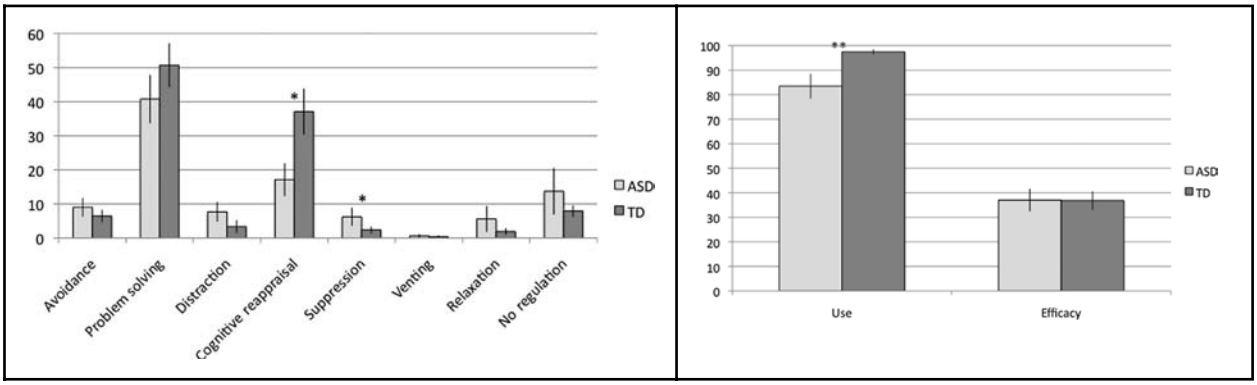
computer screen and rank them based on how angry/sad/happy the expression was. Using only 22 participants for the autistic criterion and having static faces might have limited the study in its ability to measure the skill of autistic participants in recognizing emotions accurately.

b) Repertoire

The next step is selecting a regulatory strategy. This is done from the repertoire of strategies available to the individual. As prior studies have shown, although children with autism use fewer emotion regulation strategies in general, they use more expressive suppression and less cognitive reappraisal than their typically developing counterparts (*Samson* et al., 2012, *Jahromi* et al., 2013). This finding persisted even after controlling for differences in emotional experiences and alexithymia (*Samson* et al., 2012). The same study showed that the efficacy of these strategies was equivalent in children and adolescents with autism and TD kids. Two charts from Samson's 2012 study below show the differences between autistic and typically developing adolescents and children in their emotion regulation techniques.



As children with autism have difficulty with theory of mind, it makes sense that they have difficulty evaluating situations from different perspectives (*Baron-Cohen,* 1997), and as a lack of facial expressions is part of the diagnostic criteria of autism, the fact expressive suppression is common makes logical sense as well. Adaptive emotion regulation strategies are contextually dependent and applied selectivity in contrast to maladaptive strategies that tend to be universally applied (*Alado* et al., 2010; *Mazefsky* et al., 2013). With the problems of cognitive flexibility and modulating behavior in people with ASD, a greater use of maladaptive strategies follows logically.

Samson (2014) has found that restrictive and repetitive behaviors are the best predictors of emotion dysregulation in children with ASD. Samson hypothesizes this might be due to individuals with autism being less able to regulate their emotions due to difficulties inhibiting ongoing behavior, or emotion dysregulation in ASD triggers compensatory control mechanisms expressed by restricted and repetitive behaviors.

c) Responsiveness to feedback

People will not always choose the ideal emotion regulation strategy. Feedback monitoring is important to see the efficacy of the emotion regulation strategy and for the individual to adjust to a better strategy if required. The feedback stage involves the individual evaluating if the strategy was effective and similar to the repertoire stage; it is dependent on the strategies available to the person (Bonanno et al., 2013).

There are two types of feedback, internal and social. Internal relies on the participant's emotions and whether they can evaluate if the strategy was effective in upregulating or downregulating their emotions. Children with low-support autism tend to rely on overt cues to describe their emotions (e.g., I was happy because I was laughing, I was sad because I was crying) and provide nonspecific accounts of their emotional experiences (*Losh* et al., 2006). This suggests that they might have difficulty in recognizing their emotions and, therefore, difficulty in adjusting their emotional strategy in response to that.

Social feedback is the external feedback of a regulatory strategy. This mainly comes from interpersonal interactions, which I will discuss further in the next section. Depending on how other people react to the situation or how they respond to your emotion regulation, people will either cease, adjust, or maintain their regulation strategy or select a new strategy from their repertoire, reevaluating the demands and opportunities given to them. As discussed before, people with autism might have difficulty changing their behavior and moving through the interactions with the flexibility needed.

V. Interpersonal Interactions

Interpersonal interactions allow for societal feedback and may also be one of the major stressors that cause the regulatory-flexibility model to be required in the first place. This facet is especially important to cover in the research on autistic children who struggle

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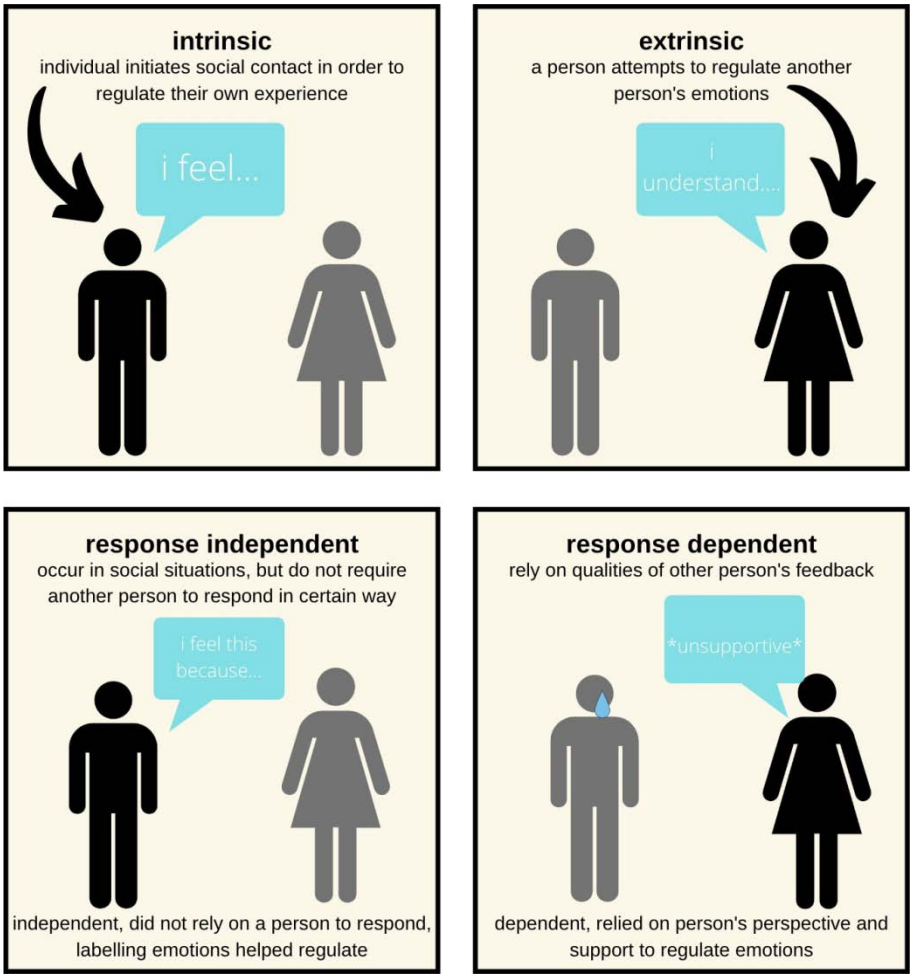
with understanding social cues. Zaki and Williams discuss how the different types of interpersonal emotion regulation affects our affect (*2013*). Individuals seek support from stress and conversely attempt to regulate others' emotions through empathetic, supportive, and prosocial behaviors (*Zaki* et al., 2013). Zaki defines interpersonal interaction as events occurring in the context of live social interaction and representing the pursuit of a regulatory goal. Under interpersonal interactions, there are two categories of emotions, intrinsic and extrinsic, and response independent and response-dependent. I have created a diagram below to illustrate each type.



There is very little research on the different types of interpersonal emotion regulation and the effect it has on autistic individuals. It would be interesting to see if, for example, children with autism rely on response-dependent regulation or how effective extrinsic regulation is to them. With the current knowledge we have, however, we hypothesize the difficulty in recognizing emotions in themselves and others (*Keating* et al., 2021) might make autistic participants worse at response-dependent extrinsic emotions than neurotypical people.

VI. Communication and the Hostile Attribution Bias

Due to the difficulty people with autism have in enacting the regulatory flexibility model, it makes sense why they sometimes respond aggressively to social situations they do not understand. This aggression may stem from the helplessness or confusion they face due to misunderstanding the situation. With a worse theory of mind, children are more likely to trust what others tell them (*Palmquist* et al., 2022). They might not understand what is meant to be a joke and are aggressive as well.

As many autistic individuals struggle with communication, augmentative and alternative devices have become a good resort. These devices come in various types but allow individuals to communicate through symbols (whether online or physical). Augmentative and alternative communication (AAC) has been proven to decrease the communication handicap and have a great psychological impact on voiceless patients (*Xin-Xing Ju* et al., 2021). It is also adaptable for patients' needs, such as eye-tracking for patients with locked-in syndrome. Rangel-Rodríguez (*2021*) found that children with communication difficulties

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engaged more in emotion-related conversations when opportunities and resources to talk about emotions were promoted, resulting in the child showing more engagement while using their AAC system.

However, critics argue whether this is the right way to teach autistic individuals to communicate and if we are molding them to fit our society's definition of "normal" (*Grunsven* et al., 2022). Although some autistic patients report feeling understood, others argue that people's perception of them changes as soon as they pull out their devices. The perception of incompetence and pity is replaced with the feeling that they are "normal" and worthy to be heard comes in. Grunsven (*2022*) states, "The design space of assistive technologies for autism . . . can and should include technologies that involve both interlocutors in the communication process ..... For example, in addition to an augmentative communication device that helps autistic children to approach their peers in 'socially appropriate ways, it could be helpful to create tools that help NT children to approach their autistic peers in 'autistically appropriate' ways." This suggests a different way to see augmentative and alternative communication and a way to reexamine the previous studies on AAC.

VII. Conclusion

There is still a lot to be understood about interpersonal regulation within children with autism, but this article aimed to provide a model to understand better how aggression might occur as a factor of the difficulty in regulating the emotions people with autism face. This article has shown how the regulatory flexibility model differs for autistic children with the different regulation strategies children with autism access and how it influences them in the feedback and repertoire stages. It describes the current knowledge about emotion regulation for autistic children and relies on studies to show how the processing might differ. There is still much research to be done on interpersonal regulation and understanding of the ways we can counteract or help people with autism. However, this framework offers a base for further research.

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