"I AM NOT A BAD PERSON [or] EVIL FOR BEING DISTRESSED": AN EXPLORATORY STUDY OF AUTISTIC ADULTS' EXPERIENCES OF CAMOUFLAGING, RESILIENCY, EMOTION REGULATION, AND HUMAN-ANIMAL INTERACTION

by

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(Under the Direction of Alan E. Stewart)

ABSTRACT

Introduction: Autistic individuals utilize camouflaging strategies to appear non-autistic. Autistic adults experience high rates of mental health concerns, and for various reasons, research has focused mainly on child populations. Specifically, emotion regulation research has underutilized mixed-method approaches and different regulation strategies in autistic samples. Human-animal interaction has also demonstrated support for improving people's psychological well-being and provided intervention opportunities for people on the spectrum. The influence of emotion regulation and human-animal interaction on camouflaging behaviors has primarily been unexamined.

Purpose: This study aimed to investigate differences in emotion regulation strategies (e.g., cognitive, interpersonal, and human-animal interaction) and understand emotion regulation's influence on camouflaging behaviors and resiliency.

Methods: An online mixed-method cross-sectional study explored autistic adults' experiences in emotion regulation and camouflaging intentions. An exploratory approach examined demographic differences, a psychological network analysis, hierarchical regression for predictors of resiliency and camouflaging, and qualitative thematic analysis. In total, 380 people consented to the study, with 281 providing completed demographic information.

Analysis: Demographic differences in camouflaging were observed. Camouflaging, perspective-taking, and reappraisal strategies were influential in the psychological network. Positive predictors of camouflaging included self-identifying autistic participants, positive impacts of having pets, social modeling, distancing, and brooding. In contrast, resiliency, negative impacts of having pets, and perspective-taking were negative predictors. Positive predictors of resiliency included participants of color, self-identifying autistic participants, perspective-taking, reappraisal, and acceptance while camouflaging behaviors soothing were significant negative predictors. Both models found interaction demographic interaction terms. Thematic analysis results indicated the following: autistic emotion experience, emotion regulation strategies, interpersonal rejection, desired support, animal agency, transcendental interconnectedness, and defining the interaction.

Discussion: Camouflaging behaviors and resiliency appeared to be influenced by individual differences in emotion regulation strategies and adjusted in response to interpersonal interactions. Participants noted differences in emotion regulation, and interpersonal emotion regulation largely produced negative experiences that required participants to "re-mask" and/or use additional regulatory strategies (e.g., distancing) consistent with the double empathy problem. Participants reported positive experiences with their animals that support emotion regulation via unconditional, non-judgmental love. Insight into further hypothesis generation and theoretical considerations are considered.

INDEX WORDS: masking, double empathy problem, interpersonal emotion regulation, social support theory, biophilia, pets

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DEDICATION

To begin, I dedicate this work to the autistic community. My work could not have been done without the community's advocacy and active engagement. I am appreciative of everyone's time and effort to complete the survey. I am grateful for people's engagement with and questions about the study. Truly, I am humbled.

This work is also dedicated to my family and friends who have died. Though I do not name everyone, I certainly think of all of them. Specifically, I dedicate my dissertation to my sister, Jamie. At a young age, Jamie was curious, compassionate, honest, and humble. I can only hope that my work and life capture half of her curiosity of and appreciation for others.

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CHAPTER 1

INTRODUCTION

Autism spectrum disorder (moving forward 'autism') is classified as a neurodevelopmental disorder typified by (a) persistent impairments in social communication and interaction; (b) restricted, repetitive behaviors, interests, and/or activities; and (c) with symptoms beginning in the early developmental period, though may not become apparent until social demands/environment exceed coping strategies or may be *masked* by the individual (American Psychiatric Association, 2013). Prevalence rates of autism have increased over the last several decades (Doyle & McDowall, 2021; Maenner et al., 2018), with the need for further support for individuals on the spectrum. For example, there are increased rates of autistic[1] adults seeking access to and attending higher education (Chandrasekhar, 2020).

Furthermore, undiagnosed adults experience barriers when seeking a formal diagnosis of autism. Practicing clinicians often report feeling uncomfortable diagnosing autism (Chandraasekhar & Hu, 2021) and have further difficulty with diagnosing adults seeking a first-

[1] Before moving forward, I want to acknowledge language. Currently, there is a discussion in the autism community and research community about the preferred language between identity-first and person-first language (Botha et al., 2020; Burry et al., 2020; Kenny et al., 2016). In a survey of 502 autistic adults from the United Kingdom, 61% preferred the term 'autistic,' endorsing identity-first language, whereas only 38% of professionals (n=1109) endorsed it (Kenny, et al., 2016). In a thematic analysis, participants largely endorsed the identify-first language, as they view autism as inseparable from their identity (Bury, et al., 2020). 'Person on the spectrum is another largely endorsed term by the autism community (Botha, et al., 2020). Additionally, some advocates argue for the use of autism spectrum condition rather than seeing it as an inherent disorder. However, it should be noted that the studies are often from the United Kingdom, Australia, and the United States, with largely white participants. Further research needs to be conducted to understand how different autistic communities relate to their diagnosis. Additionally, since the spectrum is just that of a spectrum, the best practice would be to model whatever language the person on the spectrum uses for themselves. For my dissertation, I endorse identity-first language and will use terms like 'autistic,' 'autism,' 'autistic adult,' and 'person on the spectrum.' However, I will also, at times, reflect on the historical language used by researchers and psychologists to capture the incongruence that often exists between the community and researchers and reflect the status of current literature on autism.

time diagnosis (Arnold et al., 2020; Chandraasekhar & Hu, 2021; Fusar-Poli, 2017; Happé et al., 2016; Hull et al., 2019; Leedham, et al.; Powell & Acker, 2016). Autistic women are often mis- or undiagnosed (Green et al., 2019) and are more likely to receive a professional diagnosis later in life (Tubío-Fungueiriño et al., 2021). In the autism community, camouflaging is a strategy autistic individuals utilize to appear non-autistic (Hull et al., 2017; Hull et al., 2019; Tubío-Fungueiriño et al., 2021), which, in part, potentially provides theoretical foundations to explore the differences in gender presentations (Hull et al., 2017; Livingston & Happé, 2017).

Individuals on the spectrum portray camouflaging behaviors by hiding or "masking" autistic traits (Hull et al., 2019) and use them to demonstrate competency for "typical" social interactions or to "fit in" (i.e., assimilation; Hull et al., 2017; Hull et al., 2019), and by utilizing "compensation" strategies to "overcome" cognitive differences (Livingston & Happé, 2017). Robinson and colleagues (2020) noted that the camouflaging literature is afforded a relatively recent interest. Camouflaging strategies are associated with gender differences (Cage & Troxell-Whitman, 2019; Hull et al., 2019; Milner et al., 2023; Tubío-Fungueiriño et al.,2021), some personality traits (e.g., openness to experience, neuroticism), well-being concerns (Milner et al., 2023; Robinson et al., 2020), and mental health concerns (e.g., depression, anxiety; Cage & Troxell-Whitman, 2019; Hull et al., 2021). For example, autistic adults are at elevated risk for co-occurring mental health conditions compared to their non-autistic peers (Brede et al., 2022; Cassidy et al., 2019; Lai et al., 2011; Takahashi et al., 2016) with rates ranging from 54 to 80% and up to 57% meeting multiple co-occurring mental health problems (Brede et al., 2022; Lai et al., 2011).

Despite the rates of co-occurring mental health conditions and camouflaging's negative impact, the relationships between camouflaging behaviors and emotion regulation are largely

unexplored. Emotion regulation is conceptualized as the process by which individuals recognize, manage, and modify their expression or experience of emotions and is considered an important transdiagnostic construct (Aldao, 2013; Sheppes et al., 2015). People utilize a variety of skills to regulate emotions, such as cognitive strategies (e.g., reappraisal; Sheppes et al., 2015), mindfulness (Zhang et al., 2019), interpersonal interactions (Burkitt, 2018), and human-animal interactions (Aragunde-Kohl et al., 2020; Hawkins et al., 2021; Tomlinson et al., 2022).

Autism research has primarily focused on deficits in emotion regulation (Cai et al., 2018; Mazefsky et al., 2013; Sáz-Suanes et al., 2022) and with little emphasis on adults on the spectrum (Brede et al., 2022; Mazefsky et al., 2012). Cai et al. (2018) noted several limitations in autistic research on emotion regulation. These included (1) instruments not originally meant to measure emotion regulation (e.g., Response to Stress Questionnaire); (2) under-utilized mixed methods approaches to studying the dynamic, phenomenal nature of emotion regulation in autistic people; (3) experimental designs have largely focused on using only reappraisal strategies over other regulatory strategies; (4) gender differences in emotion regulation strategies; (5) clarity on how co-occurring mental health problems (e.g., depression, anxiety) influence emotion regulation; and (6) understanding what leads to emotion dysregulation.

A qualitative study explored autistic participants' experiences of using technology to support their emotion regulation while acknowledging both the benefits (e.g., design features) and challenges (e.g., the usability of the app or device) of technology (Gillies-Walker et al., 2023). Emotional dysregulation was found to mediate the relationship between autistic and anxious symptomatology, with gender acting as a moderating factor (Sáez-Suanes et al., 2022). Taken together, further exploration of the relationship between camouflaging and emotion regulation is needed.

Autism research will benefit from investigations that include various approaches to emotion regulation, such as interpersonal or human-animal interactions. Specifically, anthrozoology is the study of human-animal interaction, which emphasizes the bidirectional relationship between human and nonhuman animals (Irvine, 2012; Siddiq & Habib, 2016). According to the 2021 American Pet Products Association's (APPA) National Pet Owners Survey, 70% of United States homes own some type of pet, with the pet industry setting a financial record that exceeded $100 billion in sales. COVID-19 drove increased pet acquisition and online pet shopping (APPA, 2021). Non-human animals provide emotional and social support for individuals (Aragunde-Kohl et al., 2020; Beck, 2014; McConnell et al., 2011; Tomlinson et al., 2022) and demonstrate psychophysiological and regulatory changes (Beetz et al., 2012; Crossman et al., 2020; Fine & Beck, 2019). Human attachment to animals appears to support improved mental health outcomes (Crossman et al., 2020; Fine & Beck, 2019). Clinical interests and applications of animal-assisted therapy have increased and been utilized in various therapeutic programs (Chadwick et al., 2022; Giuliani & Jacqumettaz, 2017; Mims & Waddell, 2016; O'Haire et al., 2015; Schuck et al., 2015; Wong et al., 2017). The human-animal bond provides further areas of exploration for emotion regulation strategies within the autistic community.

Implications for Counseling Psychology

Primarily, the counseling psychology field has largely neglected disability research (Foley-Nipcon & Lee, 2012; Woo et al., 2016). For example, a content analysis between 1990 and 2010 found that 1% of research in five of the major counseling psychology journals discussed disability research (Foley-Nipcon & Lee, 2012). Woo and colleagues (2016) content analysis from 2003 through 2013 demonstrated a lack of specific focus on disabilities among ten

major American Counseling Association journals. In the premier journal for counseling psychology, *The Counseling Psychologist,* a search utilizing key terms of *autism, ASD, neurodevelopmental disorders, and neurodiversity,* returned only two articles (Counseling Psychologist, n.d.). One article was a scale development of perceived discrimination for individuals with learning disabilities and difficulties, which included participants who identified as having attention-deficit/hyperactivity disorder (ADHD), and math, reading, writing, language, nonverbal, and other (e.g., slow processing speed) learning disorders, and did not directly include autism (Geiger & Brewster, 2018). The second article was a qualitative study on the career development of sexual and gender minority individuals who have a disability and provides recommendations for clinical consideration when working on career counseling with this population. These two articles are important, but this also highlights the dearth of articles in the counseling psychology field. While there are direct academic journals for autism (e.g., *Research in Autism Spectrum Disorders, Journal of Autism and Developmental Disorders*), counseling psychology's core values of altruism, optimal development/growth across the lifespan, holistic approach of the person's social and cultural environment, emphasis in social justice and advocacy, and focus on strength and coping (Delgado-Romero et al., 2012) offers a unique perspective to the autistic research, community, and clinical applications.

Diagnosing autistic adults later in life is often clinically complex (Powell & Acker, 2016). The diagnostic processes are often lacking for adults, and an extensive battery of clinical interviews, self-report, record reviews, and diagnostic measures are recommended (Fusar-poli et al., 2017; Wigham et al., 2019). The arduous process can lead to financial barriers for individuals seeking first-time diagnosis and might be complicated by autistic adults utilizing camouflaging techniques (Hull et al., 2019). For those seeking a first-time diagnosis, the lack of autism

knowledge by a referring professional was detrimental to autistic adults, often leading to delayed detection and mistrust (Huang et al., 2020). The college counseling literature indicated a dearth of specific investigations assessing therapy outcomes for autistic adults with some support for using cognitive behavioral therapy when treating anxiety and mindfulness for anxiety or depression (Anderberg et al., 2017). Cooper and colleagues (2018) highlighted that core training needs to include working with autistic clients and that clinicians benefit from a supervisor who can provide specialized support. Therefore, clinical and research practitioners need to develop or validate interventions and measures to cultivate their understanding of autism, camouflaging, and emotion regulation strategies.

Purpose of Study

This study addresses a gap in the literature by exploring the relationship between camouflaging autistic traits and various emotion regulation strategies. The paper addresses limitations in autistic research on emotion regulation (Cai et al., 2018) by utilizing various emotion regulation scales to investigate different strategies (e.g., interpersonal, human-animal interaction), employing a mixed-method approach, and examining different demographic factors (e.g., gender, diagnostic status in adults).

The study implements a cross-sectional design using an online survey platform to collect autistic participants' responses to questionnaires and open-ended responses. The measures utilized capture reported camouflaging behaviors, resiliency, state emotion regulation, interpersonal emotion regulation, and the impact of owning a pet. Open-ended questions are aimed at collecting the experiences of emotion regulation, interpersonal emotional support, and how participants engage with their pets to support their emotion regulation.

Definition of Terms

For clarity, the following section provides important terms and constructs discussed. The literature review provides an in-depth review of each term.

Autism Spectrum Disorder (ASD). In the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5-TR), autism is classified as a neurodevelopmental disorder characterized by a) persistent impairments in social communication and interaction; b) restricted, repetitive behaviors, interests, and/or activities; c) symptoms begin in early developmental period, though may not become apparent until social demands/environment exceed coping strategies or may be masked by the individual; d) symptoms cause clinical impairment in social, work, school, or other areas of functioning; and e) the clinical impairment is not better explained by intellectual disability or global developmental delay, though they may co-occur (American Psychiatric Association, 2022). Autism can include co-occurring intellectual or language impairments.

Camouflaging. Also referred to as social camouflaging is "defined as the use of strategies by autistic people to minimize the visibility of their autism during social situations" (Hull et al., 2019, p. 819). The Camouflaging Autistic Traits Questionnaire measures three factors of camouflaging: (1) compensation – "strategies used to actively compensate for difficulties in social situations", (2) masking – "strategies used to hide autistic characteristics or portray a non-autistic persona" and (3) assimilation – "strategies that reflect trying to fit in with others in social situations" (Hull et al., 2019, p. 825).

Emotion Regulation. Emotion regulation is a time-limited, situationally bound attempt for people to use different strategies (e.g., reappraisal, distraction, mindfulness) to influence and/or adjust their emotions to achieve a goal (Kobylińska & Kusev, 2019; Sheppes et al., 2015).

Emotion regulation is linked to long-term mental and physical health outcomes as a broad marker for psychopathology (Aldao, 2013; McRae & Gross, 2020). There is no consensus about the exact mechanisms and/or models of emotion regulation (e.g., unitary model, hedonic emotion regulation, process model) (Campos et al., 2004; Gross, 2015; Kobylińska & Kusev, 2019). While there is meaningful debate about the ontology of emotion regulation, for the purpose of this paper, emotion regulation refers to the ability of a person to perceive, name, and adjust their emotional response to a stimulus.

Interpersonal Emotion Regulation. Interpersonal emotion regulation is defined as an emotion-regulatory strategy in which people utilize interpersonal relationships to either influence and/or adjust their own emotional experiences or that of others (Butler, 2015; Hofmann et al., 2016). Interpersonal emotion regulation is an intentional act to regulate rather than a random affective outcome of a social situation and occurs in live social interaction with a regulatory goal (Williams et al., 2018; Zaki & William, 2013). It separates itself from intrapersonal emotion regulation as it requires the participation of another person involved to assist in the regulation of emotions.

Mindfulness. Mindfulness is a general term for various techniques (e.g., meditation, breathing, yoga practices) aimed at nonjudgmental attention to the present moment (Zhang, et al., 2019). Due to the broad term, disagreement exists in the literature about how to define and operationalize mindfulness (Baer et al., 2008). Baer and colleagues (2008) operationalized mindfulness through five interrelated but separate factors: (1) *describing* (i.e., the labeling of internal experiences), (2) *observing* (i.e., attending to internal/external experiences from sensations, emotions, cognitions, sense, etc.), (3) *acting with awareness* (i.e., consciously attending to the one's actions in the present moment), (4) *nonjudging of inner experience* (i.e.,

non-evaluative processing of thoughts/feelings), and (5) *nonreactivity to inner experience* (i.e., the practice of allowing thoughts and feelings to enter without a tendency to fixate on them).

Human-Animal Interaction. Human-animal interaction, also known as anthrozoology, is a broad term used to discuss the multidimensional relationships between a human person and a non-human animal. The human-animal interaction may positively improve people's well-being (Clark et al., 2020; Hawkins et al., 2022) by increasing joy (Aragunde-Kohl et al., 2020), increasing feelings of relaxation and calmness (Brown et al., 2020), and reducing depression and trauma symptomology (O'Haire et al., 2015). The biophilia hypothesis (Wilson, 1984), attachment theory, and social support theory (Beck, 2014; Fine & Beck, 2019; Meehan et al., 2017) provide a theoretical grounding for the influence that the human-animal interaction has on people's well-being, which is expanded on in chapter two. The following definitions categorize the specifics of animal-assisted activities.

- **Animal-Assisted Interventions.** According to the International Association of Human-Animal Interaction Organization's (IAHAIO) White Paper (2014), an Animal Assisted Intervention "is a goal-oriented and structured intervention that intentionally includes or incorporates animals in health, education, and human services (e.g., social work) for the purpose of therapeutic gains in humans" (p.5). Animal-assisted interventions are an overarching term that includes animal-assisted therapy, animal-assisted education, and animal-assisted activity.
- **Animal-Assisted Therapy.** Animal-assisted therapy is a structured, planned, goal-oriented therapeutic intervention, conducted by a formally trained professional conducted in their scope of practice. Intervention progress must be monitored through

professional documentation and aimed at supporting the client's physical, cognitive, behavioral, and/or socioemotional functioning.

- **Animal-Assisted Education.** Animal-assisted education is a structured, planned, goal-oriented intervention conducted by an educational service professional, with a focus on academic goals, prosocial development, and cognitive functioning. Students' progress is monitored and documented. An example of animal-assisted education includes using guinea pigs in an elementary classroom to promote social engagement for autistic students (O'Hare, 2013).
- **Animal-Assisted Activity.** Animal-assisted activity is a planned, goal-oriented informal interaction managed by a human-animal team for motivational, educational, and recreational purposes. The teams can work with others who provide services in healthcare, education, and/or human services on specific documentable goals. Examples include animal-assisted crisis response for crisis and disaster survivors, companion animals for a 'meet and greet with residents in a nursing home, or for college students

Resiliency. Resiliency has no single or clear consensus on its conceptual definition (Ghanouni & Quirke, 2023; Muniandy et al., 2021; Smith et al., 2008). Smith et al. (2008) defined resiliency through the "most basic meaning of the word" meaning "to bounce or spring back" or "recover from stress" (p. 194). Ghanouni and Quirke (2023) discussed resiliency as dynamic and typified by risk and positive adaptations during adversity or stress; therefore, resiliency is related to an individual's adaptive capacity. It is distinguished from coping mechanisms, which refer to specific cognitive and behavioral strategies used during stressful situations, and differs ontologically as a trait, process, or outcome (Muniandy et al., 2021). Trait

resiliency refers to a stable individual difference that can be modified by contextual and environmental factors. Whereas process resiliency emphasizes the interaction among adversity, outcomes, and protective factors (Muniandy et al., 2021).

Research Questions

1. What are autistic adults' experiences of different types of emotion regulation approaches (e.g., intra and inter-personal; human-animal interaction)?
    a. Quantitative research questions:
        i. Gender differences in camouflaging traits have been observed (Bargiela et al., 2016; Green et al., 2019; Hull et al., 2019; Tierney et al., 2016). Social camouflaging is proposed as an explanation for women receiving a later-in-life autism diagnosis (Hull et al., 2021; Hull et al., 2017). Given this, the researcher hypothesized the following:
            1. *Gender, diagnostic status, and racial differences will be observed in reported camouflaging behaviors*.
        ii. Social camouflaging is linked to use in social interactions, mental health concerns (Hull et al., 2021), well-being, and openness to experience (Robinson et al., 2020). Autistic individuals demonstrated difficulties in emotion regulation, which is related to increased rates of anxiety, depression, and anger (Gillies-Walker et al., 2023). Psychological networks are gaining continued interest in analyzing complex and connected multivariate data (Borsboom et al., 2021; Epskamp et al., 2018). Psychological networks were utilized to investigate the relationships among autistic traits, empathy, and alexithymia (Mason &

Happé, 2022). This paper proposes the following research question to investigate the relationships among the different variables.

1. *How are the observed variables conditionally associated with each other, and which variables display the most influence on other items?*

b. *Qualitative Research Questions*. The following questions are considered in this study to understand the different ways autistic adults emotionally regulate:

   i. What are strategies that autistic adults use to help them emotionally regulate?

   ii. What are autistic adults' experiences of interpersonal emotion regulation and human-animal interaction for emotion regulation?

2. What emotion regulation strategies and individual differences influence camouflaging behaviors and reported resiliency for autistic adults?

   a. Quantitative research questions

      i. Emotion regulation difficulties are associated with increased rates of anxiety (Robinson et al., 2020). Autistic individuals reported higher levels of negative emotion, more difficulty identifying their emotions, higher alexithymia scores, and less cognitive reappraisal with more cognitive suppression use than the non-autistic group (Samson et al., 2012). Further, autistic individuals report negative social experiences (Hull et al., 2017; Schneid & Raz, 2020) and reported masking to fit in or avoid bullying (Cage & Troxell-Whitman, 2019). With the impact of camouflaging

behaviors on autistic individuals' mental health, the research question is proposed:

1. What individual differences and emotion regulation strategies predict camouflaging behaviors and resiliency?
    a. Specifically, the study seeks to understand the association of interpersonal emotion regulation on camouflaging and resiliency once demographical (e.g., gender identity) and individual (e.g., positive impact from pets) differences were accounted for and the state emotion regulation strategies associated with camouflage behaviors and resiliency once interpersonal emotion regulation, individual differences, and demographical variables were examined.

CHAPTER 2

Literature Review

Perspectives towards Autism

Psychological historians credited Eugen Bleuler with coining the term autism as he studied clients who he described as withdrawn and with presentations of schizophrenia (Evans, 2013; Healis Autism Centre, 2020). In 1943, Leo Kanner studied differences in social interactions with 11 children who presented with concerns in adaptation to routines and sensitivity to stimuli. During similar historical time periods, Hans Asperger[2] observed a group of children, whom he described as "clumsy" with similarly presenting behavioral observations as described by Kanner. The DSM-II first introduced autism into the psychological nomenclature, cataloging it as a psychiatric condition of childhood schizophrenia (Evans, 2013; Healis Autism Centre, 2020). The publication of the DSM-IV was the first to classify the presentation of autism as a diagnostic spectrum. In 2013, the DSM-V combined four independent diagnoses (Autistic Disorder, Asperger Syndrome, Pervasive Development Disorder-not otherwise specified, and Childhood Disintegrative Disorder) into a single diagnostic label, autism spectrum disorder (American Psychological Association, 2022). Autism is classified under the broader neurodevelopmental disorders, which are characterized by manifesting in early developmental periods, leading to developmental (e.g., cognitive), executive functioning (e.g., inhibiting, attention control), and emotion regulation deficits that can range in presentation, severity, and impact on academic and social development (American Psychiatric Association, 2022).

[2] Prior to the DSM-V, Asperger Syndrome was a diagnosable condition. For a full historical account see Czech (2018).

Autism is typified by (A) persistent deficits in social-emotional communication, reciprocity, and interactions and (B) restricted interest and repetitive behaviors (American Psychiatric Association, 2022). Criterion A requires the manifestation of three broad behavioral deficits: (1) social-emotional reciprocity (e.g., difficulty with back-and-forth conversation); (2) nonverbal communicative behaviors used for social interaction (e.g., poorly integrated verbal and nonverbal communication); and (3) developing, maintaining, and understanding relationships (e.g., difficulty adjusting to social context; sustaining friendships). Criterion B involves two of four behaviors: (1) stereotyped or repetitive motor movements, use of objects or speech (e.g., echolalia); (2) insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behavior (e.g., eating the similar or same food every day); (3) highly restricted, fixated interests that are abnormal in intensity or focus (e.g., only interested in specific musical artists); (4) hyper- or hypo-reactivity to sensory input or unusual interest in sensory aspects of the environment (e.g., hypersensitive to clothing texture).

Sensory-related difficulties were considered secondary aspects of autism until more recent diagnostic inclusion. The DSM-V included sensory sensitivities as a behavioral component, ultimately recognizing that an estimated 90% of autistic individuals experience differences in sensory processing (Robertson & Baron-Cohen, 2017), with most autistic adults reporting sensory processing difficulties (Crane et al., 2009). Hypo- and hyper-sensitivities were found to predict reported anxiety with intolerance of uncertainty mediating the relationship (Hwang et al., 2019).

Theory of mind played a significant role for several decades in explaining the perceived social deficits of people on the spectrum. Simply expressed, the theory of mind is characterized by one’s ability to navigate social life by evaluating other people's

behavior (e.g., goals) and mental states (e.g., beliefs and emotions; Tager-Flusberg, 2007). Cohen-Baron and colleagues (1985) were the first to introduce the theory of mind (ToM) hypothesis to explain the difficulties in social-emotional reciprocity for autistic individuals. Since its introduction, a significant amount of research on autistic children explored ToM (Tager-Flusberg, 2007), with less research exploring ToM in autistic adults (Livingston et al., 2017). Measuring ToM has provided additional concern regarding the utility and validity of the hypothesis. For example, Oakley et al. (2016) found that the Reading the Mind in the Eyes Test (one of the most common measures for testing ToM) more accurately measured emotion recognition and provided additional insight into alexithymia's role in emotion-related difficulties for people on the spectrum. Critics of the deficit model of autism emphasized how it lacks attention to relationality, the social construction of reality, social agency and power, and 'normalized' concepts of empathy (Milton et al., 2023; Mitchell et al., 2021).

To further explore differences in communication, Milton (2012) proposed *the double empathy problem*:

> a disjuncture in reciprocity between two differently disposed social actors which becomes more marked the wider the disjuncture in dispositional perceptions of the lifeworld – perceived as a breach in the 'natural attitude of what constitutes 'social reality' for 'non-autistic spectrum' people and yet an everyday and often traumatic experience for 'autistic people' (Milton, 2012, p. 884).

The double empathy problem emphasized the collapse in mutual understanding between two people or groups (Milton et al., 2023). However, like in the case of ToM, autistic individuals were often situated as the primary drivers of communication breakdowns. The

double empathy problem provided a theory to account for the differences in communication while also emphasizing social, contextual, and historical factors for autistic individuals (Milton, 2012; Mitchell et al., 2021). Mitchell and colleagues (2021) stated:

> *Autistic people have a unique social communication style, which tends to be misinterpreted by neurotypical people, and are associated with neurotypical people perceiving autistic people unfavorably. Neurotypical people thus seem to lack the capacity to empathize with autistic people. Just as it is claimed that autistic people lack capacity to empathize with neurotypical people* (p. 8).

The double empathy problem builds from the neurodiversity framework. Sociologist Judy Singer coined the neurodiversity term, which emphasized a strength-based approach, the social model of disability, and rejected the medical model's deficit-based language and conceptualization of neurodevelopmental differences (Krcek, 2013; Armstrong, 2015; Doyle & McDowall, 2021). The neurodiversity movement borrows from the larger disability and biodiversity movements and situates neurodevelopmental differences as naturally occurring. Like biodiversity, neurodiversity is a positive attribute, something that is needed for human flourishing (Doyle, 2020; Doyle & McDowall, 2021). According to Krcek (2013), "the social model of disability reconstructs disability as a social and political process… society disables the individual" (p. 7). Disability is not innate to the individual; it is a product of ableism, manifested as disabling differences in functioning and existing due to an "unaccommodating environment" (Leadbitter et al., 2021; Olkin, 2017). However, the movement is not a panacea for all identities of disability[3], and differences exist in how to conceptualize the neurodiverse movement (den

[3] A full review and critique of the ND movement would be outside of the scope and limitations of this paper. For a more in-depth discussion, see Kreck, 2013; den Houting, 2019; and Leadbitter et al., 2021.

Houting, 2019). Nonetheless, the double empathy problem and the neurodiverse movement emphasize the advocacy work of both researchers and community members to center the experiences of the autism community.

Diagnostic Considerations and Prevalence

Furthermore, autism prevalence rates have increased over the last several decades, with variability in estimates ranging from 1 to 1.6% (Dolyle & McDowall, 2021) to 2.3% (1 in 44 children; Maenner et al., 2021). Specifically, assigned male at-birth children were 4 times more likely to be diagnosed with autism compared to assigned female at-birth children. Children born in 2014 were 50% more likely to receive a formal autism diagnosis and/or special education by 48 months old compared to children born 4 years earlier (Maenner et al., 2021).

Several factors influenced the increased prevalence rates. For example, the autism research and advocacy communities have improved diagnostic measures, challenged and changed diagnostic criteria, and increased education, leading to more awareness (Happé et al., 2016). For a variety of reasons, the academic and social support for autistic individuals and their families have largely focused on children, early interventions, and support for the family and child (Brede et al., 2022). The dearth of adult-oriented research and interventions left adults on the spectrum with little support.

Clinicians demonstrated inadequate assessment processes when working with an adult seeking a first-time diagnosis. In an autistic adult assessment, clinical competency included differential diagnosis, understanding similar presentation as in autism in other psychopathological conditions (e.g., obsessive-compulsive disorder, social anxiety), difficulties with gaining collaborative informant information, clinician bias due to a previous misdiagnosis, misunderstanding of adult presentation of autism, gender differences in presentation,

camouflaging strategies, and lack of education and training (Arnold et al., 2020; Chandraasekhar & Hu, 2021; Fusar-Poli, 2017; Happé et al., 2016; Hull et al., 2019; Leedham et al.; Powell & Acker, 2016). In a recent survey of 89 university and college counseling centers (UCCC), 42.7% of clinicians endorsed receiving some form of training around autism in educational programs, with 66.3% receiving no training at a UCCC, 57.3% seeking training on their own, 36% denied seeking training, and 31.5% receiving no training at any point, and 14.6% denied seeking training or receiving training (Chandrasekhar & Hu, 2021).

In a survey of 402 school psychologists providing autism evaluations, less than 25% reported engaging in evidence-based assessment (EBA), thus not providing comprehensive evaluations. Importantly, education about autism was not a predictor for EBA; rather, experiential and hands-on experience were more significant for engagement in EBA for autism (Aiello et al., 2017). Thus, the mental health and psychological field needs to continue to improve its understanding, education, training, and relationship to autism.

Adulthood, Camouflaging, and Diagnoses

Gender Differences.

Autistic women are often misdiagnosed or undiagnosed (Green et al., 2019). Autistic women's use of social camouflaging has been hypothesized as a potential influence for a later-in-life diagnosis (Bargiela et al., 2016; Green et al., 2019; Hull et al. l, 2019; Tierney et al., 2016). Autistic individuals utilize camouflaging in social interaction to "minimize" various visible autistic traits and behaviors (Hull et al., 2021; Hull et al., 2019; Lai et al., 2011). Camouflaging is defined by strategies of compensation (e.g., practicing expression, social scripting), masking (e.g., playing a role, developing a different persona to hide their autistic traits), and assimilation (e.g., developing guidelines for conversation, rules, forcing eye contact) (Hull et al., 2019).

Livingston and Happé (2017) defined compensation as "the process contributing to improved behavioral presentation of a neurodevelopmental disorder, despite persisting core deficit(s) at cognitive and/or neurobiological levels" (p. 731). Varying levels of support for gender differences have been found with results demonstrating significant differences (Hull et al. 2019), mixed support (e.g., support for diagnosed individuals but not for women with high autistic traits and not professionally diagnosed; Milner et al., 2023), and no clear evidence (Cage & Troxell-Whitman, 2019).

Camouflaging Considerations

Initial empirical evidence provides insight into the predictors of camouflaging behaviors and camouflaging's association with a person's quality of life. Beck and colleagues (2020) found that camouflaging predicted higher rates of psychological distress, with autistic women reporting higher rates of mental health concerns. Hull et al. (2020) examined potential predictors of camouflaging behaviors in autistic adolescents and found that intelligence, theory of mind, and autistic symptomology did not significantly predict camouflaging behaviors. Difficulties in executive functioning predicted lower reported camouflaging behaviors, but the overall model was non-significant. Loneliness and autistic traits predicted camouflaging but found no apparent sex differences (Millner et al., 2023), which contrasted previous work that supported sex differences in predicting camouflaging behaviors (Cage & Troxell, 2019). Interestingly, neuroticism and openness to experiences predicted increased camouflaging behaviors (Robinson et al., 2020). Autistic individuals who endorsed higher camouflaging intentions were reported to have poorer psychological quality of life (Millner et al., 2023).

A variety of reasons have been theorized for the use of camouflaging behaviors in autistic populations. Two primary uses of camouflaging behaviors included fitting in a non-autistic

world and maintaining relationships (Perry et al., 2022). Hull and colleagues (2017) found that motivations for camouflaging included assimilation (e.g., being a functioning member of society, being *normal*, a question of safety) and being known (e.g., connection and reduction of stress). Autistic individuals often face stigma (Cage & Troxell-Whitman, 2019; Milner et al., 2023; Schneid & Raz, 2020), which led Perry et al. (2022) to investigate camouflaging through Social Identity Theory (SIT; Tajfel & Turner, 2004). SIT posited two distinct strategies when groups face stigmatization: (1) individualistic (i.e., distancing from one's community to fit with the majority group), and (2) collectivistic (i.e., attempting to positively redefine the groups [e.g., through online advocacy]). Stigma predicted increased camouflaging behaviors. However, contrary to the expectation, both individualistic and collectivistic strategies indicated higher endorsements of camouflaging behaviors (Perry et al., 2022).

Social camouflaging has been connected to a specific type of impression management behavior (Schneid & Raz, 2020). Impression management suggests that people utilize a variety of strategies to represent themselves socially (Goffman, 1959). Schneid and Raz (2020) proposed that autism impression management was in reference to internal and external stigmatization messages and conducted a qualitative study in which they found themes the following: (1) impression management as a social asset; (2) ambivalence towards camouflaging; (3) limitations of impression management; and (4) forms of communication that allowed participants to navigate situations without camouflaging.

Disconnect theory was proposed as a theoretical foundation for investigating camouflaging (Cage & Troxell-Whitman, 2019). Disconnect theory emphasizes context-specific information to inform how individuals navigate social situations and proposes that people present differently based on context rather than engaging the same in all contexts (Ragins, 2008). Cage

and Troxell-Whitman (2019) found that autistic individuals camouflage for a variety of "conventional" (e.g., getting a job) and "relational" (e.g., bond with others) reasons, and formal (e.g., medical setting) and interpersonal (e.g., with a partner) contexts. Autistic women indicated higher endorsement of conventional reasons (e.g., work, education). Autistic participants further reported that camouflaging served to "pass" or "fit in" and helped them avoid bullying or retaliation for being autistic (Cage & Troxell-Whitman, 2019), which connects with the proposed social identity theory's in-and-out group hypotheses (Perry et al., 2022). Loneliness and autistic traits (e.g., Social Responsiveness Scale-2) demonstrated relationships with camouflaging for autistic participants with a diagnosis (Milner et al., 2023).

Taken together, autistic individuals navigate a variety of often stigmatizing and unaccommodating environments (Cage & Troxell-Whitman, 2019; Milner et al., 2023; Schneid & Raz, 2020), which can often lead to burnout. *Autistic burnout* (Higgins et al., 2021; Raymaker et al., 2020) was incorporated into the scientific literature through qualitative research and differentiated from occupational or clinical burnout.

Raymaker and colleagues (2020) defined autistic burnout as a syndrome "resulting from chronic life stress and a mismatch of expectations and abilities without adequate supports," often accompanied by exhaustion, loss of function, and reduced stimulus tolerance, typically for a duration of three months or more (p. 140). Higgins et al. (2021) characterized autistic burnout as a condition that is preceded by exhaustion due to specific activities that impact autistic individuals (e.g., camouflaging. Interpersonal interactions, cognitive overload, sensory sensitives, etc.). It may interact with co-occurring conditions, and the following criteria needs to be met "1. significant mental and physical exhaustion, 2. Interpersonal withdrawal" and must impact at least one of the following: "1. significant reduction in social, occupational, academic,"

or related areas of daily living, “2. difficulties with executive functioning, and/or dissociative states. 3. Increased intensity of autistic traits and/or reduced capacity to camouflage” (Higgins et al., 2021, p. 10). These definitions of autistic burnout were developed unrelatedly though constructed at similar periods but published at different times.

Emotions

Providing a comprehensive evaluation of emotion research is beyond the scope of this paper; a brief discussion is warranted for contextualizing emotion regulation research. Various academic and nonacademic domains have speculated about emotions under various and, sometimes, similar concepts (e.g., passions, appetites, sentiments) (Lanzoni, 2021). Emotion was introduced into the English language in the 17th century, which emphasizes its relatively recent entry into the English vernacular (Matt, 2021). Historians argued that emotions should be understood in relation to cultural influence and the relationship between language and human experiences (Barclay, 2021; Matt, 2021).

Psychology has little agreement on what constitutes emotions. As Russell (2003) highlights, “there are no formal criteria for what is and what is not an emotion… are emotions to be conceptualized as brain models, actions or action tendencies, reflexes, instincts, attitudes, cognitive structures, motives… are they biologically fixed (and hence reduceable to biology) or socially constructed roles (and reducible to sociology)?” (p.145). Epistemological and ontological stances promoted division in the emotion field (e.g., divide between intrapersonal and relational approaches, Campos et al., 2011; discrete and dimensional approaches to emotions, basic and constructed theories of emotion, Ekman & Cordaro, 2011; Gendron & Feldman Barret, 2009; Uusberg et al., 2019). In short, the emotion research field lacks a consistent conceptualization of human emotions.

Izard (2009) theorized emotions as deterministic components of neurobiological functions that cannot be created, taught, or learned. Accordingly, emotions emerged prior to language acquisition and are fundamental neurobiological activities. Additionally, Izard (2009) identified key principles of emotional functions, which highlighted the neurobiological, evolutionary role that emotions play by constituting "the primary motivational component of mental operations and overt behavior," where "basic emotion feeling help organize and motivate rapid actions" (p. 3).

From an evolutionary perspective, emotions evolved as an adaptational response to the pressures of survival, reproduction, and social context (Keltner et. al, 2019). In discrete theory, emotions are conceptualized as evolutionarily programmed, arising from subcortical processes that can be further refined through classical conditioning for emotion learning, leading to complex relations between cognition and affect (Izard, 2009; Panksepp & Watt, 2011). In other words, discrete models proposed that emotions have basic, fundamental emotion entities (e.g., anger, fear, joy) (Ekman, 1994; Izard, 2009; Panksepp & Watt, 2011).

Conversely, the dimensional model of emotions is utilized to study emotions through dimensions (e.g., arousal, valence) that inform the type of emotion rather than assuming each emotion is a discrete entity in and of itself (Harmon-Jones et al., 2017; Rubin & Talarico, 2009). Valence refers to the positive or negative evaluation of emotions, whereas arousal refers to the intensity or strength of the emotional state (Barret & Russell, 1999; Citron et al., 2014; Harmon-Jones et al., 2017; Rubin & Talarico, 2009). Typically, valence and arousal are measured through self-report and psychophysiological measures (e.g., heart rate, skin conductance). Harmon-Jones and colleagues (2017) argued for the importance of both discrete and dimensional models of emotions when attempting to understand the structure and functions of emotions.

Feldman Barrett and colleagues (2007) disputed that the behavioral shift in psychological investigations deemphasized the importance of the subjective experience of emotion and re-emphasized the significance of the phenomenological experience. Psychological constructivist models of emotion provide a theory that situates emotions as (1) "psychical compounds that are constructed out of more basic psychological ingredients;" (2) entities that are "primitive," tangled in "other mental states," and display heterogeneity in emotional response; (3) "internal sensors" that make "affective state[s] meaningful;" (4) "mental events that are performances of culture" 5) "psychological states that people colloquially refer to as 'emotion' also constitute other mental states that people refer to as 'cognitions'"; and 6) important beyond their behavioral components (i.e., "emotions are not ontologically reduced to behaviors or the social situation in which they occur") (Gendron & Feldman Barrett, 2009, p. 317-318). An emotional experience is created through a combination of physical and psychological states.

For the purposes of this paper, the author conceptualized that physiological, biological, and psychological states construct the emotion experience, which is influenced by social-cultural differences, and are used, but not limited to, meaning-making, decision-making, and have communicative functions. Emotion is an evolving experience that depends on a variety of factors, such as individual differences (e.g., openness to experience, interoceptive awareness), developmental differences (e.g., neurodivergence), context (e.g., therapy, friends), and culture (e.g., collectivism).

Emotion Regulation

As a distinct psychological construct, emotion regulation flourished in the latter decades of the 20th century (Campos et al., 1989; Gross, 1998a; McRae & Gross, 2020; Tamir, 2011). Emotion regulation is often considered a time-limited, situationally bound attempt for people to

influence and/or adjust their emotions (McRae & Gross, 2020; Sheppes et al., 2015). The aim of emotion regulation was "not to eliminate 'maladaptive' emotions and replace them with 'adaptive' ones but rather to influence the dynamics of each emotion in order to produce adaptive responses to the environment" (Aldao 2013, p. 155). The exploration of emotion regulation promoted important directions for research and clinical practice. For example, the emotion regulation literature is dedicated to understanding the ways in which people engage, use, and determine which strategies are most effective and cultivate positive or negative long-term mental and physical health outcomes (McRae & Gross, 2020). Emotion regulation difficulties are linked to mental health concerns and are seen as a potential broad, transdiagnostic maker for psychopathology (Aldao, 2013).

Gross (1998b) described emotion regulation as "the process by which individuals influence which emotions, they have, when they have them, and how they experience and express these emotions" (p.275). Emotions "results from the operation of valuation systems, [which] may be represented by distinguishing among states of the world ('W'), perceptions of those states ('P'), negative or positive valuations of perceptions… ('V'), and actions taken… ('A')" (p. 130). Emotion generation initiates when one encounters a situation, attends to its key features, appraises it, and then has a physiological and/or behavioral response (Gross, 2015; McRae & Gross, 2020). Emotion generation and emotion regulation share features; however, the goals differ. Emotion regulation's goal aims to change the emotion generation system (Sheppes et. al., 2015). Nonetheless, empirically differentiating emotion generation and regulation is difficult (for a more in-depth review, see Gross, 2015; Sheppes et al., 2015). However, some researchers dissented from the assumption that emotion regulation's role is to attend from

unpleasant to pleasant emotions (i.e., Gross's account). Rather, it served instrumental or higher-order goals (Charland, 2011; Campos et al., 2011; Tamir, 2011).

Other researchers asked why one needs to regulate to in the first place. Burkitt (2018) stated emotion regulation "implies that emotion is something that *needs* regulating, invoking the old Enlightenment idea that emotion is unruly and potentially dangerous unless kept in check by reason" (p. 167). However, that is not to argue emotion regulation has no relevance or context, but rather to show the limitations and Eurocentric constraints on emotion theory.

Ultimately, theories of emotion regulation have advanced psychology's understanding of emotion generation and regulation (Gross, 2015; Sheppes et al., 2015), but as Burkitt (2018) argued, "the approach is limited by its very instrumental and individualistic ontology" (p. 173). In this study, the author utilized two different approaches to emotion regulation: intra- (e.g., state rather than trait) and inter-personal. The following sections discuss the different emotion regulation strategies.

Intrapersonal Emotion Regulation

Intrapersonal emotion regulation strategies are defined by the individual's ability to experience and assess their own emotional experiences. The emotion regulation literature prioritized cognitive regulatory strategies (e.g., reappraisal, distractions, rumination) (Gross, 1998a; Malooly et al., 2013). Cognitive emotion regulation strategies are proposed as the ways in which people cognitively manipulate or adjust emotionally arousing events or information (Garnefski & Kraaij, 2006a; Garnefski et al., 2001; Thompson, 1991). Reappraisal is a commonly studied strategy that assumes that the appraisal of an event, not the event itself, dictates the emotional response. Reappraisal is utilized when individuals attempt to change the meaning of the event (i.e., reappraise the event) and have demonstrated effectiveness in reducing

emotional responses (Gross, 1998a; Malooly et al., 2013; Uusberg et al., 2019). Additional intrapersonal emotion regulation strategies include the following non-exhaustive list: acceptance, distraction, suppression, and avoidance.

Several intrapersonal emotion regulations self-report measures exist, such as the Cognitive Emotion Regulation Questionnaire – short (CERQ-short), Emotion Regulation Questionnaire (ERQ), Difficulties in Emotion Regulation Scale (DERS), Inventory of Cognitive-Affective Regulation Strategies (ICARUS) (Garnefski & Kraaij, 2006a; Gratz & Roemer, 2004; Gross & John, 2003; Kamholz et al., 2006). Adolescence, adult, and geriatric samples with depression demonstrated differences in types of cognitive emotion regulation strategies (Garnefski & Kraaij, 2006b). Rumination, catastrophizing, and self-blame cognitive strategies displayed a positive relationship with depression and anxiety (Garnefski et al., 2001). In other words, people who reported higher endorsements of rumination also indicated higher levels of anxiety.

Interpersonal Emotion Regulation.

Presumably, emotion regulation is scaffolded throughout life, and as children, humans rely on other family members and friends to help them regulate (Hofmann, 2014; Zaki & Williams, 2013). Relational and interpersonal emotion regulation has gained increased research interest over the last couple of decades (Burkitt, 2018; Butler, 2015; Butler & Randall, 2013; Dixon-Gordon et al., 2015; Hofmann et al., 2016; Liddel & Williams, 2019; Ray-Yoi 2020; Zaki, & Williams, 2013; Williams et al., 2018). People utilize interpersonal interactions as regulatory strategies, where they engage with others to share and disclose their emotions and experiences (Aldao, 2013; Hofmann, 2014; Williams et al., 2018). Through social support, people manage,

adjust, and regulate their emotions. Interestingly, people's perceived social support compared to their actual support is more indicative of emotional health (Hofmann, 2014; Lakey et al., 2010).

Broadly, Morris and colleagues (2007) posited that children's emotion regulation development is influenced by the family context in a variety of ways (e.g., observational learning, modeling, parenting of emotion, family climate, parents' mental health). Breaux and colleagues (2022) found evidence that parents' biological sex, family socioeconomic status, and family race/ethnicity influenced emotional socialization practices in the families. Attachment theory has been proposed to understand the development of and dynamics involved in emotion regulation across the lifespan (Ainsworth et al., 1978; Bowlby, 1973; Hofmann, 2014). Parental emotional support encourages an infant to explore their world in the safety of their parents and promotes the development of secure attachments. Fraley and Shaver (2000) theorized that romantic attachments are often supported by similar behavioral and motivational systems as parent-infant attachments. In relationships, coregulation is operationalized as "a bidirectional linkage of oscillating emotional channels between partners, which contributes to emotional and physiological stability for both partners" (Butler & Randall, 2013, p. 203). Butler and Randall (2013) further argued coregulation functions by providing allostatic balance for the partners (allostasis presumes stability through change using predictive regulation as organisms are designed for efficiency; see Sterling, 2004).

Recognizing the need for further clarification, Zaki and Williams (2013) outlined a framework in which four markers should be met for interpersonal emotion regulation: 1) specifying when it is and when it is not interpersonal, 2) separating interpersonal emotional regulation from "incidental affective consequences of social interaction", 3) understanding interpersonal emotional regulation on "whether individuals use social interactions to regulate

their own or others' affect," 4) boundaries compared to other interpersonal regulation (p. 804). Moreover, the continuum of intra- and inter-personal regulation strategies exacerbates the difficulties in parsing out the differences. For some, interpersonal emotional regulation is defined when it occurs in live social interaction, and the aim is to pursue a regulatory goal (i.e., aims to change/influence emotions) (Williams et al., 2018; Zaki & Williams, 2013).

Interpersonal regulation is delineated between intrinsic and extrinsic regulation. Intrinsic interpersonal emotional regulation is typified by one's attempt to regulate their emotions with the recruitment of another, whereas extrinsic interpersonal emotional regulation is bounded by one person aiming to regulate another individual (Hofmann et al., 2016; Zaki & Williams, 2013). Either process can be response-dependent, i.e., "the processes rely on a particular response by another," or response-independent, i.e., "if they do not require that the interaction partner responds in any particular way" (Hofmann et al., 2016, p. 3). While not all social-emotional interaction is aimed at regulation, social sharing often has a regulatory component (Hofmann et al., 2016; Zaki & Williams, 2013). Individuals modulate their expressive behavior depending on the response of the audience and exhibit shared affect with others when they believe it can help them (Zaki & Williams, 2013).

The growing interest in interpersonal emotion regulation led to a need for a psychometrically sound measure (Ray-Yol et al., 2020). Hofmann and colleagues (2016) developed the Interpersonal Emotion Regulation Questionnaire (IERQ) to address the gap in scale development. Hofmann and colleagues (2016) created a 4-factor model with 5 items in each factor and explained 68.4% of the variance. Each factor had good internal consistency – enhancing positive affect (α = .87), perspective taking ($\alpha = .85$), soothing, ($\alpha = .89$), and social modeling ($\alpha = .89$). Additionally, the CFA results indicated excellent model fit

$x^2(164) = 343.12,\ p < .001, CFI = 0.97, NNFI = 0.97, RMSEA =$ $0.04\ [90\%\ CI: 0.04\ to\ 0.05]$). The IERQ demonstrated good convergent and discriminate validity, with decent relationships with other emotion regulation and coping style scales. The IERQ provided a needed self-report measure to understand how individuals perceive and utilize their relationships to support their emotion regulation.

Autism and Emotion Regulation

Autistic children or their parents reported (often either through self-report measures or parent-report measures) more emotion regulation difficulties (i.e., less effective at using strategies) than typically developing peers (Cai et al., 2018). While other mental health and psychiatric conditions (e.g., personality disorders) might present with similar dysregulation presentations (e.g., physiological arousal, degree of negative affect), autistic individuals demonstrated unique difficulties related to their experiences (e.g., differences in processing and/or perception, difficulty with shifting). For example, the results of a survey including 27 autistic German-speaking participants and 27 non-autistic peers indicated that autistic participants reported higher levels of negative emotion, more difficulty identifying their emotions, higher alexithymia scores, and less reappraisal with more suppression use than the non-autistic group (Samson et al., 2012). In a follow-up study, Samson and colleagues (2015) found that people on the spectrum reported less cognitive reappraisal, which was associated with increased negative emotional experience and more maladaptive behaviors. Additionally, Sáz-Suanes and colleagues (2022) found that emotion dysregulation mediated the relationship between autism and anxiety, with gender-moderating emotion dysregulation and anxiety in an autistic sample with intellectual disability.

Alexithymia is a construct utilized in autism research to assess difficulties with emotion awareness (Huggins et al., 2020). Interoceptive awareness (i.e., subjective experience of interpreting and making meaning of bodily sensations) models conceptualized emotion awareness as one dimension of adaptive interoceptive awareness (Mehling et al., 2012). Various results have indicated relationships among autistic traits, alexithymia, and interoceptive awareness (Mason & Happé, 2022; Mul et al., 2018). A qualitative systematic review found seven themes most often used to define emotional self-awareness: identifying own emotions, communicating own emotions, imagination and externally oriented thinking, interpreting own emotions, interoception, empathizing with and recognizing the emotions of others, and differentiating between own emotions, with communicating own emotions (i.e., ability to identify an emotional experience) and identifying own emotions (i.e., ability to communicate the emotional experiences verbally and nonverbally to others) as the two most common themes (Huggins et al., 2020).

Mason and Happé (2022) hypothesized but did not find evidence for alexithymia predicting lower quality of life or higher autistic traits interacting with alexithymic traits. To further explore their data, a network analysis was conducted, and the results indicated that alexithymia had a strong association with autism but weak associations with depression and anxiety (Mason & Happé, 2022). In a study with autistic and non-autistic participants, interoceptive sensitivity (i.e., ability to accurately detect bodily sensations like a heartbeat) was unrelated to alexithymia and empathy; however, interoceptive awareness was related to alexithymia and empathy (Mul et al., 2018). The results led Mul and colleagues (2018) to conclude that accurately detecting bodily sensations was largely unrelated to empathy, whereas

the subjective experiences and awareness of bodily sensations and emotions were important indicators for empathy.

In a review of current research on autism and emotion regulation, Cai and colleagues (2018) argued that there are several limitations to this research area. These limitations identified were: (1) researchers including instruments not originally meant to measure emotion regulation (e.g., Response to Stress Questionnaire); (2) researchers have under-utilized mixed methods approaches to studying the dynamic, phenomenal nature of emotion regulation in autistic people; (3) experimental designs have largely focused on using only reappraisal strategies over other; (4) clarity on gender differences in emotion regulation strategies; (5) clarity on how co-occurring mental health problems (e.g., depression, anxiety) influence emotion regulation; and 6) understanding what leads to emotion dysregulation. The need for further understanding in this area has been articulated in the literature with less emphasis on emotion regulation in autism compared to other areas of autism research (Mazefsky et al., 2012). Ideally, understanding the mechanism and experiences of emotion regulation for autistic individuals advances our knowledge of autism and intervention strategies (Cai et al., 2018; Mazefsky,et al., 2012).

Moreover, there is little congruence on how to fundamentally conceptualize emotion dysregulation in the autism literature (Mazefsky, 2015). In the DSM-5-TR, clinicians can add a specifier of “with a mental or behavioral disorder” with a diagnosis of autism (American Psychiatric Association, 2022). However, Mazefsky (2015) suggested this is not enough as it “… frames these symptoms as due to an additional disorder. This draws attention away from the possibility that compromised ER [emotion regulation] is a core feature of ASD” and advocated for a specifier of “with emotion dysregulation” (p. 3406-3407).

Brief Discussion of Mindfulness

"Mindfulness can be defined as nonjudgmental attention to the present moment… [including techniques of] meditation, body scanning, walking meditation, breathing, and mindfulness yoga" (Zhang et al., 2019, p.1). Mediation is a broad term incorporating a variety of practices ostensibly aimed at various goals (e.g., heightened well-being) that include practices of emotion and attention regulation (Lutz et al., 2008). Given the overarching goal of mindfulness practice, researchers have investigated the role of mindfulness on emotion regulation (Kurth et al., 2020; Zhang et al., 2019). Mindful emotion regulation is proposed as a specific type of mindfulness technique that emphasizes the experience of and expression of people's emotions (Chambers et al., 2009; Grecucci et al., 2015; Guendelman et al., 2017).

Results for mindful-based interventions demonstrated support for use with college campus populations (Bamber & Schneider, 2022; Beerse et al., 2020; Falsafi, 2016; Gu et al., 2018; McIndoo et al., 2016). Mindfulness-based interventions displayed evidence for improved levels of depression, anxiety, and compassion (Falsafi, 2016; McIndoo et al., 2016), supporting students with attention-deficit/hyperactivity disorder (Gu et al., 2018), and decreased levels of stress (Beerse et al., 2020). In a qualitative study, college students reported improved emotion and self-awareness, relationships with others, focus, and skills for later use (Beerse et al., 2010).

Since mindfulness- and acceptance-based interventions (MABI) have provided support for emotion regulation in various physical and mental disorders and with the rates of co-occurring mental health conditions in autistic individuals, interest in the efficacy of MABIs for the autistic population is growing (Conner & White, 2018; Gaigg et al., 2020; Hartley et al., 2019; Sizoo & Kuiper, 2017; Spek et al., 2013). In a feasibility study, Conner and White (2018) found support for the intervention with nine autistic participants who reported various degrees of

improved impulse control, additional emotion regulation strategies, acceptance of emotions, and a decrease in distress. Sizoo and Kuiper (2017) found that the use of mindfulness-based stress reduction techniques performed similarly or above cognitive behavioral therapy techniques for the reduction of stress. In a piloted randomized controlled trial, online mindfulness and cognitive behavior therapy tools improved emotional acceptance and decreased anxiety (Gaigg et al., 2020). When investigating mindfulness-based post-intervention effects, autistic adults reported no statistical difference in symptoms from post-treatment to 9 weeks following treatment, suggesting stable intervention effects (Kiep et al., 2015). Taken together, autistic participants reported the potential utility of mindfulness-based interventions for co-occurring mental health concerns with promising results for online intervention, which is cost-effective and provides treatment for autistic adults who may be more comfortable engaging online.

Human-animal Interactions

Historically, human and nonhuman animals shared a multitude of different relationships in a variety of contexts, serving various instrumental motivations (e.g., animal agriculture, medical research, herding) and social roles (e.g., companions, spiritual entities) (Fine & Beck, 2019; Siddiq & Habib, 2016). In Western history, academicians have largely ignored, diminished, or excluded animals from serious philosophical and intellectual considerations. Human theoretical lenses were predominately anthropocentric, basing animal behavior on instinct and emotion, whereas human behavior was influenced by society, culture, and reason (Irvine, 2012; Siddiq & Habib, 2016). In 1979, sociologist Clifton Bryant published *The Zoological Connection: Animal-Related Human Behavior* and wrote, “sociologist have been singularly derelict in their failure to address the zoological component in human interaction and

attendant social systems… and myopic in their observations of human behavior, cultural patterns, and social relationships" (p. 399).

Bryant's paper argued for the integration of animals in research and advocated for the serious contemplation of non-human animals. The interdisciplinarity field of anthrozoology developed from animal advocacy and addresses the studies of human-animal interactions and their multi-dimensional relationships (Irvine, 2012; Siddiq & Habib, 2016). Advances through anecdotal and research literature have illuminated the various physical and mental health impacts of human-animal interactions and bonds on individuals' mental and physical health (Clark et al., 2020; Crossman, 2017; Fine et al., 2019; Friedmann & Heesook, 2009; Melson, 2003; O'Haire, 2013), as well as, advocated for the non-human animals' agency.

Nonhuman animals have been used in a variety of therapeutic clinical applications for treating various clinical presentations (e.g., trauma, depression, anxiety) (e.g., Brown et al., 2020; Fine et al., 2019; O'Haire et al., 2015; Santaniello et al., 2020; Wijker, et al., 2017). While issues exist in the methodology and rigor of human-animal interactions, continued effort in research supports a unique bidirectional relationship in the human-animal bond (Crossman, 2017; Crawford et al., 2006; Fine & Beck, 2019; Siddiq & Habib, 2016).

The growth of human-animal interaction has been hampered by inconsistent use of terminology, though the recent focus has strived to address these issues (Fine et al., 2019; Santaniello et al., 2020). For example, the Society of Counseling Psychology developed the Section on Human-Animal Interaction: Research and Design (Division 17, Section 13) to address the various psychological components and benefits of the human-animal bond. The following section aims to provide an overview of human-animal interactions and bonds, the ways in which

animals are incorporated into interventions, and current directions and trends in the autism literature.

Human-Animal Bond

Human-animal interaction is a broad term for any relationship between a person and a non-human animal (McCune et al., 2014). According to the American Veterinary Medical Association, "the human-animal bond is a mutually beneficial and dynamic relationship between people and animals that are influenced by behaviors essential to the health and wellbeing of both. This includes, among other things, emotional, psychological, and physical interactions of people, animals, and the environment."

Several philosophical and theoretical frameworks have been proposed to examine the human-animal bond, with three commonly utilized, including the biophilia hypothesis (Wilson, 1984), attachment theory, and social support theory (Beck, 2014; Fine & Beck, 2019; Meehan et al., 2017). The biophilia hypothesis was introduced by philosopher Erich Fromm and popularized by biologist Edward O. Wilson (Joye & De Block, 2011), and suggested that humans have an innate tendency to seek connections with nature and other life forms (Beck & Katcher, 2003; Gullone, 2000; Joye & De Block, 2011; Kahn Jr., 1997; Wilson, 1984). One of the hypothesis' axioms asserted a fundamental "human need" to connect with lifelike processes that are based on evolutionary accounts of human interactions with nature (Joye & De Block, 2011; Kahn Jr., 1997). Evolutionarily, humans were in consistent contact and dependent on life and life-like processes needed for survival, and biophilic tendencies then acted as an adaptation to the environment (Gullone, 2000; Joyce & De Block, 2011; Wilson, 1984). Therefore, the biophilia hypothesis is used as a theoretical account for contemporary human-animal bonds (Beck, 2014; Fine & Beck, 2019).

The human-animal bond shares similar aspects of attachment theory to human-human bonds (Bures et al., 2019; Crawford et al., 2006; Fine & Beck, 2019; McConnell et al., 2011). Attachment theory elucidates the developmental trajectory of human attachment by noting an infant's tendency to emotionally connect with a primary attachment figure (Ainsworth, 1991; Bowlby, 1980; Meehan et al., 2017). A "true attachment" relationship includes an attachment figure that is dependable, sought in moments of distress, creates a sense of safety and enjoyment when in physical proximity, and is missed during times of absence (Rockett & Carr, 2014).

Ainsworth (1991) described four primary types of secure attachment behaviors: (1) proximity seeking and maintenance (i.e., relative closeness to a primary attachment figure is prioritized); (2) separation distress (i.e., primary attachment figure is not present and causes distress); (3) safe haven (i.e., attachment figure is used for comfort when the environment is perceived as threatening); (4) secure base (i.e., attachment is perceived as secure and supports the exploration of the environment). An attachment hierarchy is described as a way one utilizes the four behaviors of secure attachment to orient toward the multiple relationships that exist (Trinke & Bartholomew, 1997) and provides a framework to understand a person's various attachment bonds (e.g., siblings, partners, animals; Meehan et al., 2017). Meehan et al. (2017) asked participants to list their attachment hierarchy and found that companion animals were fifth in importance, behind only romantic partners, mothers, best friends, and fathers, with 14% of people indicating their companion animal as the primary attachment figure in their life. Taken together, attachment theory provides a theoretical framework to explore the development and benefit of the human-animal bond (Beck, 2014; Fine & Beck, 2019; Meehan et al., 2017) while proposing defined theories to understand the various dimensions of attachments (Rockett & Carr, 2014).

Pets are often seen as part of the family; people play and speak to pets as humans do with children, and pet owners view animals in humanistic ways (Fine & Beck, 2019) and largely identify their pets as part of their social network (Meehan et al., 2017). The social support theory examines the human-animal bond through animals' non-judgmental and unconditional support (Fine & Beck, 2019; McConnell et al., 2011; Meehan et al., 2017). Relational developmental systems theories (RDSTs) have been hypothesized as a paradigm to explore developmental relationships in human-animal interactions. RSDTs are "mutually beneficial relations between individuals and their context and used to integrate the multiple levels of organization involved in the ecology of human development" (Mueller, 2014, p. 6), which might situate social support theory in a more specific context.

In a study of pet and non-pet owners, McConnell and colleagues (2011) observed that pet owners reported greater well-being and provided social needs fulfillment even when human social needs were met. In a Puerto Rican sample, Aragunde-Kohl and colleagues (2020) found that people who lived with a pet had increased feelings of love, were more likely to feel peaceful, had increased relief in negative situations, felt more sense of protection, and were more likely to feel joy compared to those who did not live with a pet.

Sexual and gender minority emerging adults are estimated to have higher rates of pet companions compared to cisgender, heterosexual emerging adults, perhaps suggesting that the animal plays an important role in socio-emotional support (Tomlinson et al., 2022). In an online qualitative study of 119 people with either a diagnosed mental health condition or struggling with their mental health, findings revealed increased hedonic tone, increased motivation and behavioral activation, reduced anxiety and panic attacks, increased social connections and reduced loneliness, reduced risk behaviors, coping and aiding the recovery process, and

increased negative feelings and emotional strain (e.g., worry that the person's own mental health condition negatively impacts their animals' overall well-being) (Hawkins et al., 2022).

The long-term benefits of pet interactions include a reduction of the response of the autonomous nervous system and increased relaxation and well-being (Aragunde-Kohl et al., 2020). Using a neurobiological lens, York (2010) suggested that "children's regulatory limbic circuits may react rapidly to animal interactions responding to proximity, touch, warmth, and responsiveness. The ventral system (v-PFC) becomes activated along with the hippocampus and amygdala… [additionally] the OFC [orbitofrontal cortex] and the ACC [anterior cingulate cortex] are activated (seeking systems) and the dorsal lateral PFC responds" (p. 566). Studies found evidence for animal interactions reducing heart rate and blood pressure, buffering anticipation of a stressor, and showing changes in cortisol, epinephrine, and norepinephrine (Beetz et al., 2012). The evidence led researchers to hypothesize that human-animal interactions, even indirectly, affect self-regulation via stress regulation, social behaviors, calmness, and reduction of anxiety, and in similar ways to human-human interaction (Beetz et al., 2012; Crossman et al., 2020; Fine & Beck, 2019). That is not to say human-human and human-animal bonds are equivalent, but that they might share overlapping features while having differences (Crawford et al., 2006).

Animal-Assisted Intervention

A growth in human-animal investigations has provided evidence for transdiagnostic support in various clinical settings (Brown et al., 2020; O'Haire, 2013; O'Haire et al., 2015; Rodriguez et al., 2021). In a 20-minute animal-assisted activity session, patients with fibromyalgia demonstrated a decrease in heart rates and an increase in salivary oxytocin and reported an increase in well-being survey scores (Clark et al., 2020). In an unstructured

interaction with dogs, children reported difference in pre- and post- test differences on the Positive and Negative Affect Schedule for Children, Short form, and State/Trait Anxiety Inventory for Children along with salivary cortisol, suggesting the animal interactions improved children's positive emotions and reduced anxiety (Crossman et al., 2020).

Researchers use animal-assisted therapy to investigate the impact on mood states and feelings. Participants reported decreased negative moods and increased positive moods and described qualitative themes of happiness, relaxation, and calmness (Brown et al., 2020). Emotional comprehension was improved after five bimonthly animal-assisted education sessions with school-age children (Scandurra et al., 2021). However, mixed results were found in animal-assisted therapy for individuals with chronic schizophrenia (Villalta-Gill et al., 2009). In a systematic literature review on trauma, O'Haire and colleagues (2015) found animal-assisted intervention to reduce symptoms of depression, PTSD, and anxiety but emphasized the need for more rigorous studies.

Animal-Assisted Psychotherapy

In the 1960s, Boris Levinson began incorporating animals into modern mental health treatments. Levinson was a child psychologist who laid the groundwork for human-animal interaction as a treatment method (Crossman, 2017). Since the 1970s, research has varied in attention and areas of human-animal interactions. Nonetheless, pet ownership has positively affected people's mental health, reducing distress, anxiety, and loneliness (Friedmann & Son, 2009). Additionally, human-animal interaction programs potentially reduce the stigma of mental health treatment (Crossman, 2017). While the IAHAIO (2014) broadly define animal-assisted therapy as a goal-oriented and structured intervention with a focus on behavioral and/or socio-emotional functioning, Parish-Plass (2008) conceptualized animal-assisted therapy as

fundamentally based on the emotional connection and the relationship among client, therapist, and animal. Fine (2019) suggested that the presence of animals can reduce the initial stress of therapy, assist in creating a warm atmosphere, and become an extension of the therapist.

In a study of anxiety in clients with learning disabilities, Giuliani and Jacquemettaz (2017) found that clients reported a significant decrease in anxiety symptomology when they participated in a therapy session with a dog compared to one without a dog. Trauma survivors indicated reduced anxiety and increased feelings of trust through nonjudgment and unconditional acceptance when engaged in trauma-informed and animal-assisted therapy (Mims & Waddell, 2016; O'Haire et al., 2015). In a meta-analysis, the results implied that animals assisted the healing process, noting support for medical well-being and behavioral outcomes, but suggested concerns with methodology, research design, and comparison groups (Nimer & Lundahl, 2007). Adding to this, a recent systematic review of animal-assisted therapy with adults found that while there appeared to be an impact of animals in the therapy, there were insufficient scientific support, inconsistent results, reliance on observational studies with small sample sizes, and a need for more rigorous studies (Charry-Sánchez et al., 2018).

Geriatric participants living with dementia and psychiatric disorders reported improvement in emotional, behavioral, psychological, and social experiences when engaged with animal-assisted therapy; however, similar skepticism was warranted about inferring a definitive conclusion due to study rigor (Peluso et al., 2018). In a semi-experimental study of residential treatment, clients with substance use disorder and dual pathology were provided animal-assisted therapy. The study focused on symptoms of impulsivity and life skills obtained, and the results suggested improvement of daily skills and decreased impulsiveness (Montolio & Sancho-Pelluz, 2019). For children with Attention-Deficit/Hyperactivity Disorder (ADHD), preliminary

findings suggested that canine-assisted therapy led to more reductions in overall severity of ADHD symptoms compared to the non-canine-assisted therapy, though both groups saw a reduction in symptomology overall (Schuck et al., 2015).

In a pilot study that assessed the impact of animal-assisted therapy on socially withdrawn youths in Hong Kong, Wong and colleagues (2017) found that both groups (i.e., therapy with animals and therapy without animals) demonstrated improvements in self-esteem and reduced social anxiety; however, the animal-assisted therapy did not show statistically significant improvement over and beyond what the non-animal therapy group exhibited. Ten qualitative interviews were conducted with participants in the animal-assisted therapy group. Two major themes emerged from the analysis: 1) animal-assisted therapy served as a catalyst for participation and noted "if it were not for the inclusion of nonhuman animals, they [the participants] would not have joined," and 2) the dogs enhanced the therapeutic environment as the participants felt "dog(s) accepted them as they were" (Wong et al, 2017, p. 9-10). While not directly therapy, though adding to the literature, a qualitative investigation of animal interventions with autistic/ADHD young people found major themes of self-esteem with subthemes of motivation and reward, emotional benefits with subthemes of strategy building and support, and identification. From the qualitative study, Chadwick and colleagues (2022) concluded that "the participants were motivated to care for the animals… they developed new emotional regulation skills and were able to regulate emotions in order to fulfill their perceived role as a caregiver to the animals, which in turn, relieved symptoms of anxiety and allowed them to grow and feel confident in their own ability" (p.56-57). While animal-assisted therapy needs a more robust methodology and design, the participants reported something unique (e.g.,

nonjudgment, acceptance, emotion regulation skills) about the animal's presence in the therapeutic space.

Autism and Animal Interaction

Specific attention has been given to human-animal interaction for people on the spectrum. Animals may promote social interactions. For example, walking a dog led to more positive social approaches (McNicholas & Collis, 2000). Given that autistic individuals are often socially isolated, researchers have postulated that non-judgmental sources of support from animals may be a particularly useful intervention (O'Haire, 2013).

In a mixed-method study utilizing qualitative data and occupational mapping, Appleby and colleagues (2021) explored families with an autistic child who had an autism assistance dog. The study concluded that the families had a median increase of 8.5 more places visited and traveled 20.50 km further from home after the dog was present for over a year. In a systematic review, 14 studies were included that showed positive outcomes for AAI interventions with autistic individuals (O'Haire, 2013). Most common were increased social interaction with animal presence, where social interaction is defined as increased verbal social approach behaviors and increased visual social behaviors. However, several concerns were noted, including a lack of consistent terminology in studies, a lack of rigor in methodology and study design, and a lack of appropriate control conditions. So, while animal-assisted interventions demonstrated effectiveness with autistic people, the methodology and study design provide concerns regarding the generalizability and ecological validity of the studies.

In another study, participants engaged in ten-week, one-hour, one-on-one sessions of animal-assisted therapy with a certified healthcare professional (Wijker et al., 2021). Overall, the researchers found that in short-term effects, the "animal-assisted therapy session significantly

reduced the level of cortisol… alpha-amylase showed trending increases, and the measures of cardiac autonomic control remained unaltered" (p. 41). However, there were no statistical differences in long-term follow-ups, suggesting no long-term physiological changes from animal-assisted therapy. Further research would benefit from exploring the underlying differences between short-term compared to long-term physiological changes. Other results showed self-reported changes in stress and agoraphobia, with increased reported social awareness and communication after a ten-week AAI program (Wijker et al., 2019). These reported improvements led to a process evaluation for animal-assisted therapy with autistic adults to create structure and improve the methodology for studies (Wijker et al., 2019).

O'Haire and colleagues (2013) designed a study comparing toys with human-animal interactions on the social behaviors of autistic children. The intervention comprised an eight-week animal-assisted activity program where a small animal (i.e., guinea pigs) was placed in the classroom. The animal-assisted activity interventions were not therapeutic interventions and had no precisely defined goals. Rather, the children had unstructured time with the animals each week for at least 40 minutes. Children were provided a variety of standardized toys (e.g., markers, blank drawing books, fashion dolls, a restaurant set of 50+ plastic pieces). Three sessions with toys and three sessions with animals were coded for social behaviors. O'Haire and colleagues (2013) found that "participants with ASD displayed prosocial behaviors during more intervals per minute in the presence of animals," whereas when toys were present, they "engaged in self-focused activities (e.g., play or self-stimulatory behaviors directed at the self)" (p. 7).

Autistic adults continue to be underserved by research, including in the human-animal interaction discipline. As Atherton and colleagues (2022) noted, autism research has largely focused on child populations and lacks investigations into the human-animal bond and pet

ownership for autistic adults. In adult samples, social avoidance fully mediated the relationship between an autism diagnosis and substituting pets for companionship (Atherton et al., 2022), offering evidence for the social support of pets in a community that experiences significant levels of loneliness (Milner et al., 2023).

Two studies (Barcelos et al., 2021; Atherton et al., 2022) reported qualitative findings about human and pet interactions in autistic samples. Focusing on human-dog interactions, Barcelos and colleagues (2021) concluded that dogs contribute to their human's overall flourishing by impacting their hedonic (e.g., calmer; less stress) and eudaimonic well-being (e.g., caring for the dog supports the individual's sense of purpose). From this, a model of suicide prevention was hypothesized, which demonstrated pathways in which a dog might show affection or love to the person, and the dog needing care from the person led to suicide prevention (Barcelos et al., 2021). Atherton and colleagues (2022) reported the following qualitative findings: (1) physical and mental health benefits, (2) pets as social alternatives and social integration, (3) and different barriers and breakthroughs to pet ownership.

Taken together, the research suggests that animals can support autistic individuals in various ways, including social inclusion (O'Haire, 2013), self-regulation (Nimer & Lundahl, 2007), acting as social alternatives, and supporting mental and psychical health (Atherton et al., 2022). Continued research is needed to understand the exact role of human-animal interactions.

Practices in participatory research with the community would benefit the research literature on human-animal interactions and autistic experiences by increased inclusion and diversifying methodology to include qualitative sources to gain understanding from the autistic community about their lived experiences with human-animal interaction, similar to what Chadwick and colleagues (2022) conducted for autistic and ADHD young people.

Research and Ethical Consideration in Animal-assisted Intervention

Animal Welfare

When working with animal interventions, the researcher must attend to both the welfare and well-being of the participants and the animals involved. Proper protocol must be used to ensure harm is not done to the animal and that promotes the values and research interest of the field (Freeman & Linder, 2019). Furthermore, Zamir (2006) raised the following moral concerns about using animals in interventions, limitations of freedom, life determination, training, social disconnection, injury, and instrumentalization. In response to ethical considerations, researchers have investigated ways to assess animal welfare through behavioral observations and physiological measures to ensure the safety of the animal (Glenk, 2017). However, limitations exist in what inferences can be drawn from animal measures of distress or of the relationship due to the limitation of communication and capabilities (Siddiq & Habib, 2016).

In a recent national survey, Linder and colleagues (2017) found that animal-assisted intervention guidelines are not implemented with fidelity across eldercare facilities, hospitals, and animal therapy organizations. To address some of these challenges in hospital settings, the Society for Healthcare and Epidemiology (SHEA) developed guidelines for animal use in healthcare settings, suggesting recommendations like handler training, up-to-date immunizations, and reevaluation of teams every three years (Murthy et al., 2015). However, SHEA's recommendations were limited to healthcare providers and facilities. To expand, IAHAIO's White Pages (2014) provided further clarification for human and animal well-being. For animal wellbeing, the following recommendations were suggested:

- Only domesticated animals can be involved and those animals that have been adapted for social interactions with human

- Wild and exotic species even tame ones, cannot be involved in interactions
- Animals considered for participation in animal-assisted interaction should be carefully evaluated by an expert in animal behavior
- Handlers and professionals working with animals should have received training and knowledge of the animals' well-being needs, including being able to detect signs of discomfort and distress
- Professionals must have an understanding of animal-specific boundaries that are normal and respectful to them
- Professionals who are responsible for the well-being of the animal during intervention must ensure that the animal is healthy, well-rested, comfortable, and cared for during and after sessions. Animals must not be overworked or overwhelmed, and the session should be time limited (30-45 minutes)
- Adequate measures must be taken to prevent zoonoses
- Professionals and administrators working in partnership with visiting or resident animals in institutions need to be aware of local laws and policies. Within their own programs and institutions professionals should advocate for policies and procedures to ensure care is provided for animals

Research Challenges

Over the last several decades, empirical research has demonstrated the benefit of human-animal interactions (Aragunde-Kohl et al., 2020; Beetz et al., 2012; Brown et al., 2020; Crawford et al., 2006; Nimer & Lundahl, 2007; O'Haire, 2013; O'Haire et al., 2015; Rodriguez et al., 2020). Despite the current evidence, conclusive inferences about animal-assisted activities cannot be drawn from the literature (Serpell et al., 2017). Multiple systematic reviews and meta-

analyses have commented on the lack of robust study designs and moderate effect sizes (Charry-Sánchez, et al., 2018; Crossman, 2017; Crossman & Herzog, 2019; Nimer & Lundahl, 2007; O'Haire, 2013; O'Haire et al., 2015; Santaniello et al., 2020). The field has lacked adequate control conditions to support construct validity evidence (Crossman & Herzog, 2019). Crossman (2017) noted limitations of extra therapeutic factors, social facilitation, insufficient statistical power, generalization across different animals, publication bias, and questionable research practice as some of the primary threats to the validity of human-animal interactions. Studies have not clearly controlled for confounding variables, making it difficult to assess if the animal is the primary source of change. O'Haire (2013) expressed concerns with methodology and study design, and others have noted concerns with the lack of inclusion of autistic adults (Atherton et al., 2022), which impacts the generalizability and ecological validity of the studies.

Nonetheless, the human-animal interaction field responded with improvement and direction, attempting to standardize the definition of terms and working to promote more fidelity in research design and methodology (Crossman & Herzog, 2019; Santaniello et al., 2020). Some of these concerns can be mitigated through experimental designs, scripts for animal handlers or volunteers, a priori sample estimates, including different animals or more than one in a study, and rigorous interpretation of the findings (Crossman, 2017). Crossman and Herzog (2019) explicitly laid out steps researchers can use to improve validity and inferences for human-animal intervention, which included improved research design, appropriate control conditions, adequate sample sizes, replication efforts, and a "metascience" of human-animal interventions, controls for research bias, preregistration and publication of null results, and avoiding spinning the discussion and abstract sections compared to what the results suggested. McCune and colleagues (2019) provided recommendations and developments in the research, such as including adding

pet ownership and animal bonds to the national health survey, emphasizing the unique nature of the human-animal attachments and relationships, building multidisciplinary teams, further development and validation of measures, new technologies (e.g., fMFI) to further understand psychological, physiological, and neurobiological aspects of the relationship, and continued effort to incorporate a global, multicultural population in research.

CHAPTER 3

RESEARCH METHODS

This chapter serves two purposes: (1) to situate the philosophical underpinnings of the study's methodology, ontology, and epistemology, and (2) to provide information about the sampling method, participant demographics, measures, study design, and analytic methods utilized to examine the data. To this end, the study is exploratory but blends the inductive and deductive approaches in exploratory and confirmatory frameworks.

In the philosophy of science, this meshing of exploratory and confirmatory approaches affords concepts like the working hypothesis (Casula et al., 2021). Previous philosophers, psychologists, and statisticians described various aims of the working hypothesis, including John Dewey, George Herbert Mead, and Lee Cronbach. Although it deviates from the traditionally confirmatory-driven hypothesis associated with positivism, the working hypothesis is nonetheless a hypothesis and, therefore, ultimately must be tested. The working hypothesis implies that it is subject to change; it is provisional, active, and "is a tool in an ongoing process of inquiry…. It works to move purposeful inquiry forward" (Casula et al., 2021, p. 1709).

Materials and Procedure

The Institutional Review Board at the author's university reviewed and approved the project's measures and procedures. All data collected were deidentified, and a random ID was assigned to all participants. The participants were recruited via email, social media posts (e.g., Reddit), and posted on autism organizations' websites (e.g., Organization for Autism Research). Recruitment ran from August 2022 until January 2023. The incentive to participate was an entry

into a random draw to receive one of five $25.00 Amazon cards. The participants read and signed the informed consent, and then completed the following survey, which included the measures below, and exploratory questions, along with three open-ended questions through the online survey platform, Qualtrics. For details of the informed consent, recruitment email, flyers, IRB approval letter, etc, see Appendices K.

Measures

The Brief Resilience Scale (BRS; Smith et al., 2008). The BRS is a 6 items brief measure of resiliency. Items 1, 3, and 5 are worded positively, whereas items 2, 4, and 6 are negatively worded and reversed scored. Participants are instructed to "Please indicate the extent to which you agree with each of the following statements by using the following scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree" (Smith et al., 2008, p. 195). Examples of items include "I tend to bounce back quickly after hard times," "I have a hard time making it through stressful events (R)" and "I usually come through difficult times with little trouble." In the development study of the BRS, measures of internal consistency ranged from .80-.91, while displaying questionable (e.g., 1 month = 0.69; 3 months = 0.61) test-retest reliability (Smith et al., 2008).

Camouflaging Autistic Traits Questionnaire (CAT-Q; Hull et al., 2019). The CAT-Q is a 25-item, 7-point Likert scale (between 1 [Strongly Disagree] to 7 [Strongly Agree]) that measures the different strategies used to camouflage autistic traits in social interaction. It includes three subscales: (1) Compensation (i.e., behaviors that compensate for difficulties in social situations), which includes items 1, 4, 5, 8, 11, 14, 17, 20, and 23; (2) Masking (i.e., behaviors utilized to hide autistic-like behaviors or traits or to attempt to appear non-autistic), which includes items 2, 6, 9, 12, 15, 18, 21, 24; and (3) Assimilation (i.e., behaviors used to fit in

or not stand out), which include items 3, 7, 10, 13, 16, 19, 22, and 25. An overall score of camouflaging behaviors are comprised by adding all three subscales scores together. Higher scores imply more self-reported social camouflaging behaviors. Questions include: “When I am interacting with someone, I deliberately copy their body language or facial expression”; “I have developed a script to follow in social situations (for example, a list of questions or topics of conversation”; “I need the support of other people in order to socialize.” The CAT-Q demonstrated good internal consistency (0.94) and adequate temporal stability (r = 0.77; Hull et al., 2019). Additionally, the scales were developed using a sample from the United Kingdom that included both autistic (N=354) and non-autistic (N=478) participants.

Interpersonal Emotion Regulation Questionnaire. (IERQ; Hofmann et al., 2016). The IERQ was designed to fill a gap in psychometrically sound instruments for measuring self-reports of interpersonal emotion regulation. The IERQ is a 20-item, 5-point Likert multidimensional scale with four subscales, *enhancing positive affect* (“describes a tendency to seek out others to increase feelings of happiness and joy”), *perspective-taking* (“involves the use of others to be reminded not to worry and that others have it worse”), *soothing* (“consists of seeking out others for comfort and sympathy”), and *social modeling* (“involves looking to others to see how they might cope with a given situation”). the IERQ demonstrated good model fit and internal consistency with Enhancing Positive Affect (α = .87), Perspective-Taking (α = .85), Soothing (α = 89) and Social Modeling (α =.91). IERQ includes questions such as: “I look for other people to offer me compassion when I’m upset”; “I like being in the presence of others when I feel positive because it magnifies the good feeling”; When I am sad, it helps me to hear how others have dealt with similar feelings.”

Pet Attachment and Life Impact Scale (PALS; Cromer & Barlow, 2013). The PALS is a 35-item, 5-point Likert multidimensional scale that measures a person's subjective evaluation of their attachment to their pet. Emotional attachment to pets underlines the development of the scale. PALS has four subscales: Love (i.e., "receiving love from pets), Regulation (i.e., "using pets as a source of emotion regulation), Personal Growth (i.e., personal or emotional growth that has occurred as a result of pet ownership"), and Negative Impact (i.e., ways in which pet ownership negatively impacts a person) (Tomlinson et al., 2021, p. 20). Questions include: "I take my pet with me to visit people"; "I am affected by the way others react to my pet"; "My pet understands me like no one else has." Several limitations exist for this scale, including a lack of measurement invariance testing and no model comparisons reported (Cromer & Barlow, 2013). A validation study reported results that indicated the 3-factor model fit converged with the data over the parent 4-factor structure, dropping Negative Impact (Tomlinson et al., 2021). The PALS has a lack of validation studies and reporting of internal consistency. Tomlinson et al. (2021) reported the following Omega values for each subscale: Love, $\omega = .87$; Regulation, $\omega = .88$; Personal Growth, $\omega = .81$; Negative Impact, $\omega = .52$.

State Emotion Regulation Inventory (SERI; Katz et al., 2016). The SERI is a 16-item 7-point Likert scale (from 1 [Strongly Disagree] to 7 [Strongly Agree]), which measures an individual's use of situationally dependent emotion regulation strategies. The scale was developed using a state-based emotion regulation construct rather than trait-based (i.e., habitual use of certain regulatory strategies). SERI comprises emotion regulation scales including distraction ("an attempt to deflect attention away from a troubling stimulus or cognition in order to avoid processing it"; $\alpha = .82$), reappraisal ("involves a reassessment of the content of the disturbing stimulus"; $\alpha = .78$), brooding ("a class of ruminative thought, entailing an abstract

dwelling on problems and concerns, with a self-critical stance"; α = .73), and acceptance ("entails a nonjudgmental willingness to engage in the negative experience without allowing it to impact subsequent behavior"; α =.70) (Katz et al., 2016; p. 2). The participant is asked to remember [*a distressing cognition that called for cognitive emotion regulation*]. Below is a list of statements. Please mark on the scale the extent to which you agree with each of the following statements regarding your negative thought, and the way you dealt with it. Example items include: "I tried to reevaluate the situation more positively"; "I looked for positive aspects of the situation"; "I critically analyzed the possible reasons for my thought."

Study Design

In mental health services and research, integrating quantitative and qualitative methods can thoroughly investigate the research questions rather than utilizing the methods individually. This perspective is the foundation of the mixed methods approach (Palinkas, 2014). The primary purposes of this study are as follows: (1) to understand autistic adults' experiences of and strategies utilized during emotion regulation, (2) to examine the individual factors (e.g., emotion regulation strategies, resiliency) that influence camouflaging behaviors, and (3) to investigate the role of human-animal interaction as an emotion regulatory strategy for autistic adults.

To address the gap in autistic adults' experiences of camouflaging, emotion regulation, and human-animal interaction, the study utilized a convergent (QUAN + QUAL = complete) design, where the emphasis is given to both qualitative and quantitative data and converging the data to investigate the research question (Cresswell & Plano Clark, 2018). A convergent design ideally provides a more holistic understanding of the problem of interest, and the analytical methods provide validation to each other (Cresswell & Plano Clark, 2018; Dawadi et al., 2021).

In convergent designs, both types of data are collected at the same time, though they are analyzed separately with their specific analytic procedures and then integrated together (Cresswell & Plano Clark, 2018; Dawadi et al., 2021). Qualitative data is uniquely suited to center and capture participants' perspectives, voices, and experiences (Mason, 2018; Palinkas, 2014). Cresswell and Plano Clark (2011) identify four major steps in convergent mixed method design: (1) design the quantitative strand, then collect data and design the qualitative strand and collect data; (2) analyze the quantitative data and analyze the qualitative data; (3) merge the quantitative and qualitative results (e.g., identify content related or different in both, comparison discussion, transform one type of result into another; and (4) interpret the merged results.

Data Analysis Plan

Quantitative Analysis

All quantitative analytic procedures were completed using R Studio (version 4.2.2; R Core Team, 2013). The data was cleaned and assessed for missing data and potential outliers. Descriptive statistics, distribution skewness, and kurtosis were calculated for all variables. Utilizing box plots, histograms, and P-P plots, a visual inspection of the data will be conducted. An alpha level of .05 will be used for all data analysis. Cronbach alphas (Cronbach, 1951), and McDonald's Omega (Hayes & Coutts, 2020) were examined using the Coefficentalpha package (Zhang & Yuam, 2016), where > 0.70 is acceptable, > 0.8 is good, and 0.9 > excellent (Taber, 2018). All exploratory items' means, and standard deviations are reported. Confirmatory factor analysis was conducted to examine the data convergence with the factor structure of each measure (e.g., BRS, CATQ, IERQ, PALS, SERI) The reporting of the factor analysis results was beyond the scope of the dissertation's results and thus reported in detail in the supplementary material (see Appendix C).

Table 1 includes all demographic variables. For the primary analysis, all aggregate scores were divided by the number of items in the variables for interpretability. The researcher coded three different gender categories: 0 = Male, 1 = Female, and 2 = Gender diverse participants. If the participants selected a gender-diverse and female identity, the researcher coded the participant as gender-diverse. Participants' racial identities were coded as follows: white = 0 and participants of color = 1. To assess for diagnostic differences, participants self-reported either having a professional diagnosis of autism or self-identify as autistic/seeking a first-time diagnosis and were coded for data analysis (0 = professional diagnosis; 1 = self-identify/seeking first-time diagnosis).

Table 1.

Participants' Demographic Information

Demographic Information				Diagnostic Information			
	Mean	SD		Diagnostic Status (n = 287)		Language (n = 319)	
Age	36.67	11.35		Self-ID/seeking first time DX	126 (43.9%)	Verbal	268 (84.0%)
				Professional DX	161 (56.1%)	Nonverbal	34 (10.7%)
Gender Identity (n = 288)		Race (n = 289)				Both	17 (5.3%)
Male	49 (17.01%)	White Participants	238 (82.4%)	Additional Developmental Disability (n = 290)		Mental Health Diagnosis (n = 281)	
Female	163 (56.5%)	Participants of Color	51 (17.6%)	Yes	127 (43.8%)	Yes	236 (84.0%)
Gender-Diverse	76 (26.4%)			No	163 (56.2%)	No	55 (19.6%)

Note. Not all demographic information was completed and may not be equivalent in the reported sample numbers. Self-ID = self-identify/diagnosis; seeking first time DX = seeking a first-time autism spectrum diagnosis; Professional DX = Professionally Diagnosed For full racial, gender, and diagnostic information see Appendix A

Furthermore, participants were asked if they had been professionally diagnosed with any additional neurodevelopmental disorders (yes/no) and then provided the option to report specific

diagnoses. Across both groups (professionally diagnosed and self-identify), attention-deficit/hyperactivity disorder (ADHD) was the most commonly co-occurring disorder reported, with 90 of the 123 participants selecting it. For those who elected to disclose self-identify with an additional neurodevelopmental disorder, ADHD was selected 56 times.

For professionally diagnosed neurodevelopmental disorders, a speech/language disorder was the next highest co-occurrence (selected 21 times), while in the self-identified group, dyscalculia was the next highest co-occurring disorder (selected 27 times). Participants experienced the same flow of questions for mental health disorders. Eighty-four percent of all participants reported receiving a professional mental health disorder diagnosis. Depression, anxiety, and post-traumatic stress disorder were the most reported mental health disorders. Almost 28% of participants selected three or more mental health disorders.

The PALS questionnaire asked participants to indicate their favorite animal (e.g., dog; cat) they thought of when completing it. In total, 299 participants listed a pet. 48.95% (n = 145) of participants reported a dog as the animal thought of when responding to the PALS questions, with 40.80% selecting a cat and 10.70% indicating a different type of animal (e.g., rat, turtle, bird) or that all their pets "are their favorites."[4].

Overall, 73.67% (n = 277) of participants reported currently living with at least one pet of their own. 47.19% of participants selected currently residing with a roommate/partner/family member who has a pet. Further, 326 of 374 (87.7%) participants indicated living with an animal in their primary residence during their childhood.

The survey included several exploratory closed-ended items that were designed to assess the participants' experiences with receiving emotion regulation during interaction with their pets.

[4] The following variables were coded: 0 = dogs, 1 = cats, and 2 = all other animals.

For these exploratory items, descriptive statistics were reported, and participants' agreement with each statement was assessed. For all survey items administered, see Appendix I-J.

Quantitative Research Question (QTRQ)

The author hypothesized that there would be gender, racial, and diagnostic status differences across the different factors of camouflaging. T-tests were examined to determine if diagnostic status and racial differences were observed in the different camouflaging autistic traits. A series of one-way ANOVAs were conducted to explore gender differences in camouflaging behaviors.

The QTRQ 2 aimed to explore the condition associations (i.e., two variables relationship when other variables' influence are accounted for) of variables in the study and to examine which variables displayed relatively the strongest influence on other variables. To investigate QTRQ 2, the researcher utilized a network analysis approach. The network analysis procedures are detailed in the following subsection.

Specifically, for QTRQ 3, hierarchical regression analyses were used to assess the association of the predictor variables with the dependent variable while accounting for other independent variables (Howitt & Cramer, 2016; Petrocelli, 2003). The researcher examined two separate regression models for dependent variables - camouflaging behaviors and resiliency. Additionally, the researcher examined model diagnostics, including multicollinearity (e.g., variance inflation factor), normality of the residuals (e.g., qq-plot, histograms, statistical tests of normality: Kolmogorov-Smirov), and outliers (e.g., Cook's distance, boxplot).

The first model assessed predictors of participants' total reported camouflaging autistic traits score. In the first step, control variables (gender identity, diagnostic status, and race) were entered. The second step included individual differences in resiliency scores and the

positive/negative impact of owning pets. In the third step, interpersonal emotion regulation (soothing, social modeling, perspective-taking, enhancing positive affect) strategies were entered. The fourth step examined state emotion regulation strategies (brooding, distancing, acceptance, reappraisal). In the fifth step, potential interaction terms were entered.

The second model assessed predictors of participants' reported resiliency. In the first step, control variables (gender identity, diagnostic status, and race) were entered. The second step included individual differences in camouflaging behaviors and the positive/negative impact of owning pets. In the third step, interpersonal emotion regulation (soothing, social modeling, perspective-taking, enhancing positive affect) strategies were entered. The fourth step examined state emotion regulation strategies (brooding, distancing, acceptance, reappraisal). In the fifth step, potential interaction terms were entered.

Network Estimation Method

Network Estimation Method. Network analyses can be utilized to explore the relationship between multivariate data and factors related to the data (Kan et al., 2018). Node and edges comprise the network analysis that is used to display complex, interconnected relationships (Borsboom et al., 2021; Epskamp et al., 2018; Hevey, 2018). The nodes represent the observed variables of interest, whereas the edges show the conditional relationships among nodes (Borsboom et al., 2021; Epskamp et al., 2018). To assess the relationships between different measures, the data was analyzed using an undirected network with a Gaussian graphical model (GGM) and least absolute shrinkage and selection operator (LASSO) in the Extended Bayesian Information Criterion (EBIC) model selection networks (Epskamp et al, 2017). The model's nodes indicate the participants' aggregate scores on the CAT-Q, PALS, BRS, IERQ, and SERI. The edges represent the regularized partial correlations between the scales. Blue lines

suggest a positive relationship, whereas red lines indicate a negative association. Thicker edges imply a relatively stronger association, while thinner lines suggest a weaker association. The R packages bootnet (version 1.5; Epskamp & Fried, 2021) and qgraph (version 1.9.3; Epskamp et al., 2022) were utilized to estimate and build the network of nodes and edges.

Network Centralities. R package, qgraph (version 1.9.3; Epskamp et al., 2022), was used to assess the importance of the nodes in the network model. The researcher investigated the node strength, closeness, between, and expected influence, which provides insight into the relative importance and interconnectedness of each node, frequently displayed as z-scores (Borsboom et al., 2021; Epskamp & Fried, 2017; Hevey, 2018; Robinaugh et al., 2016). Specifically, strength offers information about the connection between one node to other nodes by accounting for the sum of its absolute value (Borsboom et al., 2021; Epskamp & Fried, 2017; Hevey, 2018). Closeness provides information about the indirect connectedness to nodes by averaging the shortest path from one node to other nodes (Borsboom et al., 2021; Epskamp & Fried, 2017; Hevey, 2018). Betweenness offers information about the influence of one node's shortest path between two different nodes (Borsboom et al., 2021; Epskamp & Fried, 2017; Hevey, 2018). Additionally, the expected influence is considered an alternative approach to strength as it examines the cumulative influence of a node's influence in the network's activation and maintenance by assessing its positive and negative edges (Robinaugh et al., 2016).

Network Accuracy and Stability. To explore the accuracy and stability of the model, the researcher used bootstrapping methods with the bootnet (version 1.5; Epskamp et al., 2022) and ggplot (version 3.40.0; Wickman et al., 2022) package in R. The following were assessed by utilizing a 1,000-sample bootstrapping (1) the 95% confidence interval (CI) of the edge weight accuracy, (2) the stability of centralities, and (3) if the centrality measures significantly differ

(Espkamp & Fried, 2017). The author assessed the correlation stability coefficient (CS-coefficient) for the stability of centrality indices by examining the maximum number of cases that can be dropped while maintaining a correlation of 0.70 with a 95% probability (Epskamp et al., 2018). CS-coefficient should be at least 0.25 and ideally above 0.50 to suggest consistent interpretability of the model (Epskamp et al., 2018; Epskamp & Fried, 2017).

Qualitative Research Questions (QLRQ)

All qualitative analysis procedures were completed using NVivo (DSR International Pty Ltd, 2020). Three open-ended questions were examined to capture (1) what generally helps them emotionally regulate, (2) their experiences of interpersonal emotion regulation, and (3) their experiences of receiving emotion regulation from their pets. The researcher used reflective thematic analysis to analyze the data. Reflective thematic analysis recognizes the researcher's worldview by emphasizing the researcher's active role in the codes and themes (Byne, 2022). This acknowledges the researcher's contribution to the construction of qualitative themes, Further, reflective thematic analysis allows flexibility and recognizes the interactive meaning-making process between the dataset, theoretical assumptions, and researcher (Braun & Clarke, 2006; Byne, 2022). Participant experiences and the researcher's epistemological and ontological perspectives co-constructed the themes. Braun and Clarke's (2006; 2021) six phases were employed in the process. While the phases are often not linear in the application, the phase flow is typified by the following order: (1) familiarizing yourself with the data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, (6) producing the report (Braun & Clarke, 2006).

The researcher approached coding as "open and organic" (Braun & Clarke, 2021, p. 334). Two primary categories of themes exist, semantic (i.e., descriptive) and latent (I.e., interpretive)

(Braun & Clarke, 2006; Campbell et al., 2021). Moreover, researchers can employ different coding (e.g., inductive, or deductive) strategies for data analyses. For example, deductive methods use a top-down, code-book approach (i.e., using predetermined code based on theory to assess the data). Conversely, inductive approaches are characterized by bottom-up, line-by-line strategies (i.e., no predetermined codes and allowing the data to guide the initial coding) (Braun & Clarke, 2006; Byne, 2022; Campbell et al., 2021).

The researcher applied a constructivist and inductive approach to data analysis in this study. Specifically, the researcher employed open coding, marked by line-by-line coding, for all participant responses. Thematic maps were drawn to display visual connections between conceptually related codes, and codes were organized into related hierarchical codes (Braun & Clarke, 2006; Kiger & Varpio, 2020). From the hierarchical codes, themes were developed, reviewed, and refined. Lastly, the researcher defined and named the themes.

CHAPTER 4

RESULTS

The responses of 389 participants were recorded in Qualtrics. A total of 9 people did not consent to the study and were removed from the analysis. The final survey included 380 participants for analysis with missing data ranging from 13.45% (PALS) to 19.21% (Assimilation). To address missing data, the Naniar (Version 1; Tierney et al., 2023) package was utilized. Little's Missing Completely at Random was assessed and suggested no missing-ness pattern $x^2 = 312(347)$, $p = 0.909$, missing patterns = 35. The researcher estimated missing items using the multiple imputation estimation procedure in R studio using the mice package (Version 3.15.0; van Burren et al., 2022). The mice package creates "replacement values" (van Burren et al., 2022) for multivariate missing data and utilizes chained equations implementing an algorithm that bases imputed values "on the posterior distribution of parameters" (Tierney and Cook, 2023, p. 6). No missing demographic variables were estimated. Therefore, for the regression analysis, only participants who provided gender, diagnostic status, and race were included (n=281).

Descriptive Statistics

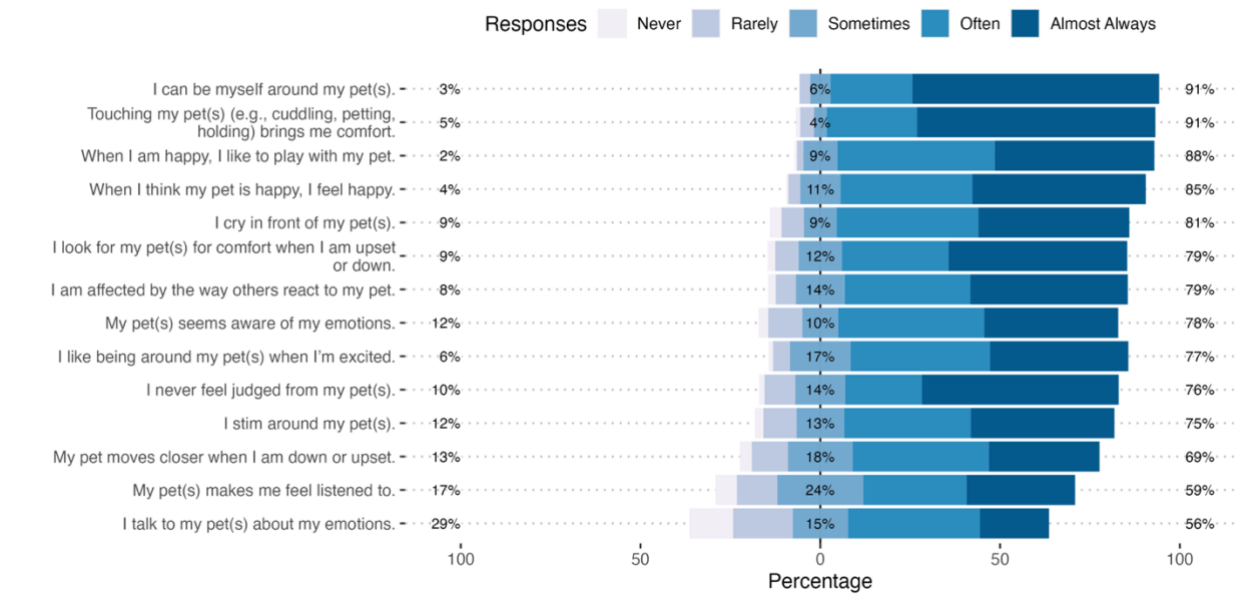
Table 2 reports the means, standard deviations, skew, kurtosis, median, and internal consistency for each variable for the participants in this study. Table 3 displays the correlations among the variables. The results indicated that the factor models for BRS, CATQ, and SERI all displayed adequate convergence with the data and internal consistency, suggesting valid measures for this sample. The results of the PALS factor results displayed adequate convergence,

except for item 20, which was removed. The three positive dimensions of PALS (i.e., love, positive growth, and emotion regulation) all strongly and positively correlated with each other. Therefore, a second-order factor of an overall positive impact of pet ownership was tested and supported. The overall positive impact was used as a global measure of the positive influence of animals in the following analyses.

Furthermore, each participant responded to fourteen exploratory closed-ended questions that assessed ways in which pets provide emotional support and regulation. The participants rated each item on a Likert scale from 1 (Strongly disagree) to 5 (Strongly Agree). Figure 1 displays the questions and percentage of participants' responses according to their ratings.

Figure 1

Percentages of Participants' Responses When Seeking Support from Pets to Emotionally Regulate (n = 338).



Note. The vertical mid-line (0) indicates the percentage of participants who responded sometimes (i.e., 3) on a 5-point Likert scale. Percentages to the right of the mid-line signify that participant responded often (4) or almost always (5). Percentages to the left of the mid-line denote participants who respond with never (1) or rarely (2).

Pets provided emotional support, and participants reported seeking and receiving emotional support from their pets. Ninety-three percent of respondents either agree or strongly agree that touching their pet(s) brings them comfort. Participants also noted that they attempt to regulate or sustain positive emotions by seeking or playing with their pets when happy. Most participants reported being affected by how others react to their pets.

Several questions asked participants to rate their pets' awareness of their emotions or pets' agency to react to their emotions. For example, autistic participants largely agreed or strongly agreed that their pets are aware of their emotions and do not judge the human participant. Sixty-eight percent of respondents perceived that their pet moves closer to them when feeling down, while 58% of participants reported feeling heard by their pets. While less than other responses, the majority (56%) of participants reported that they talk to their pets about their emotions.

Participants were also asked (1) if they use mindfulness exercises and, if so, to select from a list of different techniques and (2) if they use art/media to emotionally regulate. Figure 2 displays the percentage of items indicated by participants. Percentages are based on the total number of participants that selected the specific type. Participants could select more than one in both cases.

Table 2

Descriptive Statistics and Measures of Internal Consistencies for Variables (n = 380)

Variable	Mean(SD)	Median	Skew	Kurtosis	Alpha	Omega
BRS	2.28 (.82)	2.17	.43	-.17	.88	.88
PALS						
Emotion Regulation	3.39(1.10)	3.56	-.44	-.84	.91	.91
Love	4.09(.76)	4.29	-1.26	1.24	.93	.94
Positive Growth	3.57(1.02)	3.80	-.50	-.61	.84	.85
Positive Impact Total	3.68(.86)	3.84	-.68	-.17	.87	.88
Negative Impact	4.09(.77)	4.25	-1.27	1.53	.70	.70
SERI						
Reappraisal	4.32(1.56)	4.50	-.39	-.78	.92	.92
Distancing	4.53(1.40)	4.75	-.51	-.43	.82	.82
Brooding	5.04(1.34)	5.25	-.60	-.14	.84	.84
Acceptance	3.85(1.34)	3.75	-.03	-.52	.83	.83
IERQ						
Soothing	2.66(1.13)	2.50	.41	-.82	.94	.94
Social Modeling	3.06(1.00)	3.00	.11	-.69	.90	.90
Perspective-Taking	1.73(.95)	1.40	1.47	1.19	.93	.93
Enhancing Positive Affect	3.20(1.00)	3.20	-.18	-.69	.89	.89
CATQ						
Total	5.23(.94)	5.35	-.85	1.08	1.10	.92
Masking	5.06(1.35)	5.25	-.97	.59	.86	.87
Compensation	5.19(1.18)	5.33	-.92	1.14	.88	.88
Assimilation	5.43(1.10)	5.62	-.66	-.04	.82	.82

Note. SD = Standard Deviation, BRS = Brief Resiliency Scale; PALS = Pet Attachment Life Satisfaction Scale; SERI = State Emotion Regulation Inventory; IERQ = Interpersonal emotion regulation scale; CATQ = The Camouflaging Autistic Traits Questionnaire. BRS, PALS, and IERQ are 5-point Likert-scale; SERI and CATQ are 7-point Likert-scale Kurtosis and Skew are presented as z-scores.

Table 3

Pearson Correlations of Observed Variables

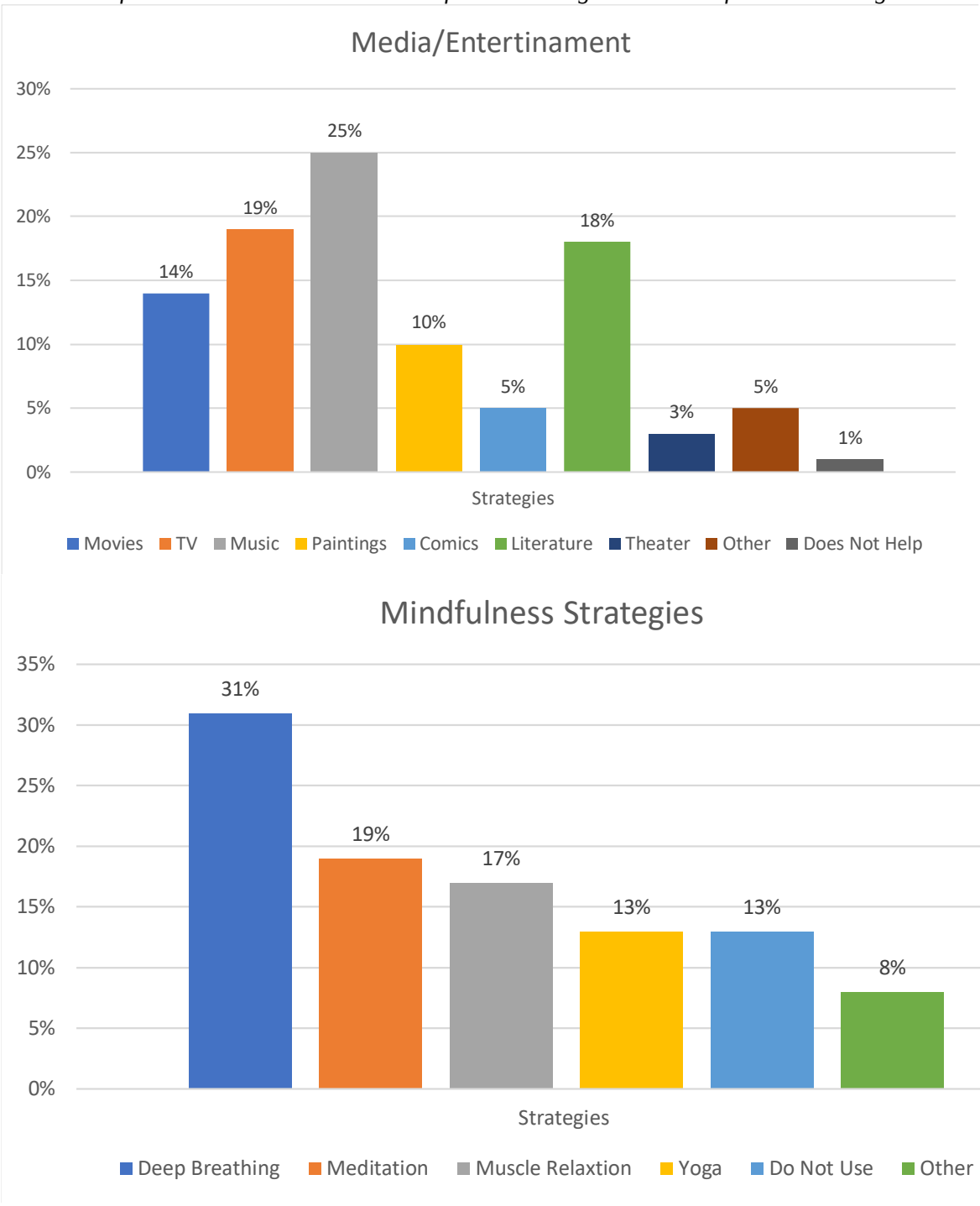
Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. BRS	1.00																	
2. PET_ER	-.08	1.00																
3. PET_Love	-.11*	.76***	1.00															
4. PET_PG	-.07	.67***	.69***	1.00														
5. PET_NI	-.02	.13**	.24***	.09	1.00													
6. PET_PI	-.09	.91***	.89***	.89***	.16**	1.00												
7. Reapp.	.24***	.20***	.11*	.18***	-.04	.19***	1.00											
8. Distanc.	-.04	.10	.07	.08	-.09	.09	.28***	1.00										
9. Brooding	-.02	.11*	.13*	.11*	-.02	.13*	.42***	.13**	1.00									
10. Accept.	.22***	.07	.03	.06	-.11*	.06	.02	-.18***	-.01	1.00								
11. Soothing	.03	.08	.08	.09	-.13**	.09	.21***	.14**	.12*	-.01	1.00							
12. Soc. Mod	.09	.18***	.14**	.23***	-.11*	.21***	.29***	.09	.25***	.05	.52***	1.00						
13. Pers.-Tak.	.31***	.11*	-.09	.08	-.15**	.06	.30***	.10	.06	.31***	.37***	.40***	1.00					
14. Enh. Pos.	.15**	.11*	.08	.18***	-.12*	.14*	.28***	.11*	.28***	.10	.52***	.53***	.38***	1.00				
15. Masking	-.10*	.20***	.20***	.20***	-.01	.22***	.25***	.07	.33***	-.13*	.08	.29***	-.05	.30***	1.00			
16. Compens.	-.08	.22***	.14**	.19***	-.10*	.21***	.16**	.16**	.30***	-.07	-.01	.27***	-.09	.14**	.57***	1.00		
17. Assim.	-.36***	.07	.08	.04	-.03	.07	-.12*	.12*	.04	-.29***	-.19***	-.13*	-.47***	-.31***	.21***	.42***	1.00	
18. CATQ	-.23***	.21***	.19***	.19***	-.06	.22***	.14**	.15**	.30***	-.20***	-.04	.20***	-.25***	-.08	.80***	,85***	.67***	1.00

Note. BRS = Brief Resiliency Scale, PET_ER = Emotion regulation from pets; PET_Love = love from pets; PET_PG = positive growth from having pets; PET_NI = Negative impact from owning pets; PET_PI = Positive Impact from having pets; Reapp. = Reappraisal; Distanc. = distancing; Accept. = Acceptance; Nonreac. = Nonreactivity; Soc. Mod. = Social Modeling; Pers.-Tak. = Perspective-taking; Enh. Pos. = enhancing positive affect; Compens. = compensation; Assim = assimilation; CATQ-T = Camouflaging Autistic Traits Questionnaire Total Score

* p < .05; ** p < .01, *** p < .001

Figure 2

Bar Chart of Media/Entertainment and Mindfulness Strategies Endorsed for Emotion Regulation



Participants were also asked how often they use both mindfulness exercises and art/media to support their emotion regulation. Music (28%) was the most endorsed media strategy that supports emotion regulation, followed by TV (19%) and literature (18%). 46.7% of participants reported using media/art often to support emotion regulation, with 53.3% indicating rarely utilizing these strategies. Deep breathing (31%) was the most commonly endorsed mindfulness technique, followed by meditation (19%) and muscle relation (17%). 55.5%, 20.1%, and 24.4% of participants endorsed utilizing one, two, or three plus mindfulness strategies, respectively. Just over 37% of participants reported frequent use of mindfulness techniques to support their emotion regulation, with 62.9% indicating rarely using mindfulness techniques.

Quantitative Research Questions

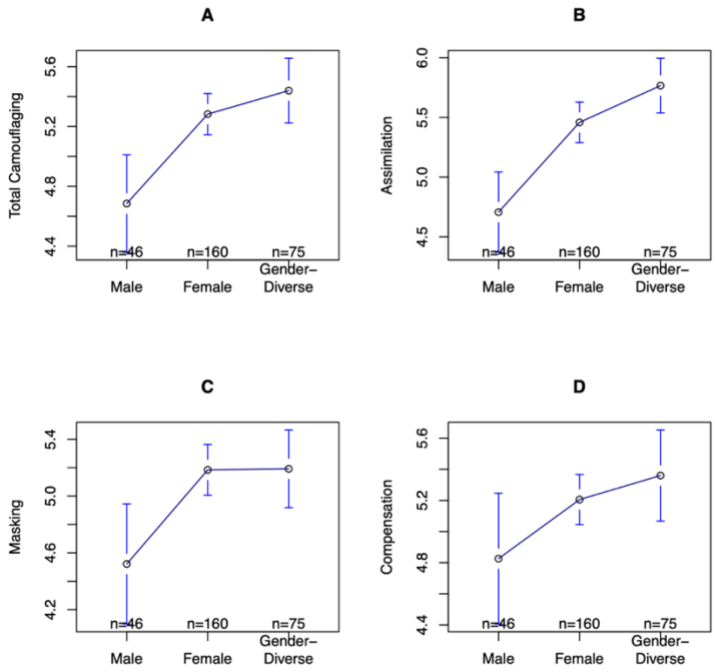
Research Question 1: Gender, Diagnostic Status, and Racial Differences in Reported Camouflaging Behaviors

Total CAT-Q. A one-way ANOVA was conducted to assess if overall camouflaging autistic traits were different between the three gender groups: male (n = 46), female (n = 160), and gender diverse (n = 75). A one-way ANOVA suggested a statistically significant main effect of the overall self-reporting of camouflaging autistic traits among the three gender groups [$F(2,278) = 10.09$, $p < 0.001$, $n_p^2 = 0.07$]. Post hoc comparisons utilizing the Tukey HSD test found the mean scores for females ($M = 5.29$, $SD = .87$, $p < .001$) and gender diverse ($M = 5.44$, $SD = .94$, $p < .001$) were both significantly higher compared to male participants ($M = 4.69$, $SD = 1.10$). No statistical differences were found between females ($p = .50$) and gender-diverse individuals.

To further examine gender differences in camouflaging behaviors, a one-way ANOVA was calculated for each subscale in the CAT-Q. **Compensation.** A one-way ANOVA suggested a statistically significant main effect of the overall self-reporting of compensation strategies among the three gender groups [$F(2,278) = 3.535$, $p = 0.03$, $n_p^2 = 0.02$]. Again, post hoc comparisons utilizing the Tukey HSD test suggested no statistical differences between mean scores for females ($M = 5.22$, $SD = 1.04$, $p = .07$) to males or between females ($p = .67$) and gender-diverse participants in the sample. Gender-diverse ($M = 5.36$, $SD = 1.27$, $p = .03$) participants reported statistically significant d higher levels of camouflaging behavior than male ($M = 4.79$, $SD = 1.38$) participants.

Figure 3

Camouflaging Means Grouped by Gender with 95% CI (n=281)



Note. A = Total Camouflaging scores; B = Assimilation scores; C = Masking Scores; D = Compensation scores.

Assimilation. The results suggested a statistically significant main effect of the overall self-reporting of assimilation strategies among the three gender groups [$F(2,278) = 14.90.$, $p < 0.001$, $n_p^2 = 0.08$]. Results from the Tukey HSD demonstrated that females ($M = 5.47$, $SD = 1.09$, $p < .001$) and gender diverse ($M = 5.77$, $SD = 1.00$, $p < .001$) were both significantly different than the male participants ($M = 4.75$, $SD = 1.16$). Female and gender-diverse participants were not significantly different ($p = 0.11$). **Masking.** Lastly, the results exhibited a statistically significant main effect of the overall self-reporting of masking strategies among the three gender groups [$F(2,281) = 8.75$, $p = 0.003$, $n_p^2 = 0.04$]. Post hoc comparison results suggested that females ($M = 5.19$, $SD = 1.14$, $p = .003$) and gender diverse ($M = 5.19$, $SD = 1.19$, $p = .009$) were both significantly higher than the male participants ($M = 4.52$, $SD = 1.42$), while female and gender-diverse participants did not statistically differ ($p = .99$).

Additionally, the results of the t-test demonstrated that there was no statistical difference between diagnostic classification within this sample for total camouflaging scores $t(275.64) = -1.88$, $p = .06$. However, examination of the camouflaging subscales revealed that reported masking strategies statistically differed between diagnostic status, $t(271.04) = -3.08$, $p = .002$, $d = .35$, with self-reported professionally diagnosed participants ($M = 4.89$, $SD = 1.39$) indicating lower reported use of masking behaviors than self-identified individuals ($M = 5.32$, $SD = .93$).

Racial differences were assessed to examine differences in camouflaging scores. Total camouflaging scores were not statically different for white autistic participants (5.27, $SD = .99$) compared to autistic participants of color ($M = 5.07$, $SD = .82$), [$t(80.05) = 1.48$, $p = .14$]. Examination of camouflaging subscales indicated that masking and compensation were nonsignificant. However, assimilation scores displayed a statistically significant difference [$t(72.183) = -3.90$, $p < .001$, $d = .59$] with autistic participants of color ($M = 4.89$, $SD = 1.05$)

reporting lower levels of assimilation strategies compared to white autistic participants (M = 5.54, SD = 1.10).

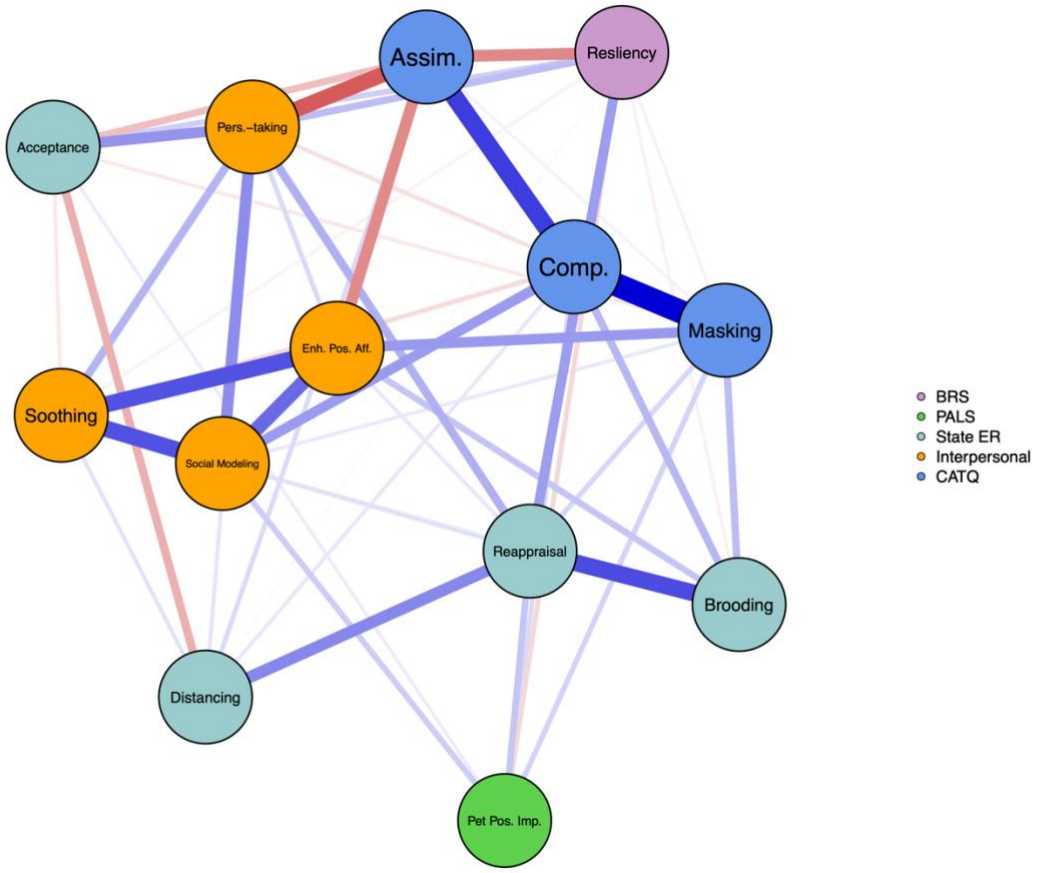
Quantitative Research Question 2: Network Analysis

The variables displayed multivariate non-normality. Since the PALS variables emotion regulation, love, and positive growth displayed a large, positive correlation among each (r > .75), an aggregate PALS positive impact score was calculated and used in the network analysis. Additionally, participants' total camouflaging scores were not used in the network analysis to examine the unique influence of each camouflaging dimension. All three camouflaging dimensions displayed a medium, positive correlation (r between .26-55) with each other.

The model was estimated using the function correlation-auto, which is part of the qgraph package (version 1.9.3; Epskamp et al., 2022) and automatically computes a correlation matrix while detecting ordinal data. Figure 4 displays the complete network analysis. The network's density included 49 of 78 (62.82%) non-zero edges with a mean weight of 0.04.

Figure 4

Network Analysis of 13 variables with N = 380



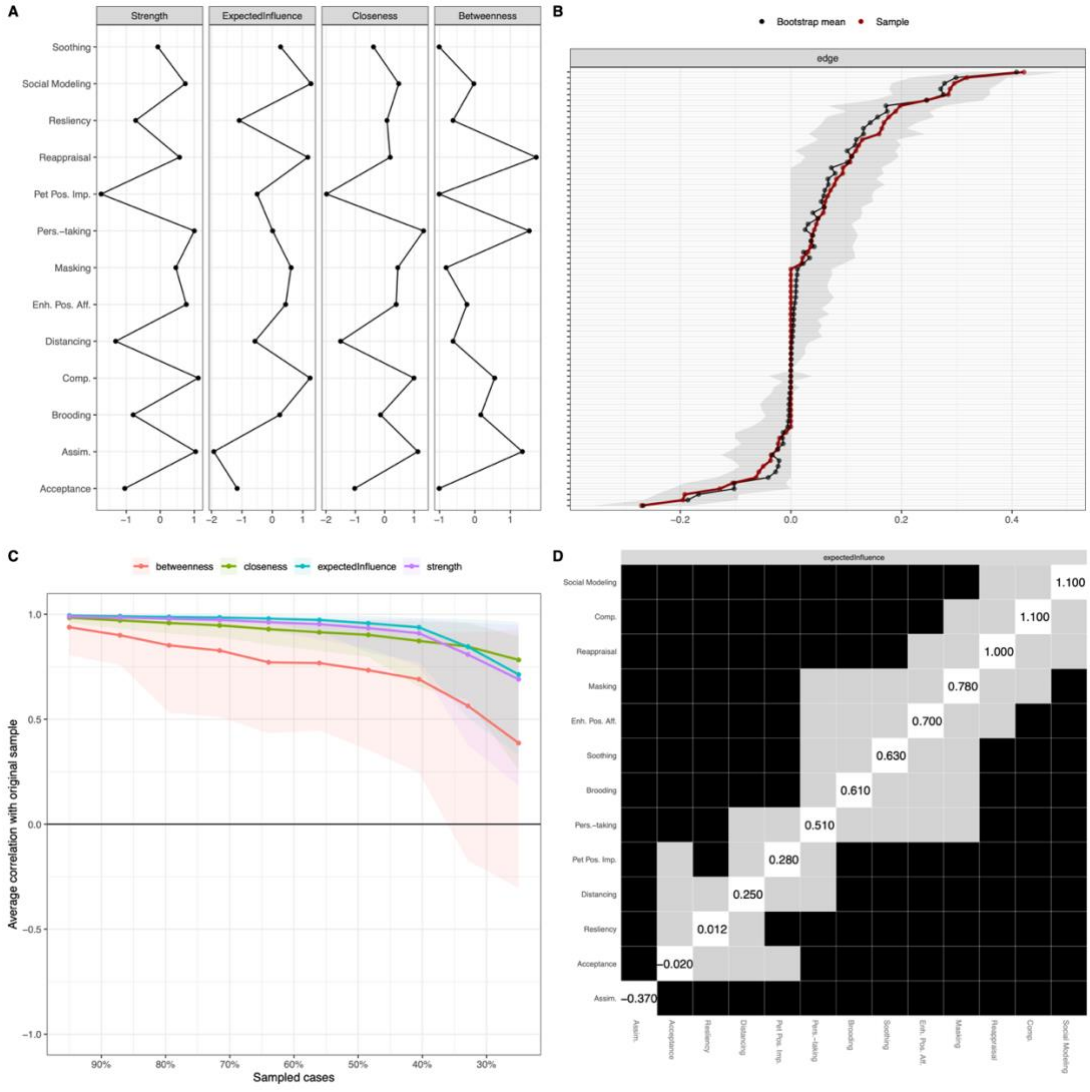
Note. BRS = Brief Resiliency Scale; PALS = Pet Attachment and Life Satisfaction Scale Positive Impact of Having a Pet; SERI = State Emotion Regulation Inventory; IERQ = Interpersonal Emotion Regulation Scale; CATQ = Camouflaging Autistic Traits Questionnaire. Thicker edges suggest stronger relationships while thinner edges imply weaker associations. Blue edges indicate a positive relation and red edges display a negative relationship.

Figure 5 includes the strength, expected influence, closeness, betweenness centralities, bootstrapped edge weights, centrality stability, and bootstrapped expected influence difference

test. The CS-coefficients were good for expected influence (CS = .595) and strength (CS = .595), adequate for closeness (CS = .439), and questionable for betweenness (CS = .129), implying strength, expected influence, and closeness centralities can be interpreted with reliability. Betweenness CS-coefficient suggested that betweenness cannot be reliably interpreted as it is below the suggested cut-off of .250 (Espkamp et al., 2017). The nonparametric bootstrapped edge weights (Figure 5B) display somewhat sizable confidence intervals (Cis) around the edge-weights and are likely comprised of a mixture of edge weights that do and do not differ from each other. It also contains CIs that center around zero. Given these results, some caution is warranted regarding the interpretability of the edge weights estimation (Espkamp et al., 2017; Hevey, 2018). The Cis exhibit a fairly Figure 5D provides a bootstrapped estimate of which edge's expected influence significantly differs from each other. In this sample. Several edges' expected influence differs from one another.

Figure 5

Interpretability of the Network Model



Note. (A) Standardized node centrality estimates including strength, expected influence, closeness, and betweenness; (B) Bootstrapped confidence intervals of estimated edge-weights. The Red line indicates the sample, whereas the black line displays the bootstrapped means, and the grey demonstrates the bootstrapped confidence intervals; (C) Displays the average correlation of centrality indices as cases are dropped; (D) Bootstrapped expected influence difference test. Black boxes represent nodes' z-scores that are statistically different from each other, whereas grey boxes represent nodes' z-scores that are not statistically different.

In the current sample, the network results indicated compensation (strength coefficient [SC] = 1.12), assimilation (SC = 1.04), perspective-taking (SC = 1.00), and enhancing positive affect (SC = .77) displayed the highest strength centralities. Regarding expected influence, social modeling (expected influence coefficient [EC] = 1.27), compensation (EC = 1.24), and reappraisal (EC = 1.16) exhibited the highest centralities. Assimilation (EC = -1.92), acceptance (EC = -1.16), and resiliency (-1.09) demonstrated the weakest expected influence centrality implying a largely negative relationship with other variables. Perspective-taking (closeness centrality [CC] = 1.32) and assimilation (CC = 1.13) displayed the strongest closeness measures of centralities. Additionally, the following variables displayed the highest levels of betweenness in the network analysis: reappraisal (betweenness centrality [BC] = 1.73), perspective-taking (BC = 1.53), and assimilation (BC = 1.34).

Quantitative Research Question 3: Predictors of Camouflaging Autistic Traits and Resiliency

The author chose to not estimate missing demographic variables. Therefore, only participants who completed all demographical variables (race, diagnostic status, and gender identity) were included in the models (n = 281). The researcher used hierarchical multiple regression procedures with steps including (1) demographic variables, (2) individual factors and interactions with pets, (3) interpersonal emotion regulation strategies, (4) state emotion regulation strategies, and (5) interaction terms. The first model assessed the overall camouflaging scores as the outcome variable with predictor variables. The second model examined reported resiliency as the outcome variable with predictor variables.

The researcher examined model diagnostics, including multicollinearity (e.g., variance inflation factor), normality of the residuals (e.g., qq-plot, histograms, statistical tests of normality:

Kolmogorov-Smirov), and outliers (e.g., Cook's distance, boxplot). All regression diagnostics are included in Appendix B. A bootstrapped regression model was estimated with the final hierarchical model to account for potential type 1 errors due to multiple tests and the study's exploratory nature.

Total CATQ. Table 4 displays the total model output for CATQ regression and bootstrapped model. Demographical variables served as covariate predictor variables and influenced the overall camouflaging behaviors [$F(4,276) = 6.12, p < .001, R^2 = .08$]. Specifically, gender identity (female participants [β = .62, p < .001] gender-diverse participants [β = .79, p < .001] and diagnostic status (self [β = .23, p = .047]) significantly predicted higher rates of reported camouflaging behaviors. Race (β = -.07 p = .64) was a non-significant predictor variable in the model.

The results of the hierarchical multiple regression demonstrated that step two accounted for an additional 11.0% of the variation in camouflaging behaviors and a significant change in R^2 [$F\ (3, 273) = 11.90, p < .001$]. Resiliency (β = -0.22, p < .001) and negative impact of having pets (β = -0.18, p < .001) decreased camouflaging behaviors, while positive impacts of having pets (β = 0.18, p = 0.001) predicted increased camouflaging behaviors. Gender identity (female participants [β = 0.58, p < .001] gender-diverse participants [β = 0.73, p < .001] and diagnostic status (self [β = .25, p = .024]) remain significant predictors of camouflaging, while race (β = -0.02, p = 0.89) was non-significant.

Table 4

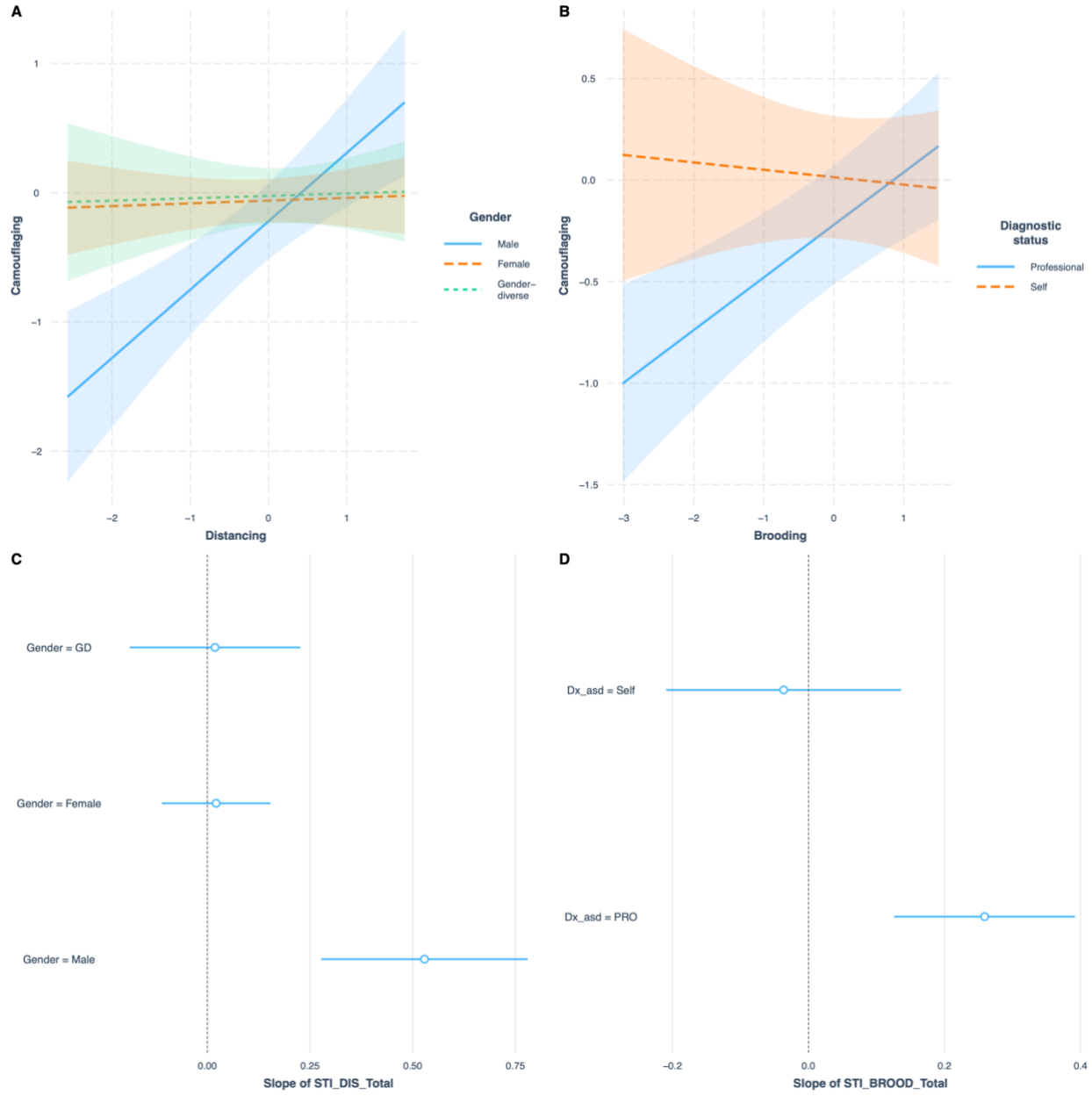
Results of Hierarchical Multiple Regression Predicting Camouflaging Behaviors

DV	Camouflaging Behaviors				
	F-stat.	DF	R^2		
	9.12	(18, 262)***	.39		
	Estimate	95% CI	p-value	Boot Est.	95% BootCI
Step One					
Intercept	-.22	[-.51, .07]	.14	-.21	[-.55, .07]
Female	.16	[-.15, .47]	.31	.15	[-.16, .47]
Gender-Diverse	.20	[-15,.54]	.27	.19	[-.19, .57]
Person of color	-.03	[-.31, .24]	-.24	-.04	[-.32, .26]
Dx Self	.24	[.03, .43]	.022*	.23	[.05, .45]
Step Two					
Resiliency	-.15	[-.26, -.05]	.005**	-.15	[-.28, -.05]
PALS PI	.13	[.03, .24]	.013*	.13	[.02, .24]
PALS NI	-.16	[-.27, -.06]	.003**	-.16	[-.26, -.06]
Step Three					
Pers.-taking	-.33	[-.47, -.19]	<.001***	-33	[-.48, -.17]
Social Modeling	.22	[.09, .35]	<.001***	.22	[.10, .35]
Enh. Pos. Affect	-.04	[-.17, .09]	.52	-.04	[-.17, .09]
Soothing	-.10	[-.23, .03]	.14	-.10	[-.24, .03]
Step Four					
Distancing	.53	[.28, .78]	<.001***	.53	[.23, .83]
Brooding	.26	[.13, .39]	<.001***	.26	[.10, .43]
Reappraisal	.06	[-.07, .18]	.35	.05	[-.06, .19]
Acceptance	-.10	[-.21, .01]	.06	-.10	[-.23, .02]
Step Five					
Dist.* Female	-.52	[-.78, -.23]	<.001***	-.50	[-.85, -.20]
Dist.*Gen. Div.	.51	[-84, -.18]	.002**	-.51	[-.90, -.12]
Brood*Dx self.	-.30	[-.50, -.09]	.005**	-.29	[-.53, -.08]

Note. SD = Standard Deviation, BRS = Brief Resiliency Scale; PALS = Pet Attachment Life Satisfaction Scale; SERI = State Emotion Regulation Inventory; Mindfulness = The Five dimensions of Mindfulness Questionnaire; IERQ = The interpersonal emotion regulation scale; CATQ = The Camouflaging Autistic Traits Questionnaire. Kurtosis and Skew are presented as z-scores.

Figure 6

Interaction Plots and Simple Slopes of Gender and Diagnostic Status Predicting Camouflaging



Note. A = Interaction of gender and distancing on camouflaging; B = Interaction of diagnostic status and brooding on camouflaging; C = simple slope of gender and distancing on camouflaging; D = Simple slopes of diagnostic status and brooding on camouflaging

Pro = Professional; Self = Self-identifying/seeking first-time diagnosis; GD = Gender-diverse

Step three included interpersonal emotion regulation strategies. The results displayed an additional 8.0% of the variance explained in camouflaging behaviors with a significant change in R^2 $[F(4, 269) = 7.38, p < .001]$. Social Modeling (β = 0.26, p < .001) significantly predicted increases, and perspective-taking (β = -0.29, p < .001) significantly predicted decreases in camouflaging behaviors. Enhancing Positive Affect (β = 0.01, p = 0.85) and Soothing (β = -0.13, p = 0.06) were both non-significant predictors in the model. Gender identity, diagnostic status. resiliency, positive and negative impact of having pets all remained significant in the model.

Step four included state emotion regulation strategies, which accounted for an additional 7.0% of the variance in camouflaging behaviors and a significant change in R^2 $[F(4, 265) = 6.90, p < .001]$. Distancing (β = 0.11, p = 0.046) and brooding (β = 0.18, p = 0.002) strategies significantly predicted increases in camouflaging behaviors. Reappraisal (β = 0.08, p = 0.19) and acceptance (β = -0.07, p = .21) were not significant. Gender identity (female [β = 0.26, p = 0.10]; Gender-diverse [β = 0.27, p = 0.13]), race (β = -0.071 p = 0.92), enhancing positive afftect (β = -0.03, p = 0.64), and soothing (β = -0.12, p = 0.07) were non-significant in the model. Diagnostic status (self; β = 0.24, p = 0.02), resiliency (β = -0.15, p = 0.02), positive (β = 0.15, p = 0.006) and negative (β = -0.18, p < .001) impact of having pets, perspective-taking (β = -0.29, p < .001), and social modeling (β = 0.21, p = 0.02) remain significant.

The last step investigated the interaction effect between gender identity and distancing emotion regulation. The additional step resulted in a 5.0% increase in the variance of camouflaging behaviors and a significant change in R^2 [F (3,262) = 6.82, p < .001]. The results demonstrated that female (β = -0.51, p < .001) and gender-diverse (β = -0.52, p = .002) participants' distancing emotion regulation scores predicted less influence on camouflaging behaviors compared to male participants. Also, self-identified (β = -0.30, p = 0.005) participants'

brooding scores displayed less impact on camouflaging behaviors compared to professionally diagnosed individuals.

Resiliency. Table 5 displays the total model output for all regression models and bootstrapped models. The demographic covariate model explained 5.0% of the variance [$F(4,276) = 3.77,\ p = .005, R^2 = .005$]. Participants of color (β = 0.47, p = .003), displayed significantly higher scores in resiliency. Gender identity (Female [β = -0.18, p = .27]; Gender-Diverse [β = -0.33, p = .084]), and diagnostic status (self-identified; β = 0.05, p = 0.66) were all non-significant predictor variables in the model.

The hierarchical multiple regression demonstrated that step two accounted for an additional 5.0% of the variation in resiliency with a significant change in R^2 [$F(3, 273) = 5.25, p = .002$]. For every one unit change in camouflaging behaviors, resiliency decreased by -0.24 (p < .001), while positive (β = -0.01, p = 0.84) and negative (β = -0.03, p = 0.66) impacts of having pets were non-significant in the model.

Again, step three included interpersonal emotion regulation strategies. The results displayed an additional 8.0% of the variance explained in resiliency with a significant change in R^2 [$F(4, 269) = 6.42, p < .001$]. Perspective-taking (β = 0.33, p < .001) and soothing (β = -0.16, p = 0.03) significantly predicted resiliency. Enhancing positive affect (β = 0.05, p = 0.52) and social modeling (β = 0.06, p = 0.43) were non-significant and trended towards a decrease in resiliency.

Table 5

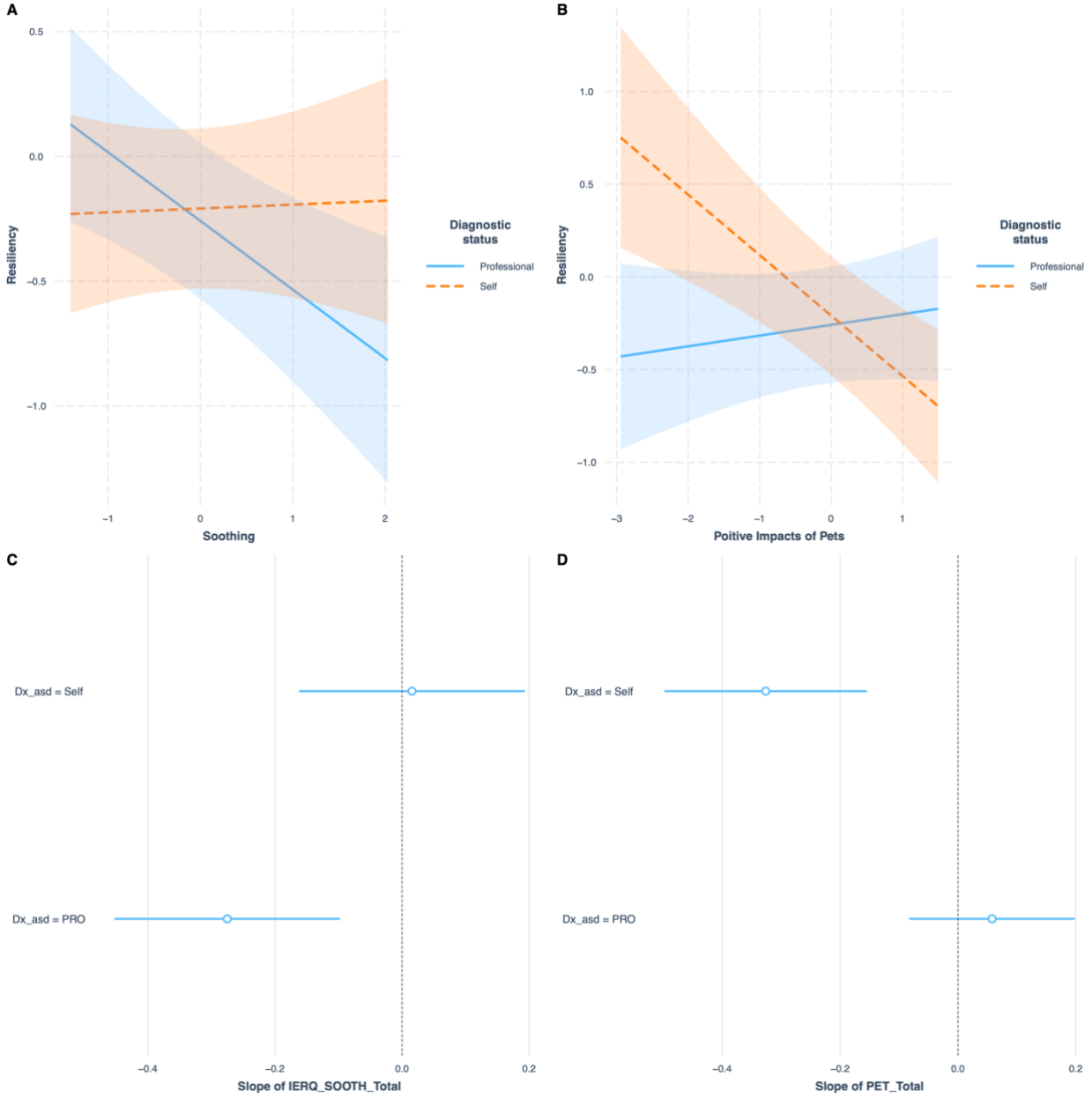
Results of Hierarchical Multiple Regression Predicting Resiliency

DV	Resiliency				
	F-stat	DF	R^2		
	6.19	(17,263)***	.29		
	Estimate	95% CI	p-value	Boot Est.	95% BootCI
Step One					
Intercept	-.26	[-.57, .05]	.10	-.25	[-.53, .00]
Female	.20	[-.12, .53]	.22	.20	[-.09, .48]
Gender-Diverse	.17	[-.20, .54]	.37	.17	[-.15, .51]
Person of color	.38	[09, .68]	.01*	39	[.11, .64]
Dx Self	.05	[-.17, .27]	.65	.05	[-.17, .25]
Step Two					
CATQ	-.18	[-.31, -.06]	.004**	-.17	[-.32, -.06]
PALS PI	.06	[-.08, .20]	.42	.06	[-.10, .22]
PALS NI	-.003	[-.11, .11]	.95	-.003	[-.11, .10]
Step Three					
Pers.-taking	.20	[.05 .35]	.011*	.20	[.04 .37]
Social Modeling	.02	[-.12, .16]	.83	.02	[-.14, .16]
Enh. Pos. Affect	.06	[-.08, .20]	.41	.06	[-.09, .21]
Soothing	-.28	[-.45, -.10]	.003**	-.28	[-.45, -.08]
Step Four					
Distancing	-.06	[-18, .05]	.29	-.06	[-22, .06]
Brooding	-.09	[-.21, .04]	.16	-.09	[-.22, .04]
Reappraisal	.27	[.14, .40]	<.001***	.27	[.14, .42]
Acceptance	.11	[-.01, .22]	.07	.11	[-.03, .23]
Step Five					
Soothing*Dx Self	.29	[.08, .50]	.007**	.29	[.06, .50]
PALS PI*Dx Self	-.38	[-.60, -.17]	<.001***	-.39	[-.57, -.18]

Note: All variables were mean centered. CATQ = Camouflaging Autistic Traits Questionnaire; PALS PI = positive impact of owning a pet; PALS NI = negative impact of having a pet; Pers.-taking = Perspective-taking; Enh. Pos. Affect = Enhancing Positive Affect; Dist. = Distancing; Gen.-Div = Gender-Diverse; Dx self = Self-identify or seeking first-time diagnosis Step one included demographics; step two included either resiliency or CATQ and human-animal interactions; step three included interpersonal emotion regulation; step four included state emotion regulation; step five included interaction terms

Figure 7

Diagnostic Status Interaction Plots and Simple Slopes Influence Predciting Resiliency



Note. A = Interaction of diagnostic status and soothing on resiliency; B = Interaction of diagnostic status and positive impact of pets on resiliency; C = simple slope of diagnostic status and soothing on resiliency; D = Simple slopes of diagnostic status and positive impacts of pets on resiliency

Pro = Professional; Self = Self-identifying/seeking first-time diagnosis

Step four included the state emotion regulation strategies, which accounted for an additional 6.0% of the variance in resiliency and a significant change in R^2 [$F(4, 265) = 10.51$, $p < .001$]. Reappraisal strategies (β = 0.27, p < .001) significantly predicted increases in resiliency. Acceptance (β = 0.22, p = 0.07), distancing (β = -0.07, p = 0.25), and brooding (β = -0.07 p = 0.25) were not significant predictors of resiliency in the model.

The last step examined the interaction effect between diagnostic status and the positive impact of having pets. The additional step resulted in a 5.0% increase in the variance of camouflaging behaviors and a significant change in R^2 [F (2,263) = 8.95, p < .001]. Self-identified autistic participants (β = -0.38, p < .001) demonstrated a significant decrease in the influence of the positive impacts of having a pet on resiliency compared to participants who indicated receiving a professional diagnosis of autism. Self-identified individuals were predicted to have an increase in resiliency when using soothing (β = 0.29, p = 0.007) as an emotion regulation strategy compared to the professionally diagnosed group.

The bootstrapped regression results supported the regression findings for predictors of compensation. The results demonstrated almost identical estimates and confidence intervals, suggesting a stable model that is reproducible.

Post-hoc Analysis

A logistic regression model was used to examine the main effects of multivariable on the probability of someone being diagnosed with autism. The covariates included age, gender, race, previous professionally diagnosed neurodevelopmental disorder other than autism (yes, no), previous professionally diagnosed mental health condition (yes, no), and current pet ownership (e.g., own a pet, do not own a pet), The inclusion of variables in the model was selected by a forward method using the changes in chi-squared and p-values. Table 6 displays the results

produced by this logistic regression model, which was significant, χ^2 (252) = 37.90, p < 0.001, McFadden R^2 = 0.18, and Nagelkerke R^2 = 0.24. The model's performance diagnostics suggested a sensitivity of 76.87% and a specificity of 59.48%. The model indicated an overall accuracy of 69.20%

Age, race, and gender were not significant predictors in the model. The results demonstrate that not having co-occurring neurodevelopmental or mental health disorders is highly significant and influences the likelihood of someone self-identifying with autism and not receiving a professional diagnosis of autism. Participants without an additional diagnosed neurodevelopmental disorder were 206% more likely were more likely self-identify as autistic. The model results displayed that not previously receiving a professional mental health diagnosis was non-significant; however, it was related to a 105% increase in self-identification with autism.

Table 6

Results of Binomial Logistic Regression Analysis of Participants' Diagnostic Status

	Estimate	Std. Error	Odds Ratio	95% Confidence Interval (0dds ratio) Lower	Upper	Z	P-value
(Intercept)	-4.31	1.13	0.01	0.00	0.11	-3.82	< .001
Age	-0.01	0.01	0.99	0.95	1.01	-0.941	0.35
Female	-0.10	0.45	0.91	0.37	2.20	-0.22	0.84
Gender-diverse	-0.39	0.51	0.68	0.25	1.85	-0.757	0.45
Person of color	-0.300	0.39	0.74	0.34	1.59	-0.764	0.45
Dev. Dis (no)	1.12	0.30	3.05	1.72	5.56	3.740	< .001
MH (no)	0.72	0.39	2.05	0.97	4.47	1.854	0.06
Pet (yes)	0.77	0.33	2.17	1.15	4.22	2.339	0.02
Enh. Pos. Aff.	0.40	0.16	1.50	1.09	2.08	2.479	0.01
Masking	0.29	0.13	1.33	1.04	1.74	2.213	0.03
Persp.-Taking	0.32	0.18	1.38	0.97	1.96	1.801	0.07

Note. Diagnostic Status level 'Self-identified' coded as class 1. Dev. Dis = Additional Professionally Diagnosed Developmental Disorder (binary yes/no); MH = Professionally Diagnosed Mental Health Disorder (binary yes/no); Pet = Current pet ownership (binary yes/no); Enh. Pos. Aff. = Enhancing Positive Affect; Persp.-Taking = Perspective Taking

Interestingly, participants who reported owning a pet were 117% more likely to select self-identification or seek a first-time diagnosis. Two continuous variables in the model displayed increased odds of self-identifying as autistic. A one-unit increase in IERQ enhancing positive emotions was related to a 50% increase in self-identifying. A one-unit increase in masking strategies suggested a 33% increase in the probability of a participant selecting self-identifying. Lastly, for every one-unit increase in perspective-taking, participants were 38% more likely to indicate a self-identification; however, it was non-significant ($p = 0.072$).

Qualitative Analysis

To address the three qualitative research questions, the researcher analyzed three open-ended response questions participants responded to in the survey. The open-response prompts were designed to gain insight into experiences and strategies autistic participants use to emotionally regulate, including interpersonal and human-animal interactions. Across the three open-ended questions, the thematic analysis results indicated support for a total of seven themes with several subthemes. Table 7 provides a brief overview of the themes, and the following sections expand on the themes and subthemes.

Theme 1. Autistic Emotional Experience

The first theme captures participants' awareness of and recognition that their emotional experiences are perceived by non-autistic individuals as different. Both their own internal experience and implicit/explicit messaging influence the construction of the meaning-making process for their emotional experience as “atypical.” Furthermore, participants recognized the need to emotionally regulate, displayed a variety of strategies and attempts to regulate, and indicated a significant amount of effort in finding strategies that support their regulation. Theme

1 is further delineated by the following subthemes (a) difficulty modulating emotions; (b) time and combination of strategies; (c) taxing; and (d) external factors.

Table 7

Overview of Themes for Participants' Open-Ended Response

Open-ended Category	Theme	Subtheme	Broad Definition
Experiences of Emotion Regulation			
	Autistic Emotional Experiences	Difficulty Modulating Time and Combing Taxing External Factors	Awareness that autistic emotional experiences are perceived as different, impacted by a variety of internal and external factors, and are often different in intensity and duration
	Emotion Regulation Strategies		Participants named a variety of different strategies used to support their regulation. Primary categories included media and entertainment, cognitive approaches, and mindfulness strategies
Experiences of Interpersonal Emotion Regulation			
	Interpersonal rejection	Prior Phase During Phase Post Phase	Autistic individuals reported largely negative experiences that created a cyclical pattern of interpersonal rejection. Due to the differences in emotional experiences, autistic individuals are often unheard or harmed in interpersonal interaction and then must regulate additional emotions, including guilt and shame
	Desired Support	Desired Experiences Adaptation and Coping	Participants named specific types of support they wished to receive when seeking support and a minority discussed positive interpersonal interactions with partners or other autistic individuals
Experience of emotion regulation during human-animal interactions			
	Animal Agency	Awareness and Individual Differences Intentional Actions Honoring Agency	Participants perceived their pets to have a sense of agency in their behaviors, noticed differences in traits, and discussed the importance of respecting their pets' boundaries and existence
	Transcendental Interconnectedness	Unconditional Love and Support No Judgment or Negative Messaging Authenticity and Transparency Affirmation	The human-animal bond creates an ineffable sense of awe. The relationship moves beyond differences between humans and non-human animals. The pets provide a space promoting authenticity and unconditional acceptance that autistic individuals are often not afforded
	Defining the interaction	Mechanism Process Incongruence	Participants noted various ways their pets provide emotional support (e.g., moving closer, sitting on the human's chest. Petting). Process and incongruence explore how individuals experience the support.

Subtheme 1.a. Difficulty Modulating Emotions. Participants discussed a variety of difficulties they encounter within their emotional experiences. They displayed a meta-cognitive awareness of their emotions and emotional experiences (even in the cases of identifying their own alexithymia) and recognized the difficulty in modulating or adjusting their emotions.

The participants noted the impact of emotional intensity on their ability to monitor and regulate. The emotional intensity might lead to a meltdown which has significant emotional impacts on the participants. Additionally, the emotional intensity raised awareness of autistic differences in emotional experience when interacting with non-autistic individuals. As participant AB shared, "people understand but don't understand how intensely I feel about the experience." Furthermore, the intensity of their emotional experience appeared beyond their "control." Participants did not lack awareness, but rather discussed the internal strife of desiring emotional regulation and not being in control of one's ability to regulate.

Subtheme 1.b. Time and Combing Strategies. Due to the differences and intensity of emotional experiences within the autistic community, emotional regulating requires a significant amount of time and often requires multiple strategies for them to reach their own baseline regulatory level. Participant DD described a combination of strategies used to support their regulation, such as spending time alone with their dog, sensory input reduction, and deep breathing.

Overall, participants utilized a combination of cognitive (e.g., distraction) and mind-body (e.g., deep breathing) strategies with being alone or limiting the amount of sensory input (e.g., noise-canceling headphones) to promote their emotional regulation. Participant CB noted, they

> *Eliminate as much sensory input as possible, and put external demands on hold until I'm re-regulated. Try to avoid being mindful in any way of my senses, as the overstimulation, this causes will send me into a meltdown near immediately.*

Depending on the emotional intensity experienced, participants noted needing significant time alone for restoration and their well-being.

Subtheme 1.c. Taxing. The data suggested participants extend a significant amount of energy attempting to emotionally regulate which often leaves them exhausted with little energy. Participant KP captures the experience of taxing well when they state

> *Getting away from a situation, laying down in silence in the dark, taking a shower, going for a walk, listening to music, doing stuff like applying lotion and massaging my feet, cooking a new recipe... I like either being by myself to engage in some self-care or do some activity that requires concentration, or being in the company of like one or two people, in which take I might talk about stuff, but that's not the most common event. Usually adjusting my emotions is exhausting and I can't engage much. It may take more than one thing to get things better again. I may need to lay down in the dark and then eventually shower and make me a cup of tea, for example.*

Autistic participants invested in multiple strategies to emotionally regulate with often little support in their process. This leads to a considerable amount of energy and effort being dispensed to regulate while also navigating other experiences that inform the autistic participants that their experience is not “normal.” In short, the autistic emotion regulation experience requires a taxing process of finding strategies that work for each individual, often without systems that support their efforts.

Subtheme 1.d. External Factors. The last subtheme suggested participants' emotional experiences are influenced by contextual, social, and cultural values. FM described the importance of being cognizant "that many things that trouble me are due to societal/cultural causes that I can do nothing about, but must just," and "that I am a valid and worthy person regardless of things outside of myself." Additionally, participants' relationships to their emotions are informed by a variety of factors. For example, participants' access to and experience of therapy is shaped by socio-cultural factors and the competency of their clinician. Participants discussed positive influences in therapy (e.g., utilizing an anxiety thermometer) while others discussed being "ghosted" by a professional or the professional becoming "frustrated" with the participant.

Themes 2. Emotion Regulation Strategies.

Participants discussed a variety of different strategies they utilize to support their emotional experiences. The data were grouped into corresponding categories where related strategies were matched. Along with discussing strategies, LS's narrative provided insight into how theme 1 intersects with strategies in theme 2 and vice versa. LS's stated,

> *I have made a[n] anxiety/stress thermometer and a[n] angry-thermometer with my psychologist. I put things in it like cuddling the cat, doing a little computer game, moving my body (stretching), asking people I trust for help, or telling them I am anxious. In the worst case: oxazepam from the doctor. getting a cup of tea. Leaving the situation. The main thing is the therapist taught me I am not a bad person, evil for being distressed. That I cannot always help it as it is a result of my life's experiences and who I am born. Get rid of the guilt.*

LS detailed how social and contextual factors, like access to a competent psychologist, aided in developing strategies to support their emotion regulation. The participants noted a variety of different strategies that afforded varying regulatory experiences. The general strategies discussed in this theme are a non-exhaustive list.

Media and entertainment were highly reported strategies to the open-response question, *what helps you emotionally regulate*. Specifically, within media and entertainment, participants communicated the importance of music, television and movies, readings, and video games to support their regulation. Volitional reconsumption of media (i.e., watching the same show multiple times) was comforting and regulating for participants.

Additionally, participants reported a variety of cognitive approaches, which included distraction, recognition, validation, acceptance, distancing, and reappraisal.

Participants endorsed several mind-body interventions. The strategies indicated were deep breathing, grounding techniques, journaling, mantras, meditation, yoga, and deep pressure.

Theme 3. Interpersonal Rejection.

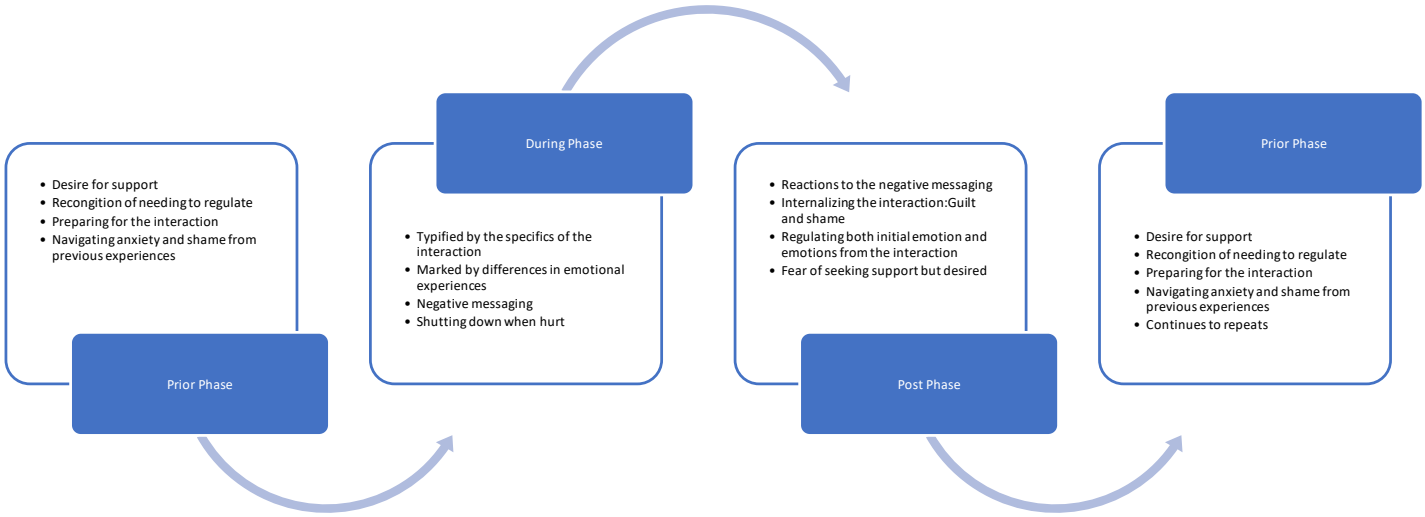
Participants indicated largely negative experiences when seeking interpersonal emotion regulation support. They were rarely met with meaningful and helpful support. Rather, participants often encountered indifference, maliciousness, rejection, denial, abuse, and invalidation. Some participants noted that non-autistic people try to provide emotional support but do not understand. These interpersonal experiences led to an accumulative impact in which the autistic individual experiences reinforcement of neuro-cognitive differences, the need to camouflage autistic traits, prioritization of “typical” emotional response, negative messaging (e.g., being dramatic), and internalizing behaviors:

> *Only seeking it from the closest People like mom and significant other. Sometimes leads to more frustration if I feel like they don't understand or reply as I'd like to. That leads to self-loathing for some reason, makes me feel stupid for feeling as I do. Mostly seeking support doesn't work much, and I need to just wait the emotions out* (Participant JH)

This relationship dynamic between non-autistic and autistic individuals coalesces into an erasure of the autistic emotional experience. In response, the autistic participants internalized this process as their fault and discussed increased rates of worry and anxiety about seeking future interpersonal support. Theme 3 is divided into three separate phases prior, during, and post. While the three phases are presented linearly in the results detailed below, participants might experience the phases simultaneously, more drawn out, or not in conscious awareness.

Figure 8

The Cyclical Patterns of Interpersonal Rejection



Subtheme 3.a. Prior phase. The prior phase is indicated by the person's recognition of emotions, human desire for connection and support, and previous experiences when seeking interpersonal emotion regulation. BW described how previous experiences have informed their experience of asking for support:

> *Sometimes reaching out for support can feel embarrassing, especially if I don't get a response that I am hoping for. Sometimes I feel like I have a hard time conveying what I am upset about or what I want/need, or I can worry about how the other person will perceive me if I'm fully honest about my thoughts. So sometimes I can wind up feeling silly. Other times, when I feel heard, even if I don't feel understood, it can be really helpful and relieving. I especially feel relieved when someone helps me to see how I can approach an issue*

The prior phase is then marked by needing to regulate from prior experiences to then ask for support regarding the initial situation that caused emotional distress.

Subtheme 3.b. During-phase. The during-phrase is designated by the specifics of the interpersonal interaction. The social, cultural, and contextual factors influence this interaction via the majority group's "social typicality" for emotional experiences. Autistic participants described having trouble expressing their emotions or self, needing to re-mask during the conversation, managing the other person's emotional reactions to their emotional disclosure or autistic behaviors, and negative experiences and messaging.

When engaged in interpersonal support, the data described primarily negative experiences. A variety of factors influence the interaction. However, the participants primarily characterized the during-phase as a negative interaction, with specific outliers (e.g., trust friend or partner). The negative interpersonal interactions are typified by the person engaging in a way

that makes the autistic participants feel dismissed, invalidated, minimized, frustrated, and unheard. Further, participants detailed often having to re-mask their emotions or manage the other person's emotions during the interpersonal exchange. AW describes this interaction in their narrative, stating, "people do not understand and cannot relate to my experience of the world, so dismiss or belittle me. I end up having to manage their emotions and re-mask." Additionally, participants articulated experiences of abuse with people often lacking compassion:

> *not good. often humans are too cruel and self-absorbed to actually help me. often when I'm vulnerable and used to seek emotional regulation through humans that's when I'd trauma bond with abusive people and they'd exploit my vulnerability. or they'd shame me for expressing human emotions* (Participant EN).

Along with EN's experiences, other participants discussed being "restrained or yelled at [participant TS]," "punished, invalidated, and humiliated [participant QJ]," and suffering "a lot of mocking [participant SW]." The autistic participants persevered through interactions that dismissed their phenomenological experience and did not center their needs. As participant JJ shares, people "often tell me meaningless platitudes that at best do nothing to help."

Negative messaging was an inherent product of either the explicit or implicit reactions and responses during the interpersonal emotion regulation interaction. Negative messaging functioned as a rejection of the autistic emotional experience via gaslighting or other victim-blaming strategies. Autistic individuals reported not wanting to seek support due to "fear or shame." Even if being alone is isolating or causing further distress, SR expressed that it's "better than realizing yet again that I'm just being ridiculous/oversensitive/dramatic/ungrateful/etc." Several autistic participants' concerns were dismissed by being told they are "being dramatic,"

"it's not that bad," "get over yourself," and "don't be so victimlike." This reinforces the need for autistic individuals to mask or hide their emotional experiences. As WV shared, other people "are acceptive of me, unless my reaction is not in line with what is socially acceptable/normal for the situation." Thus, the non-autistic emotional experience and express is afforded social currency, while the autistic emotional experience is rejected.

Subtheme 3.c. Post-phase. The post-phase is specified by participants' emotional reactions to the negative experiences and messaging, internalization of ableism and majority group social typicality, with increased rates of worry about seeking support, and needing to regulate additional emotions from the interpersonal interaction. Participant PR narrated how their family has left them "feel[ing] crazy and delusional and made me doubt my reality."

Participants described a range of emotions in reaction to the interpersonal emotion regulation experience. They primarily utilized negatively valenced words (e.g., confusion, frustrated, guilt, minimized, nervousness, self-loathing, unlovable) to indicate their emotional reaction to the interaction. Participants internalized the implicit and explicit messaging received which led to increased feelings of shame and anxiety, recognition that even when seeking support participants must share only to the extent it is still congruent with social typicality, and coping by shutting down, believing they are at fault or deciding not to seek interpersonal support. The participants' experiences reinforced a sense of "othering," and that space and love are conditionally provided.

Due to these negative experiences, when a participant wishes to seek support for a current emotional experience, they must also attend to their past experiences of interpersonal emotion regulation. Thus, from the pre-phase, participants attend to and regulate the proximal (e.g., the immediate situation causing emotional distress) and distal (e.g., anxiety from previous negative

experiences) emotional experiences while also being aware of their differences. This is captured by CM sharing, “People don’t understand, think I am being dramatic, people don’t have the time or patience to deal with me. I am bothering them,” and PQ stating, “I don't want to scare people I love or burden them with stuff they don't understand.” In other words, the autistic community described an unnecessarily significant emotional and cognitive load when simply seeking support for existing in the world.

Theme 4. Desired Support.

Participants indicated specific situations in which they experienced positive support, detailed types of support that are valued and helpful, and discussed ways in which they cope if those desires are unmet.

Subtheme 4.a. Desired experiences. When participants experienced positive interaction for emotion regulation support, they described (1) what people did to create positive interaction, and/or (2) what they hoped to receive from the interaction. When participants received helpful interpersonal interactions, they detailed responses that primarily centered their experiences. This included experiences of being seen, receiving compassion and empathy, feeling heard and listened to, and support through processing emotions. Participants noted various types of support they hoped to receive in interpersonal interactions. For example, autistic individuals desired advice, assistance in verbalizing their thoughts, feeling loved, acknowledged and heard, solutions, validation, support during meltdowns, and physical touch (particularly through hugging).

Subtheme 4.b. Adaptation and coping. Several participants communicated various ways in which they adapted or coped with the interpersonal rejection of their autistic emotional experiences. Participants identified adapting and coping by “solely” going to their partner, best

friend or another autistic individual, attempting to be “specific” or “clarify” about the support wanted, using alternative forms of communication (e.g., emoji, text messaging), ignore or mask their concerns, accept that they must regulate alone, and choose not to seek interpersonal emotional support from other people. JP expressed how their family has “often shut me down to inform me that I don't have it as bad as others” and therefore, coped by seeking support only through their partner, as “my significant other helps calm me down and actually work through my thoughts and emotions.”

Theme 5. Animal Agency.

Participants ascribed agency to their animals. Participant’s non-human animals navigated the interactions independently of the human agent.[5] Participants who ascribe a stronger sense of agency to their pet appear to more actively seek support from their pets. Being perceived as an agentic actor appears an important component in this interpersonal dynamic between humans and non-human animals. While the subthemes are non-exhaustive, the data were primarily characterized by three dimensions: (a) awareness and individual differences; (b) intentional actions; and (c) honoring agency.

Subtheme 5.a. Awareness and Individual Differences. Participants expressed that their pets display awareness of their human emotions and emotional shifts. While participants discussed or assigned awareness to varying degrees, participants described clear instances where their pet moved closer, or “just knew” when the participant was experiencing distress. Furthermore, participants described differences in their animals. They recognized that each pet

[5] This is not an argument of whether animals do or do not have agency. The animal agency theme is based on participant data that detailed participants' perception of their pets and the ways in which animal agency was communicated in their responses.

has distinct characteristics that can be seen as individual differences (e.g., neuroticism, curiosity, extroversion).

Subtheme 5.b. Intentional Actions. Actions are distinguished by the participants describing their pet as providing something in relation to the human. Throughout the responses, participants discussed pets demonstrating kindness, compassion, and calmness and creating space for the participants' emotions. Some participants detailed that their animals listen non-judgmentally to them. The animals navigate the world with actions that are perceived as purposeful. Participants do not perceive their animal as just being there but acting with a presumed purpose regardless of the cross-species differences.

Subtheme 5.c. Honoring Agency. Since participants perceive their pets as agentic actors, they acknowledged the importance of honoring the pet's agency. This was demonstrated by respecting their pets' boundaries, appreciating and respecting animals, displaying concern for their natural environment, and "meet[ing] them (animals) at their level." Regarding pet boundaries, some participants noted that when they seek support from their animal, their pet might be "busy," or does not want to be held. Additionally, a minority of participants detailed that it is unfair to request support from their pet or animals, as "they (animals) don't exist for our comfort," nor is it their "job" or "responsibility." Taken together, care for animals' agency is demonstrated by honoring the animals' existence, in and of themselves, and not simply in relation to human affairs.

Theme 6. Transcendental Interconnectedness.

Transcendental Interconnectedness is indicated by the participants' bond with non-human animals. Participants' bonds with their animals reached a state that is almost ineffable, creating an experience of awe. These transcendental moments were described as unconditional love and

self-affirming. Despite participants acknowledging that their pet cannot communicate with the person, the human-animal bond transcended the differences to create a space where participants felt unconditional love, with no ulterior motive or judgments. This bi-directional relationship promoted affirmation, authenticity, and transparency. Since the relationship lacked judgment, participants expressed their emotions, unmasked and stimming in front of their pets, and existed as they were, much in the same way their animals do as well.

Subtheme 6.a. Unconditional love and support. Unconditional love and support are underlining components of the transcendental interconnectedness between human and non-human animals. Participants who felt and perceived a sense of unconditional love from their animals appeared to connect with their pets and then be afforded more opportunities to regulate through unconditional love. The interspecies differences (e.g., lack of verbal communication) were foundational to creating the unconditional space. As TH indicated, "I was her [cat] whole love, she didn't judge, she just loved and purred and bumped her head on mine. I felt loved to my core." Communication of love moves beyond the limitations of language and humanness. Mutual love is the core of this relationship.

Subtheme 6.b. No judgment or negative messaging. As emphasized by TH above, non-human animals create space without judgment. Unlike the majority of interpersonal interactions described by autistic participants, non-human animal interactions promoted emotional support that was underpinned by a lack of judgment or worry about judgment. The support was unconditional. YR described accentuated this in their response,

> *My dog of 12 years was an excellent emotional support dog. He would sit down in front of me to offer me to give him a big hug and lean on me when I was upset. He just knew that was what I needed. He would sit with me until I felt better. With*

> *animals, there is no pressure to perform. They exist in a mindful state and see you for who you are without even need for verbal language. They do not pressure or impose what they think you need, even if they may offer what works for them, like my dog used to bring me a toy when I was upset because the toy made him happy and he wanted me to be happy. Then he would just be there with me.*

The lack of pressure and expectation to exist in a certain way alleviates social judgment. Animals do not adhere to social norms, and for the participants, the lack of unnecessary and burdening social norms created a non-judgmental relationship where they could be unconditionally loved and supported. KJ further illustrates this by sharing, "My dogs were very loving… I knew they wouldn't judge me for sobbing or stimming." There is no "performance," just a loving relationship.

Subtheme 6.c. Authenticity and transparency. Authenticity and transparency further defined transcendental interconnectedness. Through unconditional love and non-judgment, participants described being able to exist without fear of being "othered." Participants discussed stimming or performing other autistic behaviors and expressing sadness (e.g., crying) in front of their animals without fear of judgment. The animals also reflect this authenticity to their humans. Animals exist how they are. They do not act with ulterior motives, which serves as a reminder for humans to strive for their own authenticity. MJ explained, "I don't feel self-conscious or like a burden. I just feel like I'm plugged into a positive feedback loop. I trust animals because they are straightforward and show you clearly what they think of you." The transcendental interconnectedness is established by this perceived trust and authenticity.

Subtheme 6.d. Affirmation. The transcendental relationship provided affirmation for the autistic participants. The interconnectedness and human-animal interaction served as its own

form of affirmation for the autistic person. The participants are affirmed in unconditional, love, and support without judgment leading to their own authenticity. The non-human animals offered acceptance to their humans which in reflection supports the participants' own self-acceptance. Both the human and non-human animal rely on each other and affirm each other's own existence. DS communicates a how they saw a reflection of themselves, and similar boundaries in their pet:

> *My dog knows what I'm feeling from the way I act. He knows to come lick me or act cute to make me feel better and when I'm alone with him I feel comfortable telling him things. He just listens, he may not understand the words, but he understands the emotions and it feels good just to verbalize my troubles. He was rescued from an abusive house, so he has a lot of the same needs for boundaries I have but he is a lot more vocal and clear about people respecting his boundaries than I am, so I relate to him. He shows me it's okay to demand people respect my needs and boundaries, such as not touching me without my explicit permission even to hug.*

They perceived their pet as communicating their needs and engaging the world authentically and in doing so, reflected to DS that setting boundaries and communicating their needs is important. Despite the interpersonal interactions telling them otherwise, the human-animal interaction supports autistic participants' self-affirmation.

Theme 7. Defining the interaction.

Participants described various ways in which they seek and receive emotional support from their pets and animals. In part, participants who tended to ascribe more animal agency or attempted to describe the transcendental relationship appeared to notate more likelihood to

describe ways in which their pets support their emotion regulation. Animal agency and transcendental interconnectedness appeared to create the foundation, though they do not provide the particulars of the interaction. This section details the described mechanism and process from which participants felt emotionally regulated by their pets.

Subtheme 7.a. Mechanism. Participants described various ways their pets provided support for their emotions. Pets provided their humans emotional opportunities to regulate through various strategies, such as physical touch (e.g., petting, cuddling, laying on their chest), moving closer to the human, sounds (e.g., purring), aloofness/lack of human worry, being with the human in silence, talking, and playing together. Additionally, the participants expressed that their pets provide consistency and stability in both their behaviors and in being there for the human.

Subtheme 7.b. Process. The process theme provided insights into the ways in which the mechanism of the interactions afforded emotionally regulatory experiences. The interactions with animals provide emotional regulation through strategies related to distraction, redirection, grounding and mind-body practices, and release of bodily tension. RR highlights the grounding and process by sharing, “I need to calm my breathing. Some of my pets don’t mind stimming, and some get nervous. Having to be mindful about my body allows me to calm down and use them as a source of comfort to pet/cuddle with.” Further, several participants noted the regulatory experiences via pets sitting or lying on some part of their body FN described the comfort received from their cat by stating, “[my cat] will be physically close to me or even on top of me which is like a weighted blanket that also purrs and that's really comforting.” The animals provided regulatory support through physical touch and pressure on the participants’ bodies. This appeared to promote body awareness and grounded the participants, which some

participants directly commented on: “when seeking support from my dog, I would pet her and cuddle up with her, and her physical presence would be helpful in grounding me [participant GG].” Additionally, some participants with cats described their cats purring provided emotional regulation, which seems to function as a repetitive, grounding experience.

Other participants observed pets providing emotionally regulatory experiences through distraction or redirection of their attention. Through the transcendental interconnectedness, the animals offered distraction or redirection through the participants' love and concern for their pets' emotional state, as explained by participant DD, “my current dog can see when I am in distress and stays near. I calm myself out of desire to not scare the animal, and when I am more calm it approaches to express affection”. Further, redirection was accomplished in a variety of different ways. For some participants, it was simply seeing their animals interact; for others, like BB, their pets happiness provided the redirection:

> *It's important to remain mindful of the animals’ needs and comfort. I like making the animals happy, rather than using them to make me happy despite what they want. For example, my dog doesn't like being hugged so I will play with her in the way she likes, and that makes me happy as I'm mindful of her needs rather than just using her*

The care for their animals redirects their attention to the animal and away from their negative emotional experience. Some participants noted their animals’ “cuteness” as helpful in regulating. Animals' indifference towards human worries served as a form of reappraisal for a select number of participants.

Moreover, simply having a pet move closer to them, reminded participants they are loved. The human-animal relationship provided the participants with a sense of acceptance and

love along with redirecting and grounding experiences. LC commented on this process by explaining how their dog supports them: “noticing when I am upset and she [LC’s dog] uses her head to pull my arm away from what I am doing and directs me to pet her. She also lays down on me and provides deep pressure to soothe me.” The variety of different experiences provided participants with support in time-limited emotional experiences, and in cases where autistic participants might encounter situations with sustained sensory or emotional intensity. For example, JJ shared, ‘I love having my dog with me. He helps me stay on task when I’m in the store or in crowded spaces. I can get in and out without spending too much time trying to calm myself.” The dog provided a grounding and redirecting experience for JJ. Rather than be attuned to their own emotional body experiences, the participants spent less energy attempting to regulate their own emotion state, as, pets help alleviate the sensory or other environmental burdens for autistic individuals. Along with support in stores, pets offered emotional support during meltdowns and nightmares.

Participants described that the animal emotion regulatory process primarily led to positive emotion experiences. For example, participant LO explained, “I talk to my cats too when I'm sad. They can't talk back and tell me what to do in the situation, but they help me feel calm and safe.” Additional emotion reactions to pets included cheerfulness, comfort, relaxation, soothed, increased positive mood, and feeling “softer,” “tender,” “loved,” “centered,” a sense of “wholeness” or “togetherness,” and gratitude. Dissimilar from the human-human interpersonal emotion regulation, participants experienced primarily positive emotion regulation during the human-animal emotion regulation interaction.

Subtheme 7.c. Incongruence. While the majority of participants described positive interactions and benefits from pets, a minority of autistic participants detailed indifferent, mixed,

or negative experiences with non-human animals. Within this group, most of the participants described a mixed experienced when seeking regulation from their animals. Depending on the reaction of the animal, participants' negative mood might be sustained or bolstered if. For example, the person engaged the pet when the animal does not want to cuddle at that moment. When animals did not engage, participants expressed feeling rejected. Additionally, an important consideration is ensuring the pet and human are compatible. If a dog, who is particularly prone to barking frequently is matched with a human who experiences auditory sensory sensitivities, then the overall experience leads to a negative experience that can increase distress.

Lastly, a minority of participants indicated that they do not seek support from pets. Reasons for not seeking support from animals included not considering regulating human emotions as animals' duty, not wanting to be around their pet when feeling dysregulated, and animals do not experience "human feelings." The latter point emphasized the significance of human's perceived animal agency and transcendental interconnectedness when seeking emotional support from their non-human family members.

CHAPTER 5

DISCUSSION

Introduction

This study investigated individual differences in emotion regulation strategies (e.g., state reappraisal, interpersonal, human-animal interactions) for camouflaging behaviors and psychological resiliency in autistic adults. Specifically, two primary research questions guided the study: (1) What emotion regulation approaches (e.g., interpersonal, human-animal interaction) do autistic adults engage in; and (2) what emotion regulation strategies and individual factors influence camouflaging behaviors and resiliency? This was accomplished through a mixed-method approach utilizing an online cross-sectional study with closed and open-ended responses. Chapter 5 serves two functions for this study: (1) integrating the quantitative and qualitative implications together while (2) discussing the results of the study in relation to current literature, future directions, and limitations.

Taken together, the results indicated several important findings. First, camouflaging behaviors are (1) influenced by individual differences (e.g., emotion regulation strategies, gender), and (2) adjusted in response to interpersonal interactions. Second, autistic participants, who engaged in interpersonal emotion regulation reported largely negative experiences that, in turn, required them to (1) "re-mask" and/or (2) use additional regulatory strategies (e.g., distancing, shutting down) or increased negative emotions leading to dysregulation (e.g., meltdowns). Third, participants reported positive experiences with their animals (e.g., seeking their animals for emotional support), and contrary to interpersonal interactions, pets offer unconditional, non-judgmental love. Fourth, the study documented various individual and

contextual factors for resiliency and camouflaging behaviors in an autistic sample. Fifth, participants diagnostics status (i.e., professionally diagnosed or self-identify) was predicted by previous neurodevelopmental and mental health diagnoses, pet ownership, interpersonal emotional regulation and masking strategies, The study's implications are explored further and situated in the broader autism and clinical literature in the following sections.

Experiences of Intra- and Inter-personal Emotion Regulation

Intrapersonal. To examine intra-personal emotion regulation, the researcher utilized exploratory items for mindfulness strategies, media, and the arts, open responses and the State Emotion Regulation Inventory. Participants endorsed several different types of mindfulness strategies, including deep breathing, meditation, muscle relaxation, and yoga. Mind-body interventions displayed initial support for autistic participants' mental health (Conner & White, 2018; Gaigg et al., 2020; Sizoo & Kuiper, 2017). However, when needing to regulate, almost 63% of participants reported using these strategies less than half the time or rarely.

An additional exploratory question prompted participants to report if they used media or arts to regulate. Music was the most reported strategy, with TV shows and literature being second. Interestingly, in general population studies, media engagement has indicated a positive relationship with well-being (Clayton et al., 2021), hedonic, and eudaimonic motivations (Vorder & Halfmann, 2019), and has shown support for the development of para-social relationships that benefit the individual (Bond, 2021).

However, similar to the mindfulness strategies, 53% reported using these strategies less than half the time or rarely. It appears that participants had difficulty implementing strategies; however, the study did not explore the mechanisms that led to difficulties in implementation. Huggins et al. (2020) found that autistic individual's emotional self-awareness is influenced by

the identification, differentiation, and communication of emotions. Alexithymia has displayed a strong association with autistic traits (Mason & Happé, 2022), which may influence a person's ability to recognize or decide which regulation strategy would be beneficial to utilize. hypo- and Hyper-sensitivities are reported to influence uncertainty tolerance (Hawang et al., 2020). The majority of autistic individuals experience sensory processing difficulties (Crane et al., 2009; Robertson & Baron-Cohen, 2017), which may be related to interoceptive difficulties and further obfuscate recognition of when to regulate or which strategy to utilize. Additional work is needed to understand autistic adults' experiences of implementing emotion regulation strategies.

The qualitative results for question one provided further insight into emotion regulation experiences. While previous literature noted emotion regulation difficulties (Cai et al., 2018; Mazefsky et al., 2013; Samson et al., 2012), participants communicated mixed results, with some lacking emotion regulation strategies or indicating awareness of the impact of alexithymia. Participants reported various strategies, including mindfulness. Participants were more actively aware of their emotions and acknowledged their emotional differences compared to their non-autistic peers or family members.

Furthermore, the participants' SERI mean scores for state brooding and distancing were significantly higher than accepting and reappraisal strategies. Distancing and brooding mean scores exhibited the highest scores, suggesting that this sample engages in emotion regulation strategies that attempt to either deflect or avoid processing distressing stimuli or engage in self-critical ruminative thoughts (Katz et all, 2016). The data suggested that participants report reassessing distressing stimuli via state reappraisal. These findings appeared consistent with previous studies that found autistic participants reported higher levels of alexithymia and

maladaptive behaviors (e.g., suppression of emotions) and lower use of reappraisal strategies than non-autistic groups (Samson et al., 2012; Samson et al., 2015).

Interestingly, brooding strategies significantly correlate with an increased endorsement of camouflaging behaviors. Brooding and reappraisal displayed a large, positive association. This suggests that the relationship between camouflaging and reappraisal might be mediated by brooding. Current research illuminates this concern. Camouflaging predicted higher rates of distress and mental health concerns (Beck et al., 2020) and was utilized to avoid stigmatization (Perry et al., 2022; Schneid & Raz, 2020). Neuroticism positively predicted camouflaging behaviors (Robinson et al., 2020). The stigmatization faced by autistic individuals potentially contextualizes the relationships between brooding and camouflaging. The consistent negative messaging and sense of needing to fit in (i.e., assimilate; Hull et al., 2017) lead to higher rates of a self-critical stance or need to distance from their own emotions. They must reject their sense of self and community to assimilate, which provides potential support for Social Identity Theory (Perry et al., 2022; Tajfel & Turner, 2004).

Interpersonal. The descriptive data of soothing, social modeling, and enhancing positive affect interpersonal emotion regulation exhibited a slight negative skew. However, aggregate data for the perspective-taking interpersonal emotion regulation were (1) localized and displayed a positive skew and lowest mean value (i.e., a mean score of 1.73 on a 5-point Likert scale), and (2) displayed a negative relationship with all dimensions of camouflaging. Interestingly, perspective-taking displayed the strongest positive correlation with resiliency. Not including other dimensions of interpersonal emotion regulation, perspective-taking also displayed positive relationships with emotion regulation from pets, reappraisal, and acceptance while exhibiting

negative relationships with total camouflaging behaviors, assimilation strategies, and negative impact of pets.

Enhancing positive affect was the only additional measure of interpersonal emotion regulation that displayed a significant relationship with resiliency. Enhancing positive affect positively correlated with emotion regulation and positive growth from pets, reappraisal, distancing, brooding, masking, and compensation but negatively related to assimilation,

The findings suggested that social modeling was positively associated with all dimensions of positive impacts of pets, reappraisal, brooding, masking, compensation, and total camouflaging behaviors but negatively associated with assimilation. Soothing was positively related to reappraisal, distancing, and brooding while negatively associated with assimilation. These findings potentially suggest that when autistic individuals seek interpersonal emotion regulation, increased self-critical ruminative thoughts are reported.

Furthermore, these findings are consistent with the qualitative results. Autistic participants described primarily negative experiences during human-human interactions for emotion regulation. The qualitative findings suggested a cyclical pattern in interpersonal interactions. Autistic participants detailed three phrases describing how seeking interpersonal emotion regulation led to negative experiences, internalizing and re-masking, which reinforced isolation, feelings of alienation, and then needing to regulate both the initial and additional emotions in reaction to the interpersonal interaction. Participants also articulated feelings of being a “burden” to others due to the consistent negative messaging, which increased worry and internalizing behaviors. If they wanted to seek support again, participants noted needing to regulate the worry of being a “burden” from previous experiences (i.e., brooding).

Additionally, the three phases of interpersonal emotion regulation elucidated more information about perspective-taking's low mean score and negative relationship to camouflaging. Non-autistic individuals' misunderstandings, negative messaging, and/or gaslighting responses accumulate over time, which leads to the autistic individual feeling rejected. Due to the repeated negative experiences, when met with perspective-taking for emotion regulation support, autistic individuals potentially respond by shutting or melting down, which is so distressing that the individual cannot "re-mask" or cope. In other words, perspective-taking decreased camouflaging behaviors not because it *actually* helps, but rather, it is so distressing that the autistic person cannot regulate in order to camouflage.

The results provided additional information that is congruent with social identity (Perry et al., 2022) and impression management (Schneid & Raz, 2020) theory. Sterling et al. (2012) found that autistic individuals are more likely to be bullied, and Cage and Troxell-Whitman (2019) reported that autistic individuals utilized camouflaging behaviors to avoid bullying or retaliation. Milner et al.'s (2023) results demonstrated that loneliness was a predictor for camouflaging behaviors for autistic individuals. In part, loneliness might be explained by the consistent rejection of the autistic emotional experience by non-autistic peers. The "othering" of the autistic experience fits within the social identity (Perry et al., 2022) and impression management (Schneid & Raz, 2020) theory. Consistent camouflaging behaviors that require emotion regulation strategies might deplete individuals' ability to regulate in other situations and lead to "autistic burnout" (Higgins et al., 2021; Raymaker et al., 2020). Autistic burnout is proposed as a condition resulting from chronic life stress due to the unique experiences faced by the autism community (e.g., camouflaging, cognitive overload, sensory sensitivities), and may

lead to exhaustion, interpersonal withdrawal, executive dysfunction, and impacts activities of daily living (Higgins et al., 2021; Raymaker et al., 2020).

Experiences of Camouflaging Behaviors

Cross-sectional Predictors. Demographics, resiliency, impacts of having a pet, interpersonal emotion regulation, and state emotion regulation variables contributed to overall camouflaging behaviors. Self-identifying or seeking a first-time diagnosis for autism, positive impacts of having pets, social modeling, distancing, and brooding predicted increased camouflaging behaviors. Conversely, resiliency, negative impacts of having pets, and perspective-taking were negative predictors of camouflaging behaviors. An examination of interaction terms revealed that gender affects the influence of distancing, and diagnostic status affects the impact of brooding on reported camouflaging.

Demographics variables. Diagnostic status was a predictor for increased camouflaging, and the results displayed that distancing's effect on camouflaging is influenced by gender, with male participants demonstrating higher levels of distancing and ultimately higher levels of camouflaging comparatively. Additionally, the results of the ANOVAs exhibited gender differences, with female and gender-diverse participants displaying higher mean scores compared to male participants across all dimensions of camouflaging. The data exhibited the largest effect size across assimilation scores.

Beyond this, self-identifying participants displayed a significantly higher mean score on masking behaviors compared to professionally diagnosed participants. Participants of color exhibited lower mean scores compared to white participants. No additional diagnostic or racial differences were found across camouflaging dimensions.

Commensurate with previous results (e.g., Beck et al., 2020; Green, et al., 2019; Hull et al., 2019; Milner et al., 2023), gender differences were observed across camouflaging behaviors, as well as differences across race and diagnostic status. However, the results of the binary logistic regression model exhibited no gender or racial differences in the odds of participants indicating self-identifying or a professional diagnosis of autism. This finding might be explained by the majority of participants identifying as white and female. Moreover, other factors might influence gender differences in autism diagnostic rates. Masking strategies increased the probability of participants selecting self-identifying or seeking a first-time diagnosis. Masking strategies were used to explain differences in autistic presentation (Hull et al., 2019; Perry et al., 2022), and gender-diverse and female individuals exhibited higher mean scores compared to male individuals (Hull et al., 2019).

Overall, these findings emphasized the significance of the theoretical work being considered via social identity theory (Perry et al., 2022), disconnect theory (Cage & Troxell-Whitman, 2019), and social camouflaging behaviors as impression management (Schneid & Raze, 2020), while acknowledging intersectionality (Davis, 2008) in autistic participants (as discussed in Cage & Troxell-Whitman, 2019; Diemer et al., 2022; Saxe, 2017). Utilizing an intersectional lens will potentially support future directions for exploring differences in assimilation scores. For example, autistic participants of color might display lower levels of assimilation due to their intersecting identities and experiences of discrimination and stigmatization, which would distance them further from the dominant culture when attempting to assimilate.

Camouflaging Network Analysis. The subsidiary work with network analysis demonstrated that compensation and assimilation displayed high levels of influence on other

variables. However, when negative relationships were under consideration, assimilation displayed a decrease in expected influence while compensation remained positive in the network. This finding suggests that assimilation's various associations are largely negative. A visual inspection of the network revealed that assimilation negatively associates with resiliency, enhancing positive affect, perspective-taking, and acceptance.

Examination of the correlation matrix demonstrated that dimensions of camouflaging vary in their associations with other variables in this study. For example, masking and compensation behaviors are positively associated with enhancing positive affect, while assimilation displays a negative significant relationship. Soothing exhibited a non-significant relationship with masking and competition but a significant negative relationship with assimilation. Reappraisal and social modeling were positively associated with masking and compensation but negatively with assimilation. These findings suggest that compensation and masking are potentially more closely related, while assimilation captures a unique aspect of camouflaging behaviors or intentions.

Robinson and colleagues (2020) observed correlational differences in the dimension of camouflaging, with assimilation varying compared in its associations compared to masking and compensation. For example, assimilation was significantly associated with increased aloofness, pragmatic language, rigidity, and neuroticism, and decreased extraversion, while masking and compensation displayed non-significant with all variables listed. Compensation was significantly and positively associated with openness to experience but not assimilation or masking (Robinson et al., 2020).

Potential Protective Factors

Approximately 80% of participants in this study reported a mental health disorder (e.g., anxiety, depression) diagnosed by a mental health professional, with participants most often endorsing anxiety, depression, and post-traumatic stress disorder. This finding aligns with previous research that autistic individuals are at high risk for developing co-occurring mental health disorders (Brede, et al., 2022; Lai, et al., 2019). Therefore, focusing on protective factors, such as autism acceptance (Kim, 2020), for autistic individuals is important.

Predictors of Resiliency. In the final model, demographics, camouflaging, interpersonal emotion regulation, and state emotion regulation variables contributed to participants' resiliency. Specifically, participants of color, self-identifying or seeking a first-time diagnosis for autism, perspective-taking, reappraisal, and acceptance predicted increases in resiliency. Conversely, camouflaging behaviors and soothing were significant negative predictors of participants' ability to bounce back after a distressing experience. An examination of interaction terms revealed that diagnostic status affects the influence of soothing with self-identifying individuals, indicating soothing increases their sense of resiliency, while professionally diagnosed participants' sense of resiliency is negatively associated with soothing. While the influence of pets displayed no main effect, the interaction results between diagnostic status and positive impacts of pets exhibited a negative interaction between self-identification and the positive impact of pets. This suggests that for self-identified individuals, their pets negatively influence their overall sense of resiliency, perhaps due to the effort required to care for an animal or that it may take time for the relationship to be established.

Interpersonal. While the qualitative findings elucidated participants' narratives of often traumatic and harmful interpersonal interactions, some participants noted that a trusted friend,

family member, or partner provided support for emotion regulation. Trust is communicated through autism acceptance by interpersonal supporters and is being investigated as a support for autistic individuals (Kim, 2020). For example, participants described how their partners understand, accept, and provide space and comfort (e.g., hugs). Schneid and Raz (2020) found that alternative forms of communication supported autistic individuals' sense of self. The findings in this study support the conclusions of Schneid and Raz (2020) that participants adapted to support by using alternative forms of communication, such as emojis or text messaging, rather than only relying on verbal communication.

Participants noted ways in which they desire interpersonal support, and communicated specific types of strategies that would benefit their emotional regulation, such as assistance in verbalizing thoughts, comfort, and understanding during meltdowns, solution-focused perspectives, and physical touch. Participants also noted physical touch and deep pressure as useful forms of support from a trusted partner or friend. Their desire for support in communicating their thoughts or emotions might be related to the elevated rates of interoceptive awareness difficulties (Mul et al., 2018) and alexithymia (Huggins, et al., 2020; Mason & Happé, 2022). In both the qualitative (e.g., stating that they have alexithymia) and quantitative data (the mean scores for emotion regulation), participants communicated difficulties in emotion recognition and communication and desired support to assist them in understanding or verbalizing their thoughts and feelings. These implications demonstrate the differences in emotional experiences between autistic and non-autistic people and inform clinical intervention applications.

Human-animal Interactions. Participants reported primarily positive interactions with their pets that supported their emotion regulation through unconditional love and non-judgment.

Specifically, hugging (either from a partner or their pet) was identified as emotionally comforting. Hugging is an interesting form of support as, generally, it is time-limited and initiates sensation and pressure. Therefore, hugging might serve as an important form of support for autistic individuals as it provides a sense of autonomy via control over a length of time and provides pressure to ground the individual. Moreover, physical touch (e.g., hugging, cuddling, petting) appeared to serve an important role in emotion regulation via human-animal interactions. Participants indicated petting as regulating, which might function via repetitive behaviors that are soothing and/or sensory-related comfort.

Regarding the potential for emotion regulation from pets, the following provides key insights into the experiences of autistic individuals in this sample:

1. 93% agree or strongly agreed that touching their pet brought comfort.
2. 83% reported that they cry in front of their pets.
3. 78% suggested that their pet seems aware of their emotions.
4. 75% indicated never feeling judged by their pets.
5. Almost 60% stated they talk to their pets about their emotions and feel heard.

This was further corroborated by the aggregate scores in the dimensions for the Pet Attachment and Life Satisfaction Scale (PALS) (e.g., the mean score of subscales Love = 4.29 and Positive Growth = 3.57). Participants' scores indicated positive interactions and received emotion regulation support via their pets.

Overall, camouflaging behaviors displayed a positive relationship with seeking emotion regulation from pets, suggesting that those who report higher levels of camouflaging behaviors, in turn, seek more support from their pets. The qualitative findings highlighted that non-autistic individuals often reject the autistic participants' experience of emotions. Autistic individuals

reported high rates of loneliness that predict increased camouflaging behaviors (Millner et al., 2023) and are confronted with internal and external stigmatization messages (Schneid & Raz, 2020). When met with these stigmatizing and unaccommodating interpersonal interactions (Cage & Troxell-Whitman, 2019; Milner et al., 2023; Schneid & Raz, 2020), non-human animals provide nonjudgmental, unconditional love and support for the autistic participants and potentially offers conceptual reasoning for the positive association between camouflaging behaviors and the positive impact of having pets. Social support theory is proposed as a conceptual explanation for the human-animal bond (Beck, 2014; Fine, & Beck, 2019; Meehan et al., 2017). In empirical investigations, the human-animal bond with pets supported the person's social needs (McConnell et al., 2011) and provided socio-emotional support (Tomlinson et al., 2022), offered relief in negative situations (Aragunde-Kohl et al., 2020), and reduced loneliness (Hawkins et al., 2022).

The qualitative results provided insight into the human-animal interaction for emotion regulation. Participants reported primarily positive experiences with their pets and communicated various ways in which their pets provide emotional support. Unconditional love and nonjudgmental interactions appeared fundamental to the human-animal emotion regulation experience, which is often not the experience for autistic individuals during social interactions (Cage & Troxell-Whitman, 2019; Milner et al., 2023; Schneid & Raz, 2020). O'Haire (2013) expressed similar conclusions that animals can provide non-judgmental sources of support for autistic people.

Research continues to demonstrate various ways animals positively assist autistic individuals. For example, findings included increased social inclusions (O'Haire, 2013), self-regulation (Nimer & Lundahl, 2007), changes in stress and communication (Wijker et al., 2019),

exploration of more places visited (Appleby et al., 2021), and emotion regulation, support, and strategy building (Chadwick et al., 2022). However, the majority of studies investigating human-animal interventions and support focused on children and adolescents. Further investigations are needed with adult populations, which emphasizes the need for continued methodological design development in the human-animal interaction field (Crossman & Herzog, 2019; McCune et al., 2019; Serpell et al., 2017).

Individual and Contextual Considerations

Taken together, the findings contribute to individual and contextual considerations and hypothesis generation, which will be discussed in the future directions section. In this section, the author will address the findings' implications on the different factors that influence emotion and emotion regulation and the human-animal interaction for autistic individuals. The current study's findings emphasized Aldao's (2013) recognition of contextual factors that influence emotion regulation: (a) the characteristics of the person carrying out the regulation, (b) the emotion-eliciting situation, (c) the selection and strategies implemented, and (d) the outcome assessed.

The study's results suggested that autistic individuals engage in a variety of emotion regulation strategies when camouflaging. Both intrapersonal and interpersonal emotion regulation strategies predicted camouflaging behaviors. Investigating the direction of variable influences will also benefit theoretical and empirical work. The mixed method findings suggest that camouflaging and resiliency potentially share a bi-directional relationship. For example, camouflaging behaviors negatively impact resiliency and might also serve as a protective factor for camouflaging behaviors. The qualitative results demonstrate support for the interrelated

association between emotion regulation and camouflaging. Participants expressed regulating prior to seeking support and needing to regulate during or after.

Validity and methodological rigor concerns have been expressed in the human-animal interaction field (Crossman & Herzog, 2019; McCune et al., 2019; Serpell et al., 2017). In this sample, the Pet Attachment and Life Satisfaction (PALS) emotion regulation, love, and positive growth subscales exhibited large associations with each other (e.g., $r \geq .80$), which suggests all subscales might measure similar dimensions. Interestingly, the parent paper concluded that "PALS is best viewed as a multidimensional construct with potential for higher-order factors," though no higher-order models were presented (Cromer & Barlow, 2013, p. 42). These findings provided further evidence for construct and external validity questions in human-animal interaction self-report instruments and found support for a second-order factor, the positive impact of pets.

The broader Autism literature has often focused on ways in which human-animal interaction provided support during social interaction (O'Haire, 2013; O'Haire et al., 2013; Wijker et al., 2019). Rather than focusing on the social inclusion benefits, this study situates the experiences of autistic adults as the interest and focuses on the benefit of the human-animal interaction, in and of itself, for the participants, rather than situating the outcome measures as decreased autistic behaviors. Chadwick and colleagues (2022) noted similar findings where participants described the interaction with animals as motivating, rewarding, and emotionally beneficial. Pets were also found to act as social support when human social needs were not met and improve the human's overall well-being (McConnell et al., 2011). The human-animal bond is primarily explained by three separate but related theories of biophilia (Wilson, 1984), attachment theory (Bures et al., 2019; Meehan et al., 2017), and social support theory (Fine, &

Beck, 2019; Meehan et al., 2017). The transcendental interconnectedness theme relates to each of these theories, as participants largely discussed feeling unconditional love and support from their pets and assigned agency to their pets. However, in this sample, the human-animal bond is not fully explained by the three theories alone. The autistic human-animal interactions (i.e., the transcendental interconnectedness) displayed a uniqueness in the experience that moves beyond theories of attachment, social support, or connectedness to nature.

Due to the negative interpersonal interactions (found in this sample and other studies, e.g., Perry et al., 2022; Schneid & Raz, 2020), autistic individuals often experience a rejection of their emotions; they feel "unheard" and judged for their emotional experience. Autistic individuals reported camouflaging behaviors to avoid bullying (Cage & Troxell-Whitman, 2019). The participants' pets provided a restorative experience by connecting in such a way that the differences across species were inconsequential and offered an environment where participants could express emotions, feel heard, and be loved. In other words, the contextual factors (in this case, the autistic emotional experience, interpersonal rejection, and history of autism) contributed to a novel area of understanding in the autistic human-animal bond. The biophilia, social support, and attachment theories are related to these findings but cannot account for the social and historical experiences of autistic individuals and how the relationship with pets provided a unique experience for emotional connection that does not rely on the accuracy of social communication as human-human interaction does.

The findings emphasize the emotional differences between autistic and non-autistic participants (Mazefsky et al., 2013). The theory of mind hypothesis has largely situated a deficit-based perspective toward social-emotional reciprocity, suggesting autistic people "lack" the ability to accurately interpret people's mental states (Cohen et al., 1985; Tager-Flusberg, 2007).

Conversely, the double empathy problem (Milton, 2012) was proposed to explain the differences in communication styles for autistic and non-autistic individuals that influence mutual understanding on both sides. The double empathy problem provides a nuanced theoretical perspective to assess the social, cultural, and contextual factors that influence communication. The experiences are different. Social and historical conventions play a role in the mutual misunderstandings between autistic and non-autistic individuals (Milton et al., 2022; Milton et al, 2023). However, the onus of the social intervention falls on autistic individuals, leading to negative messages and potentially influencing already elevated mental health concerns (Mitchell et al., 2021).

The findings endorsed the double empathy problem by highlighting the unique emotional experiences of autistic individuals. The autistic participants experienced, recognized and regulated their emotions differently than non-autistic individuals. The participants were further made aware of their differences due to in- and out-group behaviors (Perry et al., 2022). Moreover, contemporary definitions of emotion regulation are delineated as a time-limited, situationally bound attempt for individuals to adjust their emotions (Aldao, 2013; McRae & Gross, 2020; Sheppes et al., 2015). If this is the case, then autistic people are going to display emotion dysregulation as the definition of and research on emotion regulation does not include their own experiences of emotion regulation. For example, autistic individuals displayed higher levels of negative emotions and less reappraisal (Samson et al., 2012), reported emotion dysregulation that mediated autism and anxiety (Sáz-Suanes et al., 2022), and indicated a relationship between interoceptive awareness and alexithymia (Mul et al., 2018). The abundant literature documenting emotion dysregulation in autistic samples led Mazefsky (2015) to argue

that “compromised” emotion regulation is a “core feature” of autism, and thus, a diagnostic specifier of emotion dysregulation for autism should be included.

However, as Cai and colleagues (2018) emphasized, the instruments were not always meant to measure emotion regulation, and various methodologies have been under-utilized to investigate dimensional and dynamic approaches to autistic experiences of emotion. Rather than see dysregulation as a core feature of autism, differences in emotion regulation should be emphasized and further studied. Autistic individuals reported hypo- and hyper-sensitivities that may lead to anxiety (Hwang et al., 2020), and the autistic emotion experience appeared to present in similar hypo- (e.g., alexithymia) and hyper- (e.g., intensity and duration) ways influencing a low or heightened level of arousal. The emotional experiences have an impact (e.g., work-related difficulties; Doyle, 2020; Doyle & McDowall, 2021; Patton, 2018) as the system is often not structured to support people with different needs (Olkin, 2008) and might lead to autistic burnout (Higgins et al.,2021; Raymaker et al., 2020). Nonetheless, autistic emotional experiences *are experienced* differently. Developing a further understanding of these unique emotional experiences is needed as autism acceptance (Kim, 2020) demonstrated a positive impact on autistic individuals’ mental health. Autistic participants communicated various ways in which they emotionally regulate, and it often takes multiple strategies with an increased amount of time. The emotion permeates longer for the autistic individual. Therefore, rather than see emotion regulation as time-limited, autistic emotion regulation might be better served by conceptualizing it as unbounded in time or context.

However, this is not to suggest that autistic emotion regulation does not share an association with dysregulation or other emotion difficulties, as reported in the literature (Mazefsky, 2015; Samson et al., 2012; Sáz-Suanes et al., 2022). Rather, the findings emphasized

the need for a more nuanced understanding of emotion regulation for autistic individuals that is grounded in autistic experiences and voices. If we expect an individual to regulate in a short, time-limited situation when their emotional experiences do not match this style, then the person is set up to fail. The context, situation, and strategy do not match the emotional experience. Therefore, reconceptualizing emotion regulation as an unbounded effort to adjust the intensity (hypo or hyper) emotion experience will hopefully support novel research questions that include participatory research paradigms.

Implications for Counseling Psychology

For clarity, this section condenses the broader implications to address the study's potential influence on counseling psychology. This study's findings have implications for (1) diagnostic practice, therapeutic interventions, and clinical training and (2) intersect with counseling psychology's core values (Delgado-Romero et al., 2012).

Regarding the first implication, the study demonstrated demographic differences in camouflaging and resiliency. Female and gender-diverse individuals reported higher endorsement of camouflaging behaviors compared to male individuals. Participants of color also reported higher rates of resiliency, and resiliency overall shares a negative relationship with camouflaging. Brooding and distancing emotion regulation strategies predicted increased rates of camouflaging scores. Male individuals displayed higher utilization of brooding, which led to increased camouflaging scores when compared to female and gender-diverse individuals. These findings suggest that the presentation of autism might appear different across race and gender; thus, when assessing for autism, the clinician needs to consider demographic variables and their relationship to camouflaging behaviors.

Moreover, different dimensions of camouflaging share different associations with emotion regulation strategies and resiliency. For example, assimilation negatively relates to resiliency and masking displayed a positive relationship with reappraisal strategies. Therefore, when discussing camouflaging with clients, it is important for clinicians to assess the endorsement of the different strategies. clinicians can utilize the Camouflaging Autistic Traits Questionnaire to gain insight into self-report tendencies for clients and include camouflaging questions in intake packages for a more holistic approach.

Participants had greater odds of being diagnosed with autism if they selected a previous professional mental health or additional neurodevelopmental diagnosis. This finding suggests that individuals on the spectrum often have co-occurring disorders, which is supported by the broader autism literature (Brede, et al., 2022; Lai, et al., 2019) and that comprehensive assessment batteries might capture important information that informs differential diagnosis. However, this finding also implies that when individuals present with only autistic traits without other apparent mental or neurodevelopmental disorders, the individuals are less likely to be diagnosed. Masking and interpersonal emotion regulation strategies indicated a higher probability of an individual selecting self-diagnosis or seeking a first-time diagnosis. This finding suggests that an individual whose presentation is not as apparent or severe is often missed. In other words, the severity of the symptomology's presentation influences the likelihood of someone receiving a professional diagnosis.

Together, the findings have several important therapeutic implications. First, autistic participants indicated knowledge of various types of emotion regulation strategies; however, there appears to be a disconnect from knowledge to implementation of the strategies. For clinicians, then it is not enough to provide different strategies. Clinicians need to discuss how to

implement these strategies and/or where the implementation falters with clients. Second, autistic participants reported consistent rejection and harm from interpersonal interactions with non-autistic individuals. People on the spectrum appear to experience a cycle of seeking interpersonal support, being rejected or harmed, internalizing the negative experience as their fault, and having to regulate various emotions in response. Guilt and shame typify the interaction. Then, when trying to seek support again, the autistic individual has to regulate the shame before attempting to find support, only to be met with similar patterns. These are important implications when working with individuals on the spectrum, developing interventions, or clinical training.

Third, pets provide a specific intervention strategy for autistic adults. The autistic human-animal bond seemingly affords a restorative interaction for the autistic individual. Their pets offer non-judgmental spaces with unconditional love and support where they can exist free of social expectations. Participants also endorsed several ways their animal provides emotion regulation support (e.g., moving closer, pettings, sitting on their chest/lap). Animals might offer protective factors for autistic individuals that can be included in clinical practices.

Regarding point two, the overall findings intersect with counseling psychology's core values. Specifically, the study's implications promote identity development, autonomy, diversity, social justice, and strengths orientations (Delgado-Romero et al., 2012; Scheel et al., 2018). The neurodiversity movement, disability advocacy, and theories like the double empathy problem influenced the study's development. Taken together, the autistic participants communicated an emotional experience that is different from non-autistic individuals. The emotions differ in duration and intensity. In order to regulate, individuals on the spectrum utilize multiple strategies, often for extended durations. Thus, counseling psychologists must meet the clients where they are at and develop interventions in conjunction with autistic participants and their

experiences of emotions. The field should consider the various ways people experience disability and the ways in which social structures, norms, and laws develop a disabling system (Doyle, 2020; Olkin, 2017). We must critique the system and be critical of our own roles in it.

Limitations

This study had several important limitations that deserve consideration. First, the study was conceived, conducted, and analyzed with an exploratory approach. The research design was approached as mixed methods, which often blends the deductive and inductive approaches to research via qualitative and quantitative methodology (Casula et al., 2021). However, the exploratory design influenced the clarity of the study's findings and implications from a positivist, a priori method. Many statistical tests were conducted, which might increase the type I error rate. For example, when interpreting the results of the multiple regression models, consideration needs to be given as there might be false positives. To address this in the study, bootstrapping procedures were examined to support findings.

The study implemented a survey-based online data collection in a cross-sectional design. The cross-sectional design limited the study's ability to make inferences about the duration of camouflaging or causality of variables. Further, in academic literature, camouflaging autistic traits (Hull et al., 2019; Lai et al., 2017) recently entered the scientific nomenclature; thus, theories about camouflaging are in their infancy and still developing. Given this, any measurement model was based on the current research study or from examining the literature. To the best of the researcher's knowledge, there is little to no research on the relationship between emotion regulation and camouflaging, which further impacts the ability to draw from theory.

The study was posted to several online autism communities and participation was self-selected. Participants selected options for being professionally diagnosed or self-

identifying/diagnosed. No validation methods were utilized to confirm the professional diagnosis of the participants. Therefore, the study has no means to confirm the diagnosis or self-identification, though the mean camouflaging scores align with previous scores from other autistic samples (e.g., Beck et al., 2020; Bowri et al., 2021; Hull et al., 2021; Robinson et al., 2020).

Participants who opted to participate in the study might be incentivized to participate due to their love for their pets. Non-pet owners were largely not represented in the dataset. The sample included largely white female participants who were verbal and without co-occurring intellectual disabilities. Further, to examine racial differences in the sample, multi-racial and people of color were grouped into one racial category (i.e., people of color) as there was not enough per group for quantitative analysis. The research recognizes that people of color are not a homogeneous group of people, and further work needs to examine differences in autistic communities of color using an intersectional framework (Davis, 2008; Schneid & Raze, 2020). Therefore, the findings suggested caution with the study's external validity as more participation of non-verbal autistic participants with and without co-occurring intellectual disability and autistic participants of color are needed.

Future Directions

The exploratory study provided several future directions for autism research. First, the results suggested camouflaging required the use of emotion regulation strategies. Further work can validate the findings of this exploratory study. Furthermore, since higher reported camouflaging behaviors predicted mental health concerns (e.g., anxiety; Beck et al., 2020), future studies can investigate the role of regulatory resources on camouflaging behaviors and mental health concerns. For example, does an autistic person who regulates via distancing from

their emotions to camouflaging report higher concerns with depression (i.e., distancing mediates the relationship)? Further, is this due to difficulty in emotion regulation, allocation of affective and cognitive resources needed to camouflage their autistic traits, or difficulties in the implementation of regulation strategies?

Additional research needs to explore the role of emotion regulation in camouflaging behaviors and resiliency. Camouflaging and resiliency potentially share a bi-directional relationship. If this is the case, examining how autistic individuals cultivate their sense of resiliency will be an important research and clinical focus. Clinical consideration needs to focus on developing interventions that support autistic individuals' implementation of emotion regulation strategies and cultivate a sense of autism acceptance. However, the interventions need to be developed with the autistic emotional experience under consideration. In other words, reappraisal might phenomenologically appear different from strategies with non-autistic clients. Clinicians need to develop a collaborative set of definitions for each autistic client they work with to have a clear understanding between the clinician and the autistic client.

Moreover, investigations of camouflaging behaviors need study designs that emphasize external and ecological validity. Since camouflaging behaviors are enacted during social interaction, understanding camouflaging behaviors in “real-time” is important for developing a model of the emergence and maintenance of various camouflaging strategies and potential for supporting individuals on the spectrum (for example, see Cage & Troxell-Whitman, 2019). Future research questions need a continued emphasis on individual and contextual factors that impact camouflaging behaviors. Regarding context, the qualitative results provided further insight into the negative relational patterns autistic people experience when seeking interpersonal

emotional support. These experiences created a negative feedback loop and an onus to self-regulate in multiple, dependently, and independently related contexts.

Along with understanding contextual factors, an instrument is needed that measures in-the-moment camouflaging behaviors (e.g., "During *this current* interaction…. (1) I copied the person's body language; (2) I used prepared phrases"). A here-and-now camouflaging measure would provide an opportunity to assess the impact of camouflaging on day-to-day functioning and develop further insight into individual, socio-cultural, and contextual differences that sustain or develop new camouflaging strategies. These questions are well-suited for longitudinal study design (e.g., dynamic structural equation modeling utilizing ecological moment assessments).

Lastly, autistic participants indicated a positive relationship with their non-human animals. Additional work can explore, in more depth, the role of animals in autistic samples. Research can examine the role of petting, hugging, and pressure plays in the human-animal emotion regulatory experience. Broadly, the human-animal interaction literature noted the need for better instrument development and study designs (Crossman, 2017). Largely, this study affirmed further refinement of scale development for the human-animal interaction field, specifically when examining the relationship with an autistic sample. The magnitude of the correlations among the PALS subscales obfuscated construct validity between Positive Growth, Love, and Emotion Regulation. In this sample, the results produced a lack of discernment between the construct validity in the dimensions. The findings emphasized a need for a self-report scale that explicitly measures non-human animal emotion regulation support for autistic samples. Future studies may investigate the relationship between camouflaging behaviors and needing support from pets. The results suggested that higher camouflaging behaviors lead individuals to seek more support from their pets, who provide unconditional and non-judgmental

support. This implication needs further validation and support, as it might provide an important clinical application when working with individuals on the spectrum.

Conclusion

This study investigated autistic participants' experiences of various emotion regulation approaches (e.g., cognitive strategies, interpersonal regulation, support from pets) and camouflaging behaviors. The findings provided key insights into predictors of camouflaging behaviors and resiliency, differences in the autistic emotion experience, the human-animal bond between autistic participants and their non-human animals, and the impact of camouflaging on resiliency, and the lack of interpersonal support and understanding by non-autistic individuals.

As Cai and colleagues (2018) discussed, the autism field in both research and clinical applications need a more nuanced approach to the study of emotion regulation. Furthermore, autistic experiences and voices need continued inclusion in research by approaches such as participatory action research. By implementing an exploratory, mixed-method design, the current study demonstrated the various ways in which autistic participants spend a considerable amount of time attending to and regulating their emotions and the various strategies utilized when participants camouflage their autistic behaviors. Autistic participants reported camouflaging to fit in and avoid bullying (Cage & Troxell-Whitman, 2019), to decrease stigmatization (Perry et al., 2022), and reduce feelings of loneliness (Milner et al., 2023).

These experiences already require emotional effort, and this study’s findings demonstrated that camouflaging behaviors require further emotional expenditure. The non-autistic support systems often fail, blame, and place the onus on autistic individuals for the way in which they exist. Participant AW described these interactions well, “People do not understand and cannot relate to my experience of the world, so [they] dismiss or belittle me. I end up having to manage

their emotions and re-mask.” To further support individuals on the spectrum, research and clinical applications would benefit from potentially broadening and reconceptualizing the difference in emotion regulation by centering the experiences of autistic individuals and developing specific interventions and research that focus on their experiences of emotions.

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Appendix A: Additional Demographic Information

Table A1

Race Descriptive Statistics

	Black	Asian	Arab American	Caribbean Islander	White	Indian	Latinx	Native American	Pacific Islander	Self-identify
Count	13	12	4	2	208	1	21	6	0	47

.

Table A2

Gender Descriptive Statistics

	Male	Female	Transman	Transwoman	Nonbinary	Genderqueer	Agender	Genderfluid	Self-identify
Count	55	179	10	0	41	8	14	9	10

Table A3

Diagnostic Descriptive Statistics

	Self_ID	first_diagnosis	Asperger	PDDNS	autism	Self-identify
Count	95	56	65	6	129	39

Table A4

Frequencies of Pets for PALS

Pet	Frequency	Percent	Valid Percent	Cumulative Percent
cat	122	32.105	40.803	40.803
dog	145	38.158	48.495	89.298
other	32	8.421	10.702	100.000
Missing	81	21.316		
Total	380	100.000		

Table A5

Frequencies of Participants Who Had a Family Pet Growing Up

Q3	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	326	85.789	87.166	87.166

Table A5

Frequencies of Participants Who Had a Family Pet Growing Up

Q3	Frequency	Percent	Valid Percent	Cumulative Percent
No	48	12.632	12.834	100.000
Missing	6	1.579		
Total	380	100.000		

Table A6

Frequencies of Roommate or other Individual Who Owns a Pet

EQ2	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	176	46.316	47.185	47.185
No	197	51.842	52.815	100.000
Missing	7	1.842		
Total	380	100.000		

Appendix B: Regression Diagnostic Information

Figure B1

Diagnostic Plots for Outcome Variable CATQ

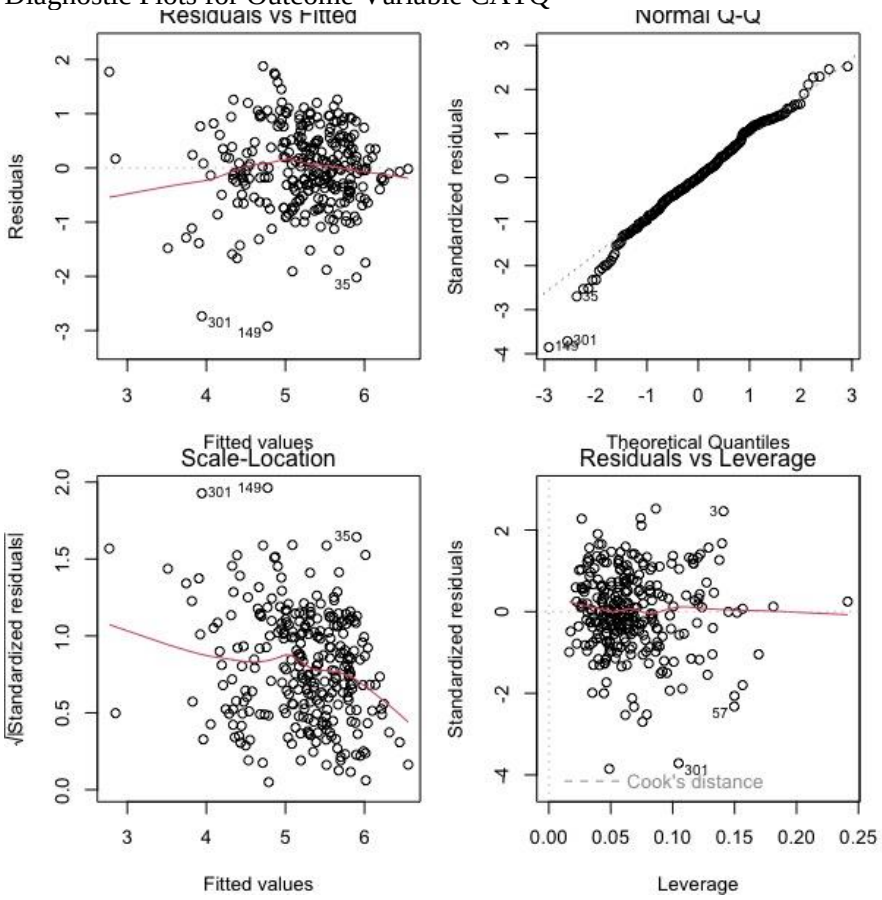

Figure B2

Residual Histogram and Box Plot for Outcome Variable CATQ

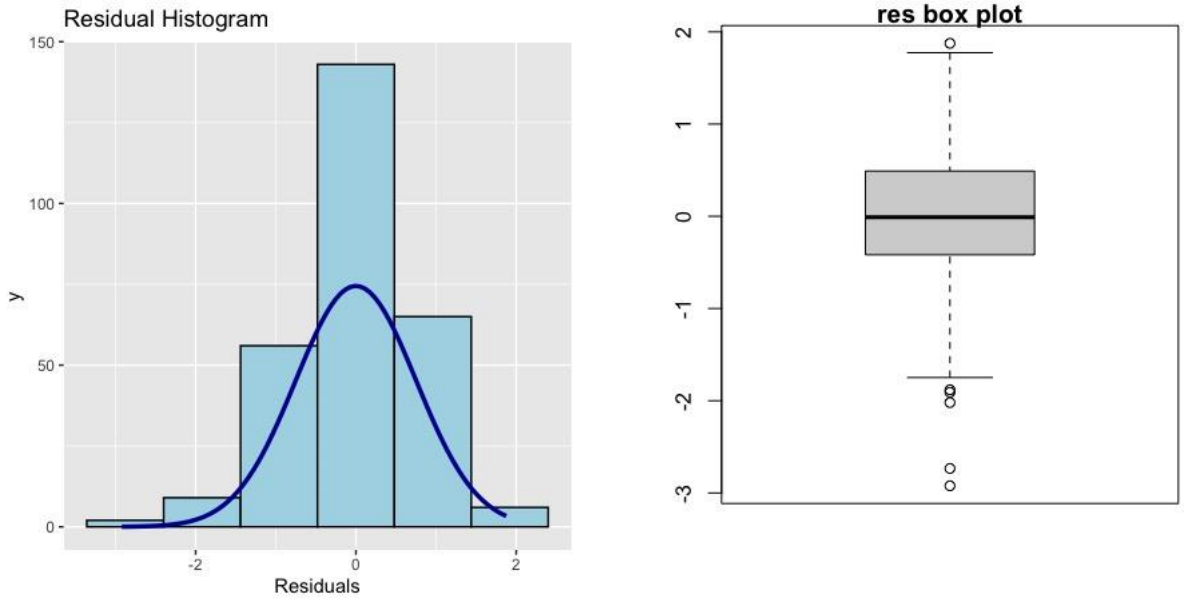

Table B1

Test of Normality for Regression Model with Outcome Variable CATQ		
Test	Statistic	P-value
Shapiro-Wilk	0.9844	0.0037
Kolmogorov-Smirno	.0436	0.6602
Cramer-von Mises	23.5147	<0.001
Anderson-Darling	0.6813	0.0744

Figure B3

Diagnostic Plots for Outcome Variable Resiliency

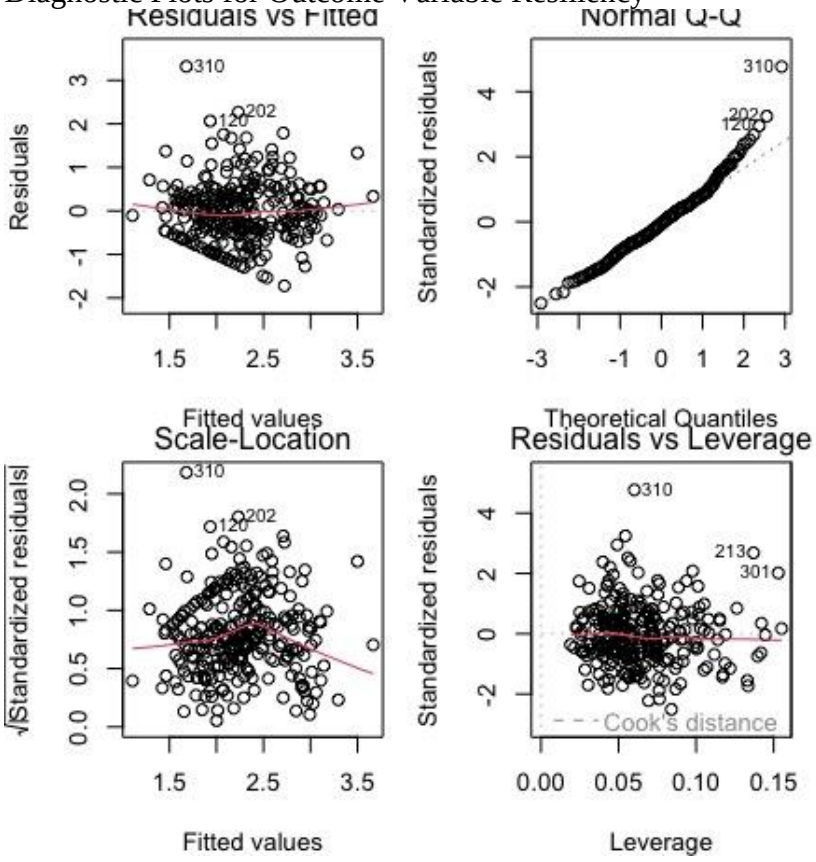

Figure B4

Residual Histogram and Box Plot for Outcome Variable Resiliency

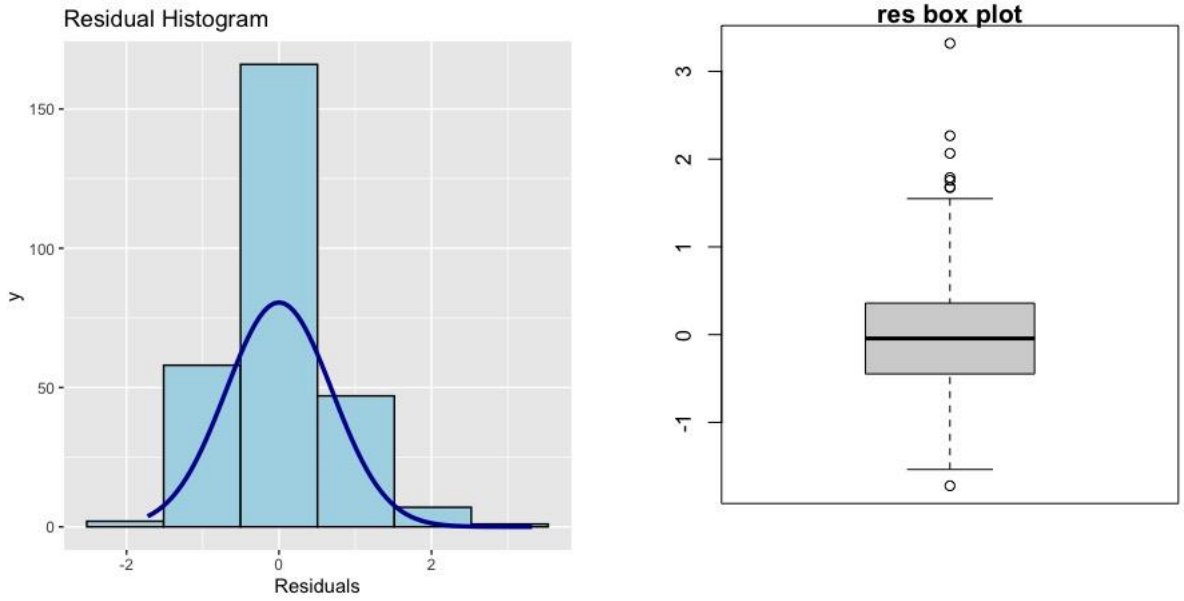

Table B2

Test of Normality for Regression Model with Outcome Variable Resiliency		
Test	Statistic	P-value
Shapiro-Wilk	0.9729	<0.001
Kolmogorov-Smirno	.0539	0.3879
Cramer-von Mises	29.1379	<0.001
Anderson-Darling	1.2099	0.004

Appendix C: Confirmatory Factor Analyses of Measures

Camouflaging Autistic Traits Questionnaire

Robust Maximum Likelihood was used to estimate the model. The data converged with the model, $\chi^2(261) = 454.612$, CFI = 0.936, TLI = 0.926, RMSEA = 0.057 [0.048, 0.065], SRMR = 0.064.

State Emotion Regulation Inventory

Robust Maximum Likelihood was used to estimate the model. The results indicated that the data converged with the model, $\chi^2(98) = 159.255$, CFI = 0.959, TLI = 0.949, RMSEA = 0.052 [0.036, 0.066], SRMR = 0.058.

Interpersonal Emotion Regulation Questionnaire

Robust Maximum Likelihood was used to estimate the model. The results indicated that the data converged with the model, $\chi^2(164) = 333.282$, CFI = 0.946, TLI = 0.937, RMSEA = 0.066 [0.056, 0.076], SRMR = 0.056.

Brief Resiliency Scale

Robust Maximum Likelihood was used to estimate the model. The results indicated that the data converged with the model, $\chi^2(7) = 16.622$, CFI = 0.977, TLI = 0.952, RMSEA = 0.085 [0.032, 0.139], SRMR = 0.032.

Pet Attachment and Life Satisfaction Scale

Robust Maximum Likelihood was used to estimate the model and test for second-order factors. Item 20 (*I like my pet mostly because it is cute*) was removed due to a small and non-significant factor loading (-0.028, p = 0.639).

A second-order model with positive growth, love, and emotion regulation was compared to a nested model that did not include the second-order term. The results of an ANOVA demonstrated that the second-order model was significantly different from the parent structure (χ^2 difference = 13.02, p = 0.002). Thus, the output suggests that the second order is more parsimonious. The results indicated that the data converged with the model, $\chi^2(164) = 333.282$, CFI = 0.946, TLI = 0.937, RMSEA = 0.066 [0.056, 0.076], SRMR = 0.056.

Appendix I: Exploratory Survey Items

Pets:

Do you currently own a pet that you live with?

Yes

No

How many pet(s) do you currently have?

1-2

3-4

5-6

7+

Do you currently live with someone who owns a pet?

Yes

No

How many pet(s) currently live with you (that someone else owns)?

1-2

3-4

5-6

7+

Did you grow up with a pet(s) in your home?

Yes

No

How many years have you lived with an animal/pet?

Slider from 0-100 years

The following questions are exploratory and ranked on a 5-point Likert scale from 1 (strongly disagree to strongly agree).

1. My pet(s) seems aware of my emotions.
2. I talk to my pet(s) about my emotions.
3. Touching my pet(s) (e.g., cuddling, petting, holding) brings me comfort.
4. My pet moves closer when I am down or upset.
5. When I am happy, I like to play with my pet.
6. I like being around my pet(s) when I'm excited.
7. I look for my pet(s) for comfort when I am upset or down.
8. When I think my pet is happy, I feel happy.
9. I cry in front of my pet(s).
10. I never feel judged from my pet(s).
11. I can be myself around my pet(s).
12. My pet(s) makes me feel listened to.
13. I stim around my pet(s).
14. I am affected by the way others react to my pet.

Mindfulness/meditation and additional regulation questions

If you use mindfulness exercises, which of the following do you use/practice?

- Muscle relaxation techniques
- Meditation

- Deep breathing
- Yoga
- Different exercise: able to provide response
- Do not use them

How often do you use/practice these mindfulness exercises when regulating your emotions?

- Rarely
- About half the time
- Most of the time
- Almost always

Does any of the following art help you emotionally regulate?

- Music
- TV shows
- Movies
- Paintings
- Comics
- Books, short stories, poems
- Theater
- Not listed: able to provide a response
- Art does not help me.

How often do you use art to help you emotionally regulate?

- Rarely
- Several days
- More than half the days

- Nearly every day

For the purpose of the questions below, emotion regulation is defined as: utilizing different strategies in various situations to influence and/or adjust your emotions in response to an emotional experience.

For all participants

1. What helps you emotionally regulate?
2. If/when you seek emotion regulation support, what are your experiences when seeking support from people?
3. If/when you seek emotion regulation support, what are your experiences when seeking support from an animal/pet?

Appendix J: Measures

THE OHIO STATE UNIVERSITY

Brief Resilience Scale (BRS)

Please respond to each item by marking one box per row		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
BRS 1	I tend to bounce back quickly after hard times	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
BRS 2	I have a hard time making it through stressful events.	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
BRS 3	It does not take me long to recover from a stressful event.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
BRS 4	It is hard for me to snap back when something bad happens.	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
BRS 5	I usually come through difficult times with little trouble.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
BRS 6	I tend to take a long time to get over set-backs in my life.	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1

Scoring: Add the responses varying from 1-5 for all six items giving a range from 6-30. Divide the total sum by the total number of questions answered.

My score: _____ item average / 6

Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: assessing the ability to bounce back. *International journal of behavioral medicine*, *15*(3), 194-200.

NovoPsych

Camouflaging Autistic Traits Questionnaire (CAT-Q)

Instructions:

Please read each statement below and choose the answer that best fits your experiences during social interactions.

		Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
1	When I am interacting with someone, I deliberately copy their body language or facial expressions.	1	2	3	4	5	6	7
2	I monitor my body language or facial expressions so that I appear relaxed.	1	2	3	4	5	6	7
3	I rarely feel the need to put on an act in order to get through a social situation.	7	6	5	4	3	2	1
4	I have developed a script to follow in social situations.	1	2	3	4	5	6	7
5	I will repeat phrases that I have heard others say in the exact same way that I first heard them.	1	2	3	4	5	6	7
6	I adjust my body language or facial expressions so that I appear interested by the person I am interacting with.	1	2	3	4	5	6	7
7	In social situations, I feel like I'm 'performing' rather than being	1	2	3	4	5	6	7
8	In my own social interactions, I use behaviours that I have learned from watching other people interacting.	1	2	3	4	5	6	7
9	I always think about the impression I make on other people.	1	2	3	4	5	6	7
10	I need the support of other people in order to socialise.	1	2	3	4	5	6	7
11	I practice my facial expressions and body language to make sure they look natural.	1	2	3	4	5	6	7
12	I don't feel the need to make eye contact with other people if I don't want to.	7	6	5	4	3	2	1
13	I have to force myself to interact with people when I am in social situations.	1	2	3	4	5	6	7
14	I have tried to improve my understanding of social skills by watching other people.	1	2	3	4	5	6	7
15	I monitor my body language or facial expressions so that I appear interested by the person I am interacting with.	1	2	3	4	5	6	7
16	When in social situations, I try to find ways to avoid interacting with others.	1	2	3	4	5	6	7

		Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
17	I have researched the rules of social interactions to improve my own social skills.	1	2	3	4	5	6	7
18	I am always aware of the impression I make on other people.	1	2	3	4	5	6	7
19	I feel free to be myself when I am with other people.	7	6	5	4	3	2	1
20	I learn how people use their bodies and faces to interact by watching television or films, or by reading fiction.	1	2	3	4	5	6	7
21	I adjust my body language or facial expressions so that I appear relaxed.	1	2	3	4	5	6	7
22	When talking to other people, I feel like the conversation flows naturally.	7	6	5	4	3	2	1
23	I have spent time learning social skills from television shows and films, and try to use these in my interactions.	1	2	3	4	5	6	7
24	In social interactions, I do not pay attention to what my face or body are doing.	7	6	5	4	3	2	1
25	In social situations, I feel like I am pretending to be 'normal'.	1	2	3	4	5	6	7

Developer Reference:

Hull, L., Mandy, W., Lai, M.-C., Baron-Cohen, S., Allison, C., Smith, P., & Petrides, K. V. (2019). Development and Validation of the Camouflaging Autistic Traits Questionnaire (CAT-Q). Journal of Autism and Developmental Disorders, 49(3), 819–833. https://doi.org/10.1007/s10803-018-3792-6

Interpersonal Emotion Regulation Questionnaire (IERQ) Items and Scoring

Below is a list of statements that describe how people use others to regulate their emotions. Please read each statement and then circle the number next to it to indicate how much this is true for you by using a scale from 1 (not true for me at all) to 5 (extremely true for me). Please do this for each statement. There are no right or wrong answers.

1----------2----------3----------4----------5
not true for me at all a little bit moderately quite a bit extremely true for me

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1. It makes me feel better to learn how others dealt with their emotions.
2. It helps me deal with my depressed mood when others point out that things aren't as bad as they seem.
3. I like being around others when I'm excited to share my joy.
4. I look for other people to offer me compassion when I'm upset.
5. Hearing another person's thoughts on how to handle things helps me when I am worried.
6. Being in the presence of certain other people feels good when I'm elated.
7. Having people remind me that others are worse off helps me when I'm upset.
8. I like being in the presence of others when I feel positive because it magnifies the good feeling.
9. Feeling upset often causes me to seek out others who will express sympathy.
10. When I am upset, others make me feel better by making me realize that things could be a lot worse.
11. Seeing how others would handle the same situation helps me when I am frustrated.
12. I look to others for comfort when I feel upset.
13. Because happiness is contagious, I seek out other people when I'm happy.
14. When I am annoyed, others can soothe me by telling me not to worry.
15. When I'm sad, it helps me to hear how others have dealt with similar feelings.
16. I look to other people when I feel depressed just to know that I am loved.
17. Having people telling me not to worry can calm me down when I am anxious.
18. When I feel elated, I seek out other people to make them happy.
19. When I feel sad, I seek out others for consolation.
20. If I'm upset, I like knowing what other people would do if they were in my situation.

Scoring instructions: All items are forward scored. Enhancing Positive Affect = Sum of items 3, 6, 8, 13, 18; Perspective Taking = Sum of items 2, 7, 10, 14, 17; Soothing = Sum of items 4, 9, 12, 16, 19; Social Modeling = Sum of items 1, 5, 11, 15, 20

Pet Attachment and Life-Impact Questionnaire (PAL)

This questionnaire is for anyone who has lived with a pet. If you have EVER lived with a pet (whether or not you owned it) please indicate how strongly each statement reflects how your pet has impacted your life. If you have lived with more than one pet please respond with your **favorite or most important pet** in mind. If you choose a past pet, please respond as if the pet currently lives with you.

What kind of animal was your most special/important/favorite pet? _____
Responses for each question are:

Not at all Somewhat Moderately Quite a bit Very much
1 2 3 4 5
PAL1 - Having a pet has helped my health.
PAL2 1 My pet is part of my family.
PAL5 - A pet completes the family.
PAL6 -Having a pet is stressful.
PAL7 - I am more affectionate because of my pet.
PAL8 - I have learned compassion from my pet.
PAL9 - Having a pet has helped me to understand loss and letting go.
PAL10 - My pet gives me unconditional love.
PAL11 - My pet gives me something to love.
PAL12 -My pet gives me something that I can form a close emotional bond with.
PAL13 -Having a pet has negatively impacted me emotionally.
PAL14 - My pet is my companion.
PAL15 - My pet and I have a special relationship.
PAL16 - My pet is loyal.
PAL17 - My pet provides comfort for me.
PAL18 - I am worse off because I have a pet.
PAL19 - I like to cuddle with my pet.
PAL20 - I like my pet mostly because it is cute.
PAL21 - It's worth giving up other things in life in order to have a pet.
PAL22 - Pets take a lot of time but it is worth it.
PAL24 -My pet is my friend.
PAL25 - My pet teaches me to trust.
PAL26 - My pet calms me down.
PAL27 - My pet cheers me up.
PAL28 - I take my pet with me to visit people.
PAL29 - I keep a picture of my pet with me.
PAL31 - My pet teaches me responsibility.
PAL32 - My pet is fun and entertaining.
PAL33 - My pet is a financial hardship.
PAL34 - My pet allows me to feel needed.
PAL35 - My pet is someone to lean on and be with me when no one else is there for me.
PAL36 - My pet provides stability for me.
PAL37 - My pet understands me like no one else has.
PAL38 - Talking to my pet makes me feel better.
PAL39 - My pet offers protection/safety.

The State Emotion Regulation Inventory (SERI)

Instructions and Items

Remember [*a distressing cognition that called for cognitive emotion regulation*]. Below is a list of statements. Please mark on the scale the extent to which you agree with each of the following statements regarding your negative thought, and the way you dealt with it.

This applies **from the moment [*starting point*] until now.** Please mark each item in order, without skipping any.

1---------- 2---------- 3---------- 4---------- 5----------6----------7

Strongly Disagree Strongly Agree

1. I tried to think about other things
2. I tried to reevaluate the situation more positively
3. I critically analyzed the possible implications of my thought
4. When the thought entered my head, I simply accepted it as it was
5. I tried to call to mind other topics that were unrelated to the thought
6. I looked for positive aspects of the situation
7. I critically dealt with the significance of my thought and how it reflects on me
8. I allowed the thought to enter my head as it was
9. I tried to think about something else instead of dealing with the thought
10. I tried to change the way I think about the situation
11. I considered how my thought highlights problematic aspects of my current situation
12. I allowed the thought to come up without delving into it or avoiding it
13. I tried to worry about other things instead
14. I tried to see the situation in a more positive light
15. I critically analyzed the possible reasons for my thought
16. I allowed the thought to come up without putting in great effort to change it

Scoring
Distraction: 1, 5, 9, 13 Reappraisal: 2, 6, 10, 14 Brooding: 3, 7, 11, 15 Acceptance: 4, 8, 12, 16

No items are reverse coded. Items in each subscale are to be averaged together, with higher scores indicating greater deployment of strategy. Please note that the scores of each subscale are to be left discrete, as the SERI does not measure a composite, general emotion regulation score.

Appendix K: IRB Approval

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Human Research Protection Program

EXEMPT DETERMINATION

August 4, 2022

Dear Alan Stewart:

On 8/4/2022, the Human Subjects Office reviewed the following submission:

Title of Study:	Autism and Human-Animal Interaction: A Mixed Method Approach to Emotion Regulation
Investigator:	Alan Stewart
Co-Investigator:	Harrison Chapman
IRB ID:	PROJECT00006156
Review Category:	Exempt 2ii

Materials Reviewed: Submission form, Updated Chapman, Informed Consent HAI_Autism .docx, Debrief Form .docx, Exploratory Questions .docx, Brief Resilience Scale .pdf, Camouflaging Autistic Traits Questionnaire (CAT-Q).pd, Five Facet Mindfulness Questionnaire subscales .docx, IERQ.docx, Pet Attachment and Life-Impact Questionnaire .docx, The State Emotion Regulation Inventory .docx, Open-Ended Response Questions.docx, Autism_HAI Study Flyer .pdf, Updated Email for recruitment .docx

We have determined that the proposed research is Exempt. The research activities may begin 8/4/2022.

Since this study was determined to be exempt, please be aware that not all future modifications will require review by the IRB. For more information please see Appendix C of the Exempt Research Policy (https://research.uga.edu/docs/policies/compliance/hso/IRB-Exempt-Review.pdf). As noted in Section C.2., you can simply notify us of modifications that will not require review via the "Add Public Comment" activity.