Investigating the Manifestation and Subjective Experience of Restricted Interests in Autistic and Non-Autistic Youth: An Interpretive Phenomenological Analysis

by

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Abstract

Restricted Interests (RIs), characterized by their intense focus in a restricted range of topics that interfere with other activities, are an under-researched aspect of autism. Using interpretive phenomenological analysis, the characteristics and motivations for RIs were explored through interviews with thirty autistic and twenty-two non-autistic children. Both autistic and non-autistic participants' interests could be socially motivated, although some autistic participants demonstrated an absence of social motivation. Desire to overcome challenges and improve skills motivated interests in both groups. Many autistic participants, and a few non-autistic participants, indicated an obsessive engagement in their interests which highly interfered with their daily activities. Other autistic and non-autistic participants demonstrated an intense engagement in their interests, but these did not interfere with other activities and were harmoniously integrated into their identity. A thorough understanding of the motivation for RIs may help to facilitate peer interactions, social development, and identify sources of poor socioemotional functioning in autistic children.

Keywords: Autism Spectrum Disorder; Restricted Interests; Children; Motivation; Interpretive Phenomenological Analysis

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Chapter 1. Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by challenges in social communication and social interactions, and by the presence of restricted and repetitive patterns of behaviour, interests, or activities (APA, 2022). The first category of symptoms includes pervasive challenges using and understanding verbal and nonverbal communication, difficulties with socioemotional reciprocity and understanding social norms, and a reduced motivation and ability to interact socially with other people. The second category of symptoms, broadly categorized as restricted and repetitive behaviours and interests (RRBs), may include stereotyped or repetitive motor movements or use of objects, an insistence on sameness or strict adherence to a routine, hyper- or hypo-sensitivities to sensory stimuli, and highly fixated, restricted, and intense interests or obsessive preoccupations.

The highly intense restricted interests (RIs) in the RRB domain are found in approximately 75 to 98 percent of autistic youth[1] (Klin et al., 2007; Nowell et al., 2021). Despite their high prevalence, they are considerably less understood and significantly less researched than the other social and behavioural symptoms of ASD. The unusually strong intensity and perseveration on activities related to the child's interest, along with the solitary engagement in these activities, differentiates the RIs in autism from interests in typical development (Anthony et al., 2013; Klin et al., 2007). RIs cause a significant amount of interference in the child's activities of daily living (Nowell et al., 2019; Turner-Brown et al., 2011), where engaging with the interest is all-consuming to the exclusion of non-interest activities with other objects, topics, or people (Atwood, 2003). It is often emotionally distressing to the individual when forced to stop engaging in their interest as the fixation on a narrow range of activities or interests is highly engrossing (Grove et al., 2018) and they may serve to help regulate the person's emotions (Spiker et al., 2012). In contrast to RIs in autism, non-autistic youth tend to possess a variety of interests, most of which do not typically approach the restricted and highly intense nature of RIs beyond early childhood (Anthony et al., 2013; DeLoache et al., 2007).

[1] Identity-first language (e.g., autistic person) is used to describe people who are diagnosed with ASD in the current study, given recent findings that autistic adults generally prefer the use of these terms over the use of person-first language (e.g., person with autism); see Boucher et al. (2022a).

To date, research investigating RIs in autism is scarce. The majority of research examining RIs focuses on the classification of interest content, leading to an under-developed understanding of the functions of RIs and the reasons for their prolific engagement. Moreover, the scant research that aims to conceptually understand RIs frequently focuses on older adolescents and adults (Armstrong, 2014; Grove et al., 2018; Mercier et al., 2000; Winter-Messier, 2007), despite RIs being more prevalent and most intense during childhood (Armstrong, 2014; Esbensen et al., 2009). More research is needed to characterize RIs in autistic youth and to determine how these interests manifest and affect the lives of those who possess them in order to improve our understanding of this common symptom of ASD.

1.1. History and Definition of Restricted Interests in Autism

1.1.1. Restricted Interests in the Early History of Autism

Before the inclusion of ASD and its predecessors in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM)*,* highly intense interests have been recorded in individuals who would likely meet modern criteria for ASD. Beginning around the midpoint of the 20th century, RIs have been observed and reported under various labels, primarily as *circumscribed interests*, *restricted interests*, and *repetitive and narrow interests*, among other similar names (Winter-Messiers, 2007). The highly intense interests possessed by many autistic people have been an observable indicator of autism since Grunya Sukhareva's (1926/1996) observation of six autistic boys. She described a child, M.R., who was a voracious reader with minimal interest in socializing with classmates. A 12-year-old boy "A.D." was reported as having particularly strong interests that he had exclusively pursued starting at age 6. Sukhareva identified that these children tended towards an autistic attitude of solitude and social withdrawal, and avoided social games with peers.

In the years following Sukhareva's (1926/1996) research, Leo Kanner (1943) reported on the cases of eleven autistic children. Kanner identified that some children would possess a narrow interest and engage in behaviours only relating to that interest, a defining characteristic of RIs today. For example, one child named Alfred L. had an intense interest in mechanical objects and his everyday activities mostly related to trains, vacuum cleaners, or cars in some way; he would draw trains, read and learn about these

objects, and primarily play with toy trains or cars. Alfred would not engage with other children or adults in these activities. Another child, Elaine C., had an intense interest in animals. She would frequently pretend-play as if she were an animal, would only engage in stories relating to or containing animals, and would enthusiastically memorize the names and classifications of animals. Kanner stated that the patterns of unusual behaviour related to their intense interest contributed to their “extreme autistic aloneness” (p. 242).

Circumscribed interest patterns were investigated more closely in 1954 by Robinson and Vitale, who described a group of children who possessed a narrow but remarkably deep interest in a pursuit that they personally valued. The authors describe three preadolescent boys who showed disinterest in engaging with other people socially but showed a remarkable depth of knowledge and interest in a limited range of pursuits. One child was described as having an intense fascination with anything related to trolleys, busses, or the subway, with another child deeply interested in organic chemistry and banking. A similar depiction of circumscribed interest patterns was reported by Bakwin (1955). He identified a group of like-minded and likely autistic children who would pontificate amongst themselves or to their uninterested peers regarding their ‘special topics’ to display their ‘special knowledge’. Bakwin describes a hostility arising from attempts to stop the child from engaging in their interest, and resentment towards other children who participated in their favorite activity. The descriptions of the circumscribed and restricted interests of these children by Robinson and Vitale (1954) and Bakwin (1955) indicate that RIs have been a prominent and peculiar characteristic of autism even before such a diagnosis could be made.

The DSM-III (APA, 1980) was the first to provide a standardized diagnostic system for autism. The DSM-III introduced new diagnoses of *Infantile Autism* (IA) for onset in infancy and *Childhood Onset Pervasive Developmental Disorder* (COPDD) to describe onset during childhood. In the DSM-III, IA and COPDD were defined by the lack of interest in people, poor verbal and nonverbal social communication behaviours, and bizarre responses to the environment such as ritualistic or stereotyped behaviours. There was also “peculiar attachment to odd objects” (p. 423) classified under the bizarre responses to one’s environment, which is the first standard conceptualization of RIs as a diagnostic criterion for autism.

The subsequent DSM-III-Revised (DSM-III-R; APA, 1987) eliminated IA and COPDD in favour of *Autistic Disorder* which can be diagnosed at any age, resulting in a significantly higher degree of specificity with which it could be diagnosed (Factor et al., 1989; Volkmar et al., 1992). The DSM-III-R operationalized Autistic Disorder with three broad symptom clusters: impairment in reciprocal social interaction, impairment in verbal and nonverbal communication, and restricted activities and interests. Five symptoms were listed in the restricted activities and interests cluster, the fifth of which was the "restricted range of interests and a preoccupation with one narrow interest" (APA, 1987, p. 39). Restricted interests could be the single symptom that was needed to meet criteria for the third cluster.

1.1.2. Restricted Interests versus Obsessive Preoccupations

The DSM-IV (APA, 1994) significantly altered diagnostic categories for autism, creating *Asperger's Disorder, Rett's Disorder,* and *Childhood Disintegrative Disorder* in addition to Autistic Disorder. Restricted interests were further described in this edition of the DSM, defined now as an "encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus" (p. 71). This definition introduced a new challenge in defining and characterizing RIs in the DSM: differentiating between special interests and obsessive preoccupations. The definition of restricted interests in the DSM-IV states that for the child to meet criteria, they could engage in repetitive or stereotyped behaviours within their interests, such as lining up objects or a preoccupation with parts of objects such as spinning the wheels of a toy car. The intense preoccupations are not defined as separate from the restricted interests in the DSM-IV, making it difficult to differentiate between the two using the DSM-IV criteria.

This conflation of RIs and obsessive preoccupations is first evident in Kanner's 1943 paper. Whereas a few children would engage in an interest through learning about it or engaging in their interest through different activities, other children would perseverate on a specific and unusual object of interest with a limited range of repetitive or stereotyped behaviours. An example of an obsessive preoccupation in Kanner's paper was Donald T., a five-year-old boy, who showed an obsessive preoccupation with objects that could be spun and resisted intensely when his mother would stop him from spinning objects. Obsessive preoccupations do not extend beyond the very specific

behaviours that they engaged in, and Kanner did not report these as being conceptually different behaviours than the “narrow interests” identified in his other participants.

In the text revision of the fifth edition of the DSM (APA, 2022), there remains a conflation between RIs and obsessive preoccupations. The two behaviours are conflated as “highly restricted, fixated interests that are abnormal in intensity *or focus* (e.g., *strong attachment to or preoccupation with unusual objects*, excessively circumscribed or perseverative interests) [emphasis added]” (p. 58). The *Autism Diagnostic Interview-Revised* (ADI-R; Lord et al., 1994), one of the gold-standard assessment tools to diagnose ASD, makes the clearest distinction between RIs and obsessive preoccupations as the measure separates these behaviours into two separate questions. The ADI-R states that unusual or obsessive preoccupations have peculiar or odd content, and that the preoccupation is unusual in its intensity and lack of social features. The examples of obsessive preoccupations that the clinician administering the ADI-R provides to the caregiver completing the interview are metal objects, lights, street signs, and toilets. In contrast, the question pertaining to RIs states that they are unusual in their qualities such as solitary engagement, lack of progression or change in interest over time, and the highly circumscribed nature of the interest, and not peculiarity in the interest itself.

This conflation between RIs and unusual preoccupations is of consequence, as an obsessive and unusual preoccupation with an object is different from the learning and information gathering characteristic of RIs (Klin et al., 2007). In contrast, the behaviours associated with the preoccupation include repetitious movements or sensory behaviours (e.g., rolling or spinning an object, rubbing an object on their skin), which are less commonly identified in RIs (Attwood, 2003). Most important, however, are the differences between the functions and motivators of RIs versus preoccupations. The common behaviours associated with RIs include learning about a topic, memorizing facts, accumulating objects related to the interest, talking about their interest, and classifying or ordering information systematically (Aday, 2011; Klin et al., 2007; South et al., 2005). These are considered to be “higher level” behaviours, involving higher order cognitive functions such as verbal and visual memory for learning (Bishop et al., 2006). Only RIs involve behaviours characteristic of non-autistic interests, such as the desire to develop skills related to their interest (Grove et al., 2016) and to interact with other people (Sedgewick et al., 2016). However, the lack of a cohesive and substantiated

understanding of the functions of RIs has resulted in an unclear picture of RIs being similar to obsessive preoccupations. Thus, more research is needed specifically focusing on RIs and how they manifest in order to better understand this phenomenon.

1.2. Development of Interests

Before RIs in autism can be closely examined, there is a need to understand the typical course of how interests develop and are maintained. Interests can be defined as self-sustained and motivated engagement with specific objects, activities, or ideas (Ryan, 1995; Silvia, 2001). At a basic level, interests emerge out of curiosity or attention to something in the person's environment. Hidi and Renninger's (2006) *Four-Phase Model of Interest Development* first describes a *situational interest phase* where the initial curiosity towards an environmental stimulus serves as a trigger for interests. A subsequent phase of *interest maintenance* occurs as the individual engages in behaviours to sustain and direct attention to the stimulus. If these actions produce positive affect, the person may develop a predisposition to continuously reengage with the specific stimulus over time; this is the *emerging individual interest* phase. Curiosity is ongoing, motivated particularly by the pursuit of improving one's skills, gaining more knowledge, and developing expertise in the interest area. Emergent interests are typically self-generated through intrinsic motivation and curiosity and may evolve into a final phase of *well-developed individual interest*. These well-developed interests are characterized by a substantial understanding or knowledge pertaining to the interest area of which the knowledge can be applied in creative and vocational pursuits.

Integrative theories of cognition and behaviour, particularly Deci and Ryan's (1980) *Self-Determination Theory*, complement the four phases of interest development. This theory states that when an activity engages our psychological needs for competency, autonomy, and relatedness, our interest becomes piqued (Deci & Ryan, 1980; Deci & Ryan, 2012; Ryan, 1995). Developing skill in an activity of interest increases the person's intrinsic motivation due to the positive affect that is associated with fulfilling one's psychological need for competency. Competency strivings sustain behaviour through the personal satisfaction and positive affect that the person experiences when a valued outcome is achieved (Deci & Ryan, 2000; Thoman et al., 2007). Similar to the need for competence is the need for autonomy, in which one successfully and freely engages in activities without external pressure, extrinsic

motivation, or reward (Deci & Ryan, 2000; Krapp, 2005). Interests are also motivated by the psychological need for relatedness and to feel connected with other people (Deci & Ryan, 2000). The desire for social contact may motivate someone to engage in activities of interest with other people who share a common interest (Krapp, 2005), resulting in shared enjoyment and positive affect that further motivates future engagement (Thoman et al., 2007). Fulfilling these psychological needs promotes a positive sense of well-being in the individual, which sustains intrinsic motivation to engage in activities of interest (Deci & Ryan, 1985; Deci & Ryan, 2000).

Interests can vary in the intensity with which they are engaged and can range from a slight increase in intensity beyond sustained curiosity (Hidi & Renninger, 2006) towards an obsessive passion wherein engagement is characterized by a rigid persistence (Vallerand et al. 2003). Towards the extreme end of this intensity spectrum are the dualistic *harmonious* and *obsessive* passions described by Vallerand et al. (2003). They define passion as "a strong inclination toward an activity that people like, that they find important, and in which they invest time and energy" (p. 756), which motivates and sustains one's behaviour. For an activity to be considered a passion, the activity must hold a high value to the person and be incorporated into their personal identity. A healthy integration of passion into one's identity is termed *harmonious passion*, occurring when a person freely engages in an activity while maintaining full volitional control of their actions; these pursuits do not override engagement in any other activities and thus the individual maintains a balance with other areas of one's life (Forest et al., 2011). In contrast is the *obsessive passion*, wherein the intense passion is characterized by an internal pressure or compulsion to engage in the activity, holding a disproportionately high status in one's identity. With an obsessive passion, the individual may engage in an activity as if they were dependent upon it, akin to a behavioural addiction observed in gambling (Stenseng et al., 2011). The obsessive passion is excessively engaged in relative to the other activities in the person's life such as work and tending to one's needs (Stenseng et al., 2011), which can lead to engagement even when there are serious negative consequences for doing so (e.g., financial insolvency due to gambling; Philippe & Vallerand, 2007).

These various theories of interest development and maintenance are not mutually exclusive; rather, they help explain the mechanisms of how interests are formed, sustained, motivated, and incorporated into one's identity. Hidi and Renninger

(2006) describe the transition from attention-capturing curiosity to intrinsically motivated interests as time and energy are invested into an activity. Deci and Ryan's (2000) self-determination theory elucidates various processes that sustain motivation over time and across experiences of activity engagement. The dualistic model of passion by Vallerand et al. (2003) explains how highly valued activities become incorporated into one's identity and can drive internal pressure or compulsive engagement in an interest. Taken together, these theories can help explain the process of how an initial experience with something can progress into full-fledged passion and intense engagement that may be similar to that of an autistic restricted interest.

1.3. Development of Restricted Interests

1.3.1. Nexus Model of Restricted Interests

Few papers exist that explore the theoretical underpinnings of RIs in autism. Two main models provide theoretically different, but not necessarily incompatible, explanations to how RIs arise and are maintained. First is the *Nexus Model of Restricted Interests* (Carter et al., 2020), which speculates how specific cognitive functions relating to social behaviours in autistic individuals may be the cause of the behaviours that are characteristic of RIs. An early altered trajectory of experiencing and attending to one's social world is suggested to be the underlying cause of RIs. Carter et al. theorize that specific behaviours associated with RIs in autism result from the devaluing of social stimuli through several cognitive functions, namely those that are memory based (e.g., collecting facts and developing highly-specific expertise in their interest) and those that relate to spatial attention (e.g., perseverative attention on specific interest-related stimuli or objects), face and object processing (e.g., diminished interest in social objects and a perceptual 'preference' for interest-related objects), and auditory processing (e.g., reduced processing of social auditory stimuli like voices and prioritized processing to auditory stimuli relating to interests). These brain areas undergo a functional shift throughout the person's early life towards processing information related to the person's RIs, as the development of these brain areas are dependent on experience. Thus, instead of the typical experiences non-autistic individuals have with social objects in their environment, autistic individuals miss out on these reinforcing interactions and the cognitive processes are instead utilized to process objects of interest.

The Nexus Model of Restricted Interests is compelling when considering the evidence that objects commonly reported to be of high interest in autism (e.g., trains and vehicles) are attended to more quickly, frequently, and for longer than social objects such as faces when presented to autistic participants (Sasson et al., 2008; Sasson et al., 2011; Scheerer et al., 2021). However, few studies have conducted the necessary neuroimaging required to determine if these 'socially focused' brain areas are indeed co-opted by the preferential processing of information related to RIs. A study using functional magnetic resonance imaging (fMRI) with children and adolescents with and without ASD identified that images relating to their interests elicited the activation of brain areas implicated in the processing of faces (Foss-Feig et al., 2016). But, as Carter et al. (2020) state about their model, these studies are typically under-powered to investigate the complex change that they have hypothesized. Similarly, the design of studies required to test the nexus model may be prohibitively expensive and resource consuming given the need to study autistic and non-autistic children over time. As a result, the nexus model remains difficult to test.

1.3.2. Motivational Model of Restricted Interests

Similar to the motivational models of interest development discussed earlier (Deci & Ryan, 1980; Hidi & Renninger, 2006) is the *Motivational Model of Special Interests* by Armstrong (2014). Like Hidi and Renninger (2006), Armstrong (2014) states that an environmental factor serves as the initial trigger, towards which attention is directed and sustained. For this to become an interest, Armstrong describes various conditions that are required for the initial interest to be maintained and for it to intensify, similar to those proposed by Deci and Ryan (1980). The four maintenance factors Armstrong (2014) describes are environmental opportunities for interest engagement, perception of one's own ability, a cognitive reward (wanting to know more about things related to the interest), and an emotional reward (feeling good when engaging with the interest). A key difference between the aforementioned theories and the model proposed by Armstrong is the hypothesis that RIs in ASD are primarily motivated by competency pursuits than they are for social or interpersonal reasons.

Armstrong (2014) tested her model using open-ended interview questions with caregivers and autistic and non-autistic adults ages 18 to 50 who possessed a highly intense "special interest" (SI). An environmental trigger was found for only half of the

autistic SI group but was always identifiable in the non-autistic SI group. Common triggers of interest for autistic participants were family members buying something for the participant or enrolling them in an activity. In contrast, most interests in the non-autistic group were triggered by friends of the participant, an environmental trigger that could be significantly less likely in autistic individuals given the social challenges inherent to ASD. Regarding an environmental factor as a necessary trigger for RIs, Armstrong concluded that more research was needed to decide if this was a viable component of her model.

There were similar mixed findings regarding the maintenance factors of Armstrong's (2014) model of special interests. Autistic participants reported ample opportunity to engage in their interest without much restriction, which was similarly identified for the non-autistic group. Perception of one's ability was found more frequently to be a maintenance factor in the intense interests of non-autistic participants, possibly due to the reduced ability of autistic participants to engage in the social comparisons required to evaluate one's competency. Both groups indicated that cognitive rewards were major maintenance factors in their intense interests, as participants reported positive feelings derived from knowledge and fact accumulation in the topic area of their interest. Emotional rewards were shown to be the most significant maintenance factor for both autistic and non-autistic participants. Interestingly, the emotional reward derived from escaping reality and stress reduction was a common theme brought up by participants in both groups.

1.3.3. Review of the Motivational Model of Restricted Interests

Components of Armstrong's (2014) motivational model of restricted interests are supported in the literature, particularly her findings suggesting that cognitive and emotional rewards serve to maintain the person's interest, primarily by fulfilling the psychological needs for competency and autonomy (Deci & Ryan, 2000; Ryan, 1995). The solitary engagement with trains and activities relating to trains, for example, may be rewarding to the autistic person who possesses this interest, where autonomous engagement in the interest and knowledge acquisition are intrinsically motivating and rewarding (Winter-Messiers, 2007). A study by Grove et al. (2016) examined the motivations that autistic adults had for pursuing their RIs and found that most autistic participants were intrinsically motivated to engage in their interest for the purpose of gaining knowledge in the topic, for the 'flow' state that it produced, and for the feelings of

achievement that these activities produced. Both the satisfaction of one's need for competency and autonomy are demonstrated through these motivations. However, given the numerous factors implicated in the development of interests in typical development, there remains the possibility that other psychological and motivational factors motivate and maintain RIs in autism.

Despite some evidence for select components of Armstrong's (2014) motivational theory of RIs, this model is incomplete as it failed to identify the mechanisms behind the initiation of the intense interest. Researchers have suggested that RIs may first manifest as an obsessive preoccupation with specific objects (e.g., the wheels of a single toy train) before developing into a circumscribed and intense interest within a specific topic/area (e.g., trains) (Attwood, 2003). Some caregivers of young children also remark that there is no clear or identifiable cause or trigger to the interest (DeLoache et al., 2007) but instead it emerges as a sudden and all-consuming obsessive preoccupation that later takes on the qualities and behaviours of a restricted interest (Leekam et al., 2011). It would be important to know whether RIs start as an obsessive preoccupation that expands into other related activities so that we can better understand how these interests differ or are related to obsessive preoccupations. Since many RIs are reported to start in childhood and last throughout early adulthood (Armstrong, 2014; Shattuck et al., 2007), it is also possible that interviewing adults and their caregivers could result in forgetting specific details about the interest, namely how the interest started. One way to obtain this information is to collect this information from children while the interest may be relatively new, specifically in pre-adolescence where RIs in autism are thought to form.

Also absent from Armstrong's (2014) theory were popular theoretical components of interest development in non-autistic people: the needs for relatedness (Renninger et al., 2014) and the maintenance of interests as a function of identity (Vallerand et al., 2003). Recent research has suggested that despite the challenges in social interaction and social competence, many autistic people possess the desire to interact socially, form friendships, and have meaningful relationships with other people (Cresswell et al., 2019; Cook et al., 2018; Sedgewick et al., 2016). One strategy for engaging socially with others has been reported to be engaging in a shared interest with peers. Boyd et al. (2007) identified that autistic children were more likely to approach a non-autistic peer and play with them if the topic of play was their special interest.

Similarly, in a study examining the social motivations of autistic children, Sedgewick et al. (2016) identified that some autistic girls used a shared interest to start interactions with other girls and to lay the foundation for friendship. Autistic boys have also expressed the importance of shared interests as a part of friendship, with a child in one study defining a friend as “someone who you can have common interests with” (Daniel & Billingsley, 2010, p. 226). However, some autistic adults have reported hiding their interest from other people to avoid peer rejection (Mercier et al., 2000). In sum, it is possible that one of the motivators and maintenance factors for RIs is shared engagement in interests and the need for relatedness with others, so these psychological needs should be studied in closer detail.

Pertaining to the absence of ‘identity’ as a maintenance factor of Armstrong’s (2014) model, there is a paucity of research examining the relationship between RIs and self-identity. Armstrong (2014) identified that non-autistic participants’ interests were an integral part of their self-identity but did not find similar results for autistic participants. For non-autistic adults, their passion or interests are often fundamental to their identity (Vallerand et al., 2003). In fact, interests frequently guide vocational pursuits (Forest et al., 2011), although for some people, their job becomes an obsessive and disharmonious passion characterized by rigidity and being a ‘workaholic’ (Vallerand et al., 2014). In a similar way, it is possible that the description of an obsessive passion by Vallerand et al. (2003), and how it occupies one’s sense of identity, might help describe autistic RIs. The individual may derive positive affect from their interest, but not engaging with it leads to negative affect, frustration, and rumination (Vallerand et al., 2014). The obsessive passion becomes a large component of one’s sense of self, so it is engaged with an intense rigidity and perseveration on the activity. At this level of obsessive engagement, the interest is greatly valued and becomes a major part of their sense of identity (Vallerand, 2008). This level of integration into self-identity is thought to occur as a result of intrapersonal or interpersonal pressures, such as the need to feel socially accepted or because the interest is rooted in their self-esteem (Mageau et al., 2011). The lack of literature in the area of autism, however, requires additional research to understand the relationship between RIs and identity, and if they may be integrated into identity as a harmonious or obsessive passion.

1.4. Present Study

Even though RIs are prevalent in the majority of autistic youth (Klin et al., 2007; Nowell et al., 2021), RIs have yet to be investigated directly from the perspective of the children who possess these interests. Much of the research in the area exploring RIs in autism has focused on autistic adults; a focus on autistic children is needed as RIs are thought to reach their peak intensity and prevalence in childhood (Armstrong, 2014; Esbensen et al., 2009). One way to collect this information is from the child themselves, as they can provide insights into their own lived experiences and perceptions about their interests.

In the current study, autistic and non-autistic children between the ages of 6 and 12 years old completed a semi-structured interview discussing their interests. Other measures were collected to characterize the sample, specifically measures of intelligence and severity of autism symptoms. Interviews were also conducted with autistic children who did not possess RIs and with non-autistic children in order to investigate the possible differences and similarities between diagnostic groups (autistic and non-autistic) and interest intensity levels (RIs and typical interests). The current study extends previous research by: (1) characterizing RIs using information provided from the child themselves, an area that has been neglected in the study of RIs; and (2) including a non-autistic comparison group. The primary objective of this paper is to describe the manifestation and meaning of RIs in autistic children within the context of their lived experience. The current study aimed to answer the following research questions:

1.4.1. Research Question #1

What are the characteristics of RIs in autistic children, and how do these interests differ from the restricted and non-restricted interests held by non-autistic children?

1.4.2. Research Question #2

What purpose or meaning do RIs serve for autistic children, and how do these compare to the interests of non-autistic children?

1.4.3. Research Question #3

To what extent do the interests described by autistic participants align with the Lord et al. (1994) ADI-R conceptualization of RIs (solitary engagement, lack of progression, highly narrow, not peculiar)?

Chapter 2. Methods

2.1. Participants

A total of 52 children between the ages of 6 and 12 years old participated in the study. Thirty of the children were diagnosed with ASD (m_{age} = 9.73, SD = 1.91; 20 boys) while 22 children had no ASD diagnosis (m_{age} = 8.84, SD = 1.67; 12 boys); see Table 1 for participant demographics. Participants were recruited through two day camps for autistic and non-autistic children hosted by the Autism and Developmental Disabilities Lab (ADDL). The current study was one of several studies conducting research at these camps. The camps were held over two days in July 2019, with one camp dedicated to autistic children and the other for non-autistic children. The camps were free to attend and were held at Simon Fraser University. Not all of the campers participated in the current study; prior to the camp day, caregivers of registered campers were contacted using a phone script to determine study eligibility, after which they were sent the consent form and a video release form (see Appendix A for consent materials). Four campers did not meet criteria for the current study due to comorbid intellectual disability, so they did not participate in this specific study.

Participants were recruited through a database of past participants in the ADDL as well as through online advertisements on the ADDL Facebook page and on the websites of local autism service providers (ACT-Autism Community Training, Pacific Autism Family Network). Participants of the current study were compensated with a t-shirt, a toy or object of their choice (approximately $5.00 in value), and caregivers were entered into a draw to win a $100 pre-paid Visa gift card. Caregivers were given free access to workshops led by professionals in the field of mental health while their child participated in the camp. Inclusion criteria for the camp and for the current study included: at least one caregiver must be fluent in speaking and reading English and the child must be fluent in speaking English; the child must not have a diagnosis of intellectual disability; the caregiver must provide consent to audio and video record their child; and the child must provide assent to be audio recorded and to participate in the study.

Table 1

Participant Demographic Information.

	Autistic (*n* = 30) *n* (%)	Non-Autistic (*n* = 22) *n* (%)
Gender		
Male	20 (67%)	12 (55%)
Female	10 (33%)	10 (45%)
Ethnicity		
White	19 (63%)	12 (55%)
Asian	8 (27%)	6 (27%)
Indigenous	0	2 (9%)
Mixed Ethnicity	3 (10%)	2 (9%)
Primary Language		
English	24 (80%)	21 (95%)
Chinese	4 (13%)	1 (5%)
Japanese	1 (3%)	0
French	1 (3%)	0
School Attended		
Public School	22 (73%)	21 (95%)
Private Catholic School	2 (7%)	1 (5%)
Private Specialized School	1 (3%)	0
Home School	5 (17%)	0
Family Income		
$21,000 to $49,999	3 (12%)	3 (14%)
$50,000 to $79,999	8 (23%)	6 (27%)
$80,000 to $109,999	8 (27%)	4 (18%)
$110,000 to $139,999	6 (19%)	4 (18%)
Greater than $140,000	5 (19%)	5 (23%)
Psychiatric Conditions		
Anxiety	8 (27%)	1 (5%)
Depression	0	1 (5%)
Obsessive-Compulsive Disorder	1 (3%)	1 (5%)
ADHD	3 (10%)	3 (14%)
Learning Disability	2 (7%)	0
Family Diagnosed with ASD		
None	25 (83%)	15 (68%)
Sibling	2 (7%)	4 (18%)
First Cousin	2 (7%)	1 (5%)
Second Cousin	0	2 (9%)

N = 52.

The inclusion criteria were necessary to ensure that the sample was as homogenous as possible, given that one goal of Interpretive Phenomenological Analysis (IPA) is to make specific claims about a specific issue within a particular group (Smith & Osborn, 2003). The IPA approach enables researchers to make specific claims about the particular groups in the study by ensuring that the sample is homogenous in certain characteristics (Smith & Osborn, 2003). In the current study, the sample is comprised of autistic and non-autistic children between the ages of 6 and 12 years old, with the inclusion criteria of being English speaking and not having a comorbid diagnosis of intellectual disability. It would not be appropriate to make claims about the phenomenon of RIs beyond this sample, such as to autistic and non-autistic children with intellectual disability, to autistic and non-autistic adults and early childhood, or to people with other development disabilities (e.g., ADHD). Therefore, several measures were collected with participants in order to provide a rich description of the sample to ensure that the findings of the current study are contextualized within this specific group. See Section 2.4 for a description of IPA and its use in the current study.

Caregivers confirmed their child's autism diagnosis by providing a copy of their child's diagnostic report or proof of government funding. In the Canadian province of British Columbia, children diagnosed with ASD can receive funding from the Ministry of Children and Family Development Autism Funding Program. To qualify for funding, children must be assessed by a psychologist, psychiatrist, or pediatrician trained to administer the ADI-R (Lord et al., 1994) and the Autism Diagnostic Observation Schedule (ADOS; Lord et al., 2012) and meet the diagnostic criteria of the DSM-5 (APA, 2013). All children diagnosed with ASD in the current study met these criteria.

2.2. Measures

Caregivers completed one questionnaire to provide information about family demographic information and two questionnaires assessing their child's autistic traits: the Autism-Spectrum Quotient (AQ; Baron-Cohen et al., 2001) and the Social Responsiveness Scale, Second Edition (SRS-2; Constantino & Gruber, 2012). Children completed a measure of intelligence, the Wechsler Abbreviated Scale of Intelligence, Second Edition (WASI-II; Wechsler, 2011), and then completed a semi-structured interview about their interests (see Appendices B and C).

2.2.1. Demographic Questionnaire

Caregivers provided demographic information about themselves, their family, and their child who was participating in the study. Questions on the demographic questionnaire included the child's sex, birth date, race/ethnicity, languages spoken, type of school attended, family income, parent's education level, comorbid physical and mental health conditions of the child, and if the child has any relatives diagnosed with ASD.

2.2.2. Autism-Spectrum Quotient

All caregivers completed the Autism-Spectrum Quotient Child form (AQ-Child; Auyeung et al., 2008) for participants ages 6 to 11 years old, and the Autism-Spectrum Quotient Adolescent form (AQ-Adolescent; Baron-Cohen et al., 2006) for participants older than age 12 years old. Both the child and adolescent versions of the AQ contain the same 50 statements which load onto five factors associated with autism: social skills, attention switching, attention to detail, communication, and imagination (Auyeung et al., 2008; Baron-Cohen et al., 2001). Each of these factors contains 10 questions on a four-point Likert scale: (0) definitely agree, (1) slightly agree, (2) slightly disagree, and (3) definitely disagree. Per the scoring of the original AQ (Baron-Cohen et al., 2001) and the AQ-Adolescent (Baron-Cohen et al., 2006), and to be consistent with the studies examining the psychometric properties of the AQ-Adolescent and AQ-Child (Armstrong & Iarocci, 2013; Gomez et al., 2019; Wakabayashi et al., 2007), each item was scored as either 0 or 1. The sum of all 50 questions comprises the AQ total score, which provides an overall score of autistic traits for the individual. The maximum score was thus 50, with a cut-off score of 32 which correctly identifies 80.8% of autistic adolescents (Baron-Cohen et al., 2006) and 86.8% of autistic children (Wakabayashi et al., 2007). Both Baron-Cohen et al. (2006) and Wakabayashi et al. (2007) found 0% of non-autistic participants scoring at or above the 32-score cut point. These findings suggest good construct validity of the AQ-Child and AQ-Adolescent.

The internal consistency of the AQ-Child was assessed on a sample of 500 children between the ages of 6 to 9 years old (autistic disorder or Asperger's disorder n = 192; Auyeung et al., 2008). The internal consistency of each of the five AQ-Child factors was satisfactory (Cronbach's α: social skills = 0.93; attention to detail = 0.83;

attention switching = 0.89; communication = 0.92; and imagination = 0.88). The internal consistency of the entire AQ-Child was high (Cronbach's α = 0.97). The test-retest reliability was evaluated with a randomly selected subgroup of 272 participants and the correlation between the two times was good (r = .85). The internal consistency of the AQ-Adolescent was assessed on a sample of 131 youth with a DSM-IV (APA, 1994) diagnosis of autistic disorder or Asperger's disorder (Baron-Cohen et al., 2006) and 50 non-autistic youth between the ages of 12 and 15 years old. Cronbach's α coefficients were high for all five factors: social skills = 0.88, attention to detail = 0.66, attention switching = 0.76, communication = 0.82, and imagination = 0.81. The internal consistency of the entire AQ-Adolescent was high (Cronbach's α = 0.79). The test-retest reliability was high (r = .92).

2.2.3. Social Responsiveness Scale, Second Edition

All caregivers completed the Social Responsiveness Scale, Second Edition (SRS-2; Constantino & Gruber, 2012) School-Age form as a standardized measure of autism symptom severity. The School-Age form contains 65 items scored on a four-point Likert scale: (1) Not True, (2) Sometimes True, (3) Often True, and (4) Almost Always True. Scores on the SRS-2 load onto a two-factor structure, *Social Communication and Interaction* and *Restricted Interests and Repetitive Behavior*, corresponding to the DSM-5 diagnostic criteria for ASD. The SRS-2 total score is considered to be the most reliable measure for social challenges related to ASD (Bruni, 2014). Raw scores are converted to standardized *T*-scores (mean = 50, SD = 10), with $T \geq 76$ indicating severe range of symptom severity, 66 to 75 indicating moderate range of symptom severity, 60 to 65 indicating mild range of symptom severity, and ≤ 59 indicating that the person is within normal limits.

The SRS-2 School-Age form was standardized on 1014 children across sixteen age levels matched on 2009 US Census data for geographic region, race/ethnicity, and parent educational level (Constantino & Gruber, 2012). The School-Age form has high internal consistency (Cronbach's α = 0.95). The School-Age form has a sensitivity of .92 and specificity of .92, meaning that the SRS-2 School-Age form correctly identifies 92% of children as having ASD and correctly identifies 92% of children as not having ASD, respectively.

2.2.4. Wechsler Abbreviated Scale of Intelligence, Second Edition

The cognitive ability of all participants was assessed using the Wechsler Abbreviated Scale of Intelligence, Second Edition (WASI-II; Wechsler, 2011) as an element of the rich description of the sample and to estimate intellectual ability. The WASI-II provides an accurate estimate of cognitive ability comparable to other measures of intelligence, developed for quick administration with individuals aged 6 to 90 years old. The subtests comprising the Full-Scale IQ-2 (FSIQ-2) were administered by graduate students in the Clinical Psychology program at Simon Fraser University or the University of British Columbia during the day camps. The FSIQ-2 scale on the WASI-II is composed of scores from two subtests: Vocabulary and Matrix Reasoning. The Vocabulary subtest prompts examinees to define words that are presented visually and orally by the examiner, and assesses the participant's word knowledge, verbal concept formation, and crystalized intelligence (Wechsler, 2011). The Matrix Reasoning subtest has examinees select a correct picture response to complete matrices presented to them from the WASI-II stimulus book. This subtest assesses fluid intelligence, spatial ability, and perceptual organization, among other nonverbal reasoning abilities. The reliability coefficient for the FSIQ-2 composite scale is excellent (.93) for children ages 6 to 16 years old, and the interrater reliability for the subtests was high for both Matrix Reasoning (.99) and for Vocabulary (.95) (Wechsler, 2011). Correlations between the WASI-II and other assessments of cognitive ability range from acceptable (r = 0.71) to excellent (r = 0.92) (McCrimmon & Smith, 2012; Wechsler, 2011).

2.2.5. Restricted Interest Interview Questions for Youth

A series of interview questions were adapted from Winter-Messiers (2007) to collect information about the child's RIs directly (see Appendix C). The interview protocol contained 16 questions with clarifying prompts to use when needed. Several questions in the interview protocol were taken from a parent-report questionnaire of special interests, the Yale Special Interests Survey (YSIS; Klin & Volkmar, 1996) and re-worded in order to administer them to children (see Appendix D). The child is first asked five initial questions, labelled "rapport-building questions". They ask for the child's name and grade, the food they ate for breakfast, their favourite and least-favourite food, and how they are enjoying their summer vacation. The first eight questions are the same as those asked by Winter-Messiers (2007). The ninth question in the interview protocol is similar

to that of Winter-Messier (2007) and asks how much time they spend each day thinking about their RI, however the prompts have been substituted with those from the YSIS. Three similar questions from the YSIS are asked pertaining to the amount of time they engage in their interest with family, peers, and other adults who are not family (questions 11, 12, and 13, respectively). Additional interview questions are included from the YSIS, namely how the child feels when they are told to stop doing their interest (question 15) and what their parents think about their interest (question 16). A final two questions are asked to all respondents. First, they are asked what they want to be when they grow up. Second, they are asked if there's anything else they want to tell us about themselves.

Throughout the interview, additional prompts were used at my discretion to investigate the factors of competence, autonomy, relatedness, harmonious passions, and obsessive passions. These prompts were clarification questions meant to enable additional discussion if the participant brought up a point that would benefit from additional clarification. This type of prompting is consistent with the principles of conducting semi-structured interviews (Merriam & Tisdell, 2015).

Most interviews followed the order outlined in Appendix C, however some children included additional information that would partially answer a different question; this information was either prompted immediately or brought back up again if the initial question had to be prompted. For example, a question about how much time they play with friends related to their interest could be answered with additional information about how much time they play with their siblings; a prompt is needed for the first question, but could be followed up immediately with a prompt for how much time is spent with siblings related to their interest.

2.3. Procedure

Caregivers completed an electronic consent form one week prior to their participation to ensure sufficient time and opportunity to ask questions about the study (see Appendix A). On the day of the camp, caregivers completed the demographic questionnaire, AQ, and the SRS-2 while their child completed the WASI-II, the RI interview, and other camp activities. When it came time to conduct the semi-structured interviews with participants, they were pulled one at a time from a nearby room into a separate room with the researcher. A camera was concealed behind the researcher in a

box and out of view of the participant, and the child sat approximately three feet to the right of the researcher across a table. Video recording of the interview provided the opportunity to capture non-verbal communication and behaviours that enabled a fuller representation of the interaction in the written transcript. Parents provided written consent prior to the interview for their child to be audio and video recorded.

The video recording was started prior to the child entering the room so that the camera could be re-concealed. When the child was brought to the room, the interviewer read the assent script and explained the purpose of the interview. The interviewer then explained the purpose of the audio recorder and allowed the participant to ask questions before making a decision to participate. When assent was granted, the interviewer began recording using a Philips Voice Tracer DVT1150 audio recorder placed between the participant and the interviewer. If assent was not granted or the interview was completed, the child was escorted back to the adjacent room. If assent was not granted, the video recording would be stopped and promptly deleted from the camera. Assent was not granted by one participant, so they are not included in the participant count or analyses. For all participants, the interview ended only after all questions were asked and an answer was provided. Interviews lasted between 6 minutes and 21 minutes. This study was approved by the SFU Office of Research Ethics [2019s0072].

2.3.1. Transcriptions

Two research assistants (RAs) were trained to use an abridged version of the Jefferson (1984) transcription system (see Appendix E). The focus of the transcription process is to record the interview verbatim, while supplementing the transcript with non-verbal behaviours or communication. For this training, the RAs were instructed to learn the system and transcribe three ten-minute videos depicting an interaction between a child and their caregiver from a previous study. Their practice transcriptions were then compared to the completed transcriptions for accuracy in audio transcribing and the identification of nonverbal behaviours. For the current study, one RA would first transcribe the interview verbatim using the audio recorded data. Next, they would transcribe the same participant using the video data, reviewing words while inserting nonverbal communication or actions. Next, the other RA would review the transcription using the audio and then the video. Next, I did the same, and additionally completed a final review of all transcriptions for accuracy using the audio and video for each

participant. In total, each transcription was reviewed eight times (four by audio, four by video) by three different people.

2.4. Interpretive Phenomenological Analysis

An interpretative phenomenological analysis (IPA) approach was undertaken. This approach offers a well-grounded philosophy from which to scientifically examine lived experience (Husserl, 1965; Jackson et al., 2018). Broadly, the emphasis in phenomenology is uncovering the meaning of a phenomenon for those involved based on how the phenomenon is experienced and consciously appraised (Merriam & Tisdell, 2015). That is, the goal of phenomenology is to explain *what* is being experienced and *how* it is experienced. What an individual perceives through their senses undergoes an active evaluation through one's constant interaction with their world (Husserl, 1965). Phenomena cannot be studied objectively when their understanding and manifestation is contingent on having been experienced by someone operating, thinking, and feeling in their world.

Specific to IPA, the researcher enters into the pre-existing world comprised of people and culture and cannot be detached from it (Bhattacharya, 2017). IPA also asserts that the individual's experiences are intertwined with their personal perception of events and objects (Neubauer et al., 2019). With these two points in mind, IPA is committed to understanding the participant's perspective, but also recognizes that this understanding can only be made possible through the researcher's engagement with the data to interpret the individual's interactions with the world and the resulting mental and affective responses (Alase, 2017; Osborn & Smith, 1998). That is to say that the phenomenon of interest, restricted interests, are recognized as a subjective experience that is appraised by the individual in terms of their lived experiences and culture, and that the researcher must interpret these experiences and the meaning that the participant ascribes to these experiences. The researcher is learning not only about the experiences of the participants, but of their mental and social world (Smith & Osborn, 2003).

2.4.1. Thematic Analysis

Consistent with IPA, thematic analysis was conducted in NVivo 12 (QSR International, 2020) to inductively identify patterns and themes within the collected data. The thematic analysis undertaken in the current study followed the phases put forth by Braun and Clarke (2006). First is familiarizing oneself with the data. Beyond the process of interviewing the participant and collecting the data, the researcher must transcribe the data, review recordings, and record their initial ideas in this preliminary review. As previously stated, the interviews were transcribed verbatim by research assistants using a modified Jefferson (1985) transcription system. I became familiar with the data through conducting the interviews, assisting with transcription, re-watching all interviews while checking the accuracy of the transcripts, and then reading the final transcriptions.

The second step of Braun and Clarke's (2006) process of thematic analysis is the generation of initial codes. This is the first step in organizing the raw data into the first level of meaning. The transcripts were reviewed line-by-line and a brief code was generated for segments that denote specific ideas within the data. Because there are no preconceived themes or codes for the current analysis, I did not place a limit on the number of codes that could be created from the data. I coded the transcript data along with one additional graduate student with prior experience conducting qualitative analyses. The extracted codes were then compared between coders to examine the initial interpretation of the data which allowed us to identify if information was overlooked or if interpreted differently; these divergences are informative when conducting reflexive thematic analysis, as it is expected that no two researchers will interpret and code data the same way given differences in their assumptions and analytical skills (Byrne, 2022; Clarke & Braun, 2018).

The third step of the thematic analysis is searching for themes (Braun & Clarke, 2006). After the data was initially coded, the other coder and I collated the relevant coded segments into potential themes according to their similarities. This step involves a predominantly inductive approach to creating themes from the breadth of generated codes rather than deductively grouping codes from a preconceived starting point. However, it is recognized that the semi-structured interview protocol was created with partial influence from theories of motivation, therefore the creation of themes in this step does not cleanly fall into a deductive approach to data analysis. This is within the

expected limits of inductive analysis, as coding of data and subsequent collation of codes into themes should contribute towards addressing the pre-specified research questions (Braun & Clarke, 2012; Byrne, 2022).

The fourth phase involved reviewing the created themes, specifically: identifying themes with sufficient data to support them, collapsing related themes together, and separating larger themes into distinct themes. A thematic map was utilized to demonstrate each theme and the supporting codes that have been generated. Following the creation of the thematic map, I began the fifth step to identify the underlying story of these themes. Specifically, each theme was defined and named to represent the essence of what each theme represents and captures. These themes were exhaustive and mutually exclusive to clearly represent the content that comprises each theme. The final step, phase six, is the generation of a written report that provides a logical, concise, and coherent account of the data (i.e., the results section).

2.5. Trustworthiness

Trustworthiness is the extent to which there is confidence in the design, analysis, and presentation of qualitative data in a study (Lincoln & Guba, 1985). To obtain trustworthiness of the research study and data, the criteria of credibility, transferability, dependability, confirmability, and authenticity are considered (Schwandt et al., 2007).

2.5.1. Credibility

Credibility is the extent the findings of a qualitative study are congruent with reality. The first step towards credibility in the current study is the adoption of research methods that are well-established, such that the method of data collection has been used before in similar populations. While no previous studies have conducted interviews with preadolescent autistic youth about their RIs, previous studies have used a similar semi-structured interview methodology with autistic youth to examine challenges they perceive in engaging in physical activity (Arnell et al., 2018; Healy et al., 2013; Obrusnikova & Cavalier, 2011), to examine their experiences and challenges making friends at school (Calder et al., 2012; Sedgweick et al., 2016), and to explore their concerns about their reputation at school (Cage et al., 2016). The quantitative measures of intelligence and autism symptom severity also help to ensure that the participants

meet a requisite ability to report on their interests (i.e., adequate social communicative ability found in the majority of autistic youth without an intellectual disability).

Additional methods to obtain credibility are used. Memoing and journaling was conducted throughout the research process. Memos are quick notes about the researcher's self-reflection of their thought processes, perceptions of a participant or datum, other observations about a participant which might connect to some broader theoretical idea, and so on (Lincoln & Guba, 1985). A detailed journal includes the explicit decisions made about the study, data collection, and coding. Last are negative case analyses, which includes involving autistic participants who do not fit the restricted interest criteria. Autistic children who do not have a special interest were interviewed and are included in analysis, along with non-autistic children who are endorsed by their caregiver as possessing a restricted interest. The inclusion of negative cases of autistic children allowed for a more refined investigation as to the differences between autistic RIs, non-restricted interests in autism, and typical interests in non-autistic children. The inclusion of non-autistic children who possess RIs enabled comparisons across diagnostic groups to determine how the phenomenon of intense interests is different and similar between these children.

2.5.2. Transferability

Transferability is similar to external validity in quantitative research methodology and is the extent to which the findings can be applied to other contexts and populations (Lincoln & Guba, 1985). However, generalizability is not the goal of the IPA approach. Instead, the goal is to provide thick description, which is characterizing the sample with enough information to contextualize the data in specific settings or circumstances so that other researchers can decide for themselves whether or not the findings are applicable to their contexts (Maxwell, 2005). The current study utilizes a demographic questionnaire, an IQ measure (WASI-II), a standardized measure of ASD symptom severity (SRS-2), and a widely used measure of ASD symptom severity (AQ) to help characterize the sample.

2.5.3. Dependability and Confirmability

Dependability and confirmability are similar to reliability in quantitative research (Lincoln & Guba, 1985). They are focused on consistency of the results across time, researchers, and analysis techniques. Dependability is achieved when team members agree with the decision trails at each stage of the research process. Confirmability is the degree to which the findings of the current study could be confirmed by other researchers, ensuring that interpretation is grounded in the data. By keeping an audit trail, which includes maintaining time-stamped journals and memos, the research team and a theoretical other researcher could examine the decisions and rationale for each step of analysis and arrive at a similar conclusion.

2.5.4. Authenticity

Authenticity is the extent to which our research produces useful and meaningful results through an interactive inquiry process and through social change that may occur as a result of this study (Guba, 2004). First, specific to the current study is fairness, which is ensuring that competing constructions of reality have been accessed, exposed, deconstructed, and then considered when inductively creating the analytic product. Second is catalytic authenticity, which is the extent to which the results of the study can be usefully taken outside of the stakeholder group (i.e., the current research team) to stimulate action (Amin et al., 2020). The results of the current study will be prepared as a manuscript for publication available to all who are interested, presented at the field's flagship conference *International Seminar for Autism Research* (INSAR) to researchers, clinicians, autistic adults, and educators, and presented through layperson summaries compiled in an easy-to-read text format and video format posted on the ADDL's website, social media pages, annual newsletter, and to local autism service providers who post research "round ups".

2.6. Positionality and Research Bias

Inherent to the qualitative analytic procedure of the current study is the risk of researcher bias due to my positionality and subjectivities as a researcher and graduate student. I am a Métis, cis-gender, able-bodied male. I am not autistic. I do, however, have a breadth of knowledge of RIs in autism having researched the topic for several

years under the guidance of Dr. Grace Iarocci in the Autism and Developmental Disabilities Lab. I have a strong understanding of the history of autism, research into the core and secondary symptoms of autism, but I also have my own assumptions and subjectivities regarding autism.

I view RIs as having both strengths and associated challenges and approached my research, interviews, and interactions with participants and their family members with this in mind. I recognize that many researchers, family members, and autism service providers view RIs as a weakness or a behaviour to be modified or eliminated (Boven, 2018). I also recognize that some autistic people view RIs as a weakness or impediment within themselves, while others view it as a personal strength (Mercier et al., 2000; Winter-Messier, 2007). I approached my interviews with this understanding, knowing that there would be diversity in my interviews in the opinions and lived experience of my participants.

An important component of IPA is bracketing, which is being reflexive about my own interpretations (influenced by my history, knowledge, and experience with RIs) as well as those of my research participants (Merriam & Tisdell, 2015). I am unable to step outside of my own subjective experience, thereby I must acknowledge and work to limit how my preconceptions of the psychological phenomena influences my analysis and interpretation of this phenomenon from the perspective and lived experience of the participant. I must also be alert to the social contexts that my data exists in, namely a society that predominately views ASD as a disability with primarily inhibiting symptoms. Lastly, I acknowledge that there is not one objective truth that can or will be obtained through this research. My understanding of RIs is useful for how I set-up my investigation into the topic of the manifestation of RIs (see the Introductory section), but any preconceived idea I have about RIs must earn its way into the analysis as a reflection of the data. My understanding is not absolute or exhaustive, and my findings are a tentative hypothesis about the phenomenon of RIs based on the data of the current study (Merriam & Tisdell, 2015). With these points in mind, and the steps I take towards maximizing trustworthiness of the data, I can state with relative confidence that bias is mitigated in the current study.

Chapter 3. Results

3.1. Descriptive Statistics

Descriptive and statistical analyses were conducted in IBM SPSS version 27.0. Table 2 presents the descriptive statistics for primary variables.

Table 2

Group Differences on Main Variables.

	Autistic (*n* = 30)				Non-Autistic (*n* = 22)			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Age in years	9.48	2.07	6.12	12.97	8.84	1.67	6	11
FSIQ-2 Score	101.63	14.62	77	131	107.64	14.15	79	129
AQ Total Score	33.97	3.97	28	43	17.05	6.73	7	30
SRS-2 Total Score	74.57	10.86	58	104	50.00	10.35	39	76

Note. N = 52

Abbreviations: SD, Standard Deviation; FSIQ-2 Score, Wechsler Abbreviated Scale of Intelligence-2nd Edition Full-Scale-2 Intelligence Quotient Score; AQ Total Score, Autism-Spectrum Quotient Total Score; SRS-2 Total Score, Social Responsiveness Scale-2nd Edition Total Score T-Score

3.2. Independent Sample t-tests

Independent sample t-tests on means were conducted to determine group differences in age and IQ scores to assess equivalency of the autistic and non-autistic groups, and for SRS-2 total scores and AQ total scores to assess for differences between groups in ASD symptomatology.

There were no outliers in the data, as assessed by inspection of a boxplot. Age, IQ scores, AQ total scores, and SRS-2 total scores were normally distributed for each group, as assessed by Shapiro-Wilk's test ($p > .05$). The assumption of homogeneity of variances was violated for AQ total scores, as assessed by Levene's test for equality of variances ($p = .002$); as such, a Welch t-test was used for group comparisons in AQ total scores. The assumption of homogeneity of variances was met for all other variables.

As expected, the two groups did not significantly differ in age or IQ scores, and the group of autistic participants had significantly higher AQ total scores and SRS-2 total scores than the non-autistic group, indicating significantly higher prevalence of autistic traits and higher autism symptom severity, respectively. See Table 3 below.

Table 3

Independent Sample t-test on Means between Groups.

	df	*t*	*p*	Cohen's *d*
Age in years	50	-1.18	0.243	-0.331
FSIQ-2 Score	50	1.48	0.144	0.416
AQ Total Score [a]	31.33	-10.56	<.001	-3.202
SRS-2 Total Score	50	-8.28	<.001	-2.307

Note. $N = 52$.

[a] Welch test is reported because Levene's test indicated that the homogeneity of variances assumptions was not met.

Abbreviations: FSIQ-2 Score, Wechsler Abbreviated Scale of Intelligence-2nd Edition Full-Scale-2 Intelligence Quotient Score; AQ Total Score, Autism-Spectrum Quotient Total Score; SRS-2 Total Score, Social Responsiveness Scale-2nd Edition Total T-Score

3.3. Characteristics of the Interests

The objective of the qualitative analysis of the semi-structured interviews was to characterize the interests that participants held (e.g., what is the interest, what are the behaviours associated with the interest) and to explore the purposes, meaning, and motivation of interests. The goal was to compare how the interests of autistic children differ from non-autistic children through an examination of autistic RIs, non-autistic RIs, and regular interests held by autistic and non-autistic participants. First, the interests reported by participants during the semi-structured interview are characterized and summarized below; these sections focus on characteristics of RIs that have been identified as common behaviours or indicators in past research (Armstrong et al., 2014; Klin et al., 2007; Lord et al., 1994). Second is the reporting of superordinate and subordinate themes related to the motivation and reasons for engaging in interests. Third is an evaluation of the ADI-R criteria for RIs and the conceptualization for more nuanced categorization of RIs in autistic and non-autistic children.

3.3.1. Number of Interests Provided by Participants

There was a mix in how many interests the autistic and non-autistic children provided when asked to state their favourite thing to do. All non-autistic participants (*n* = 22) indicated a variety of interests, even by those who held a highly intense and specific interest. Non-autistic participants frequently asked if they could say more than one thing or began listing several of their hobbies. Half of the autistic participants indicated that they held other interests in addition to their primary, specific interest (*n* = 15). The remaining 15 autistic participants indicated that they held a single interest and did not have any additional interests when queried.

3.3.2. Interest Topics

All participants in both groups provided their top or most favourite thing to do when asked to specify one interest. Several autistic children held interests that were unusual or advanced/below their age level (*n* = 6), such as participants reporting a specific and intense interest in the children's shows *Pocoyo* as an 11-year-old, *Mickey Mouse Club House* as an 11-year-old, *Paw Patrol* as a 12-year-old, an interest in the periodic table of elements at age 7, an interest in public transportation, and an interest in

laundering clothes. One autistic child indicated that his second favourite interest was grass trimmers, although his primary interest was video games. Two non-autistic children reported an interest in something unusual or uncommon for a child of their age, such as an advanced interest in architecture and an intense interest in fly fishing.

Video games were a common interest in both groups. Autistic children who liked video games were split as to whether they only liked one specific video game (*n* = 6), specifically *Minecraft*, *Roblox*, and *Fortnite*, or if they liked many different video games (*n* = 6). Three autistic participants reported an intense interest in a sport (soccer, hockey, ping-pong), two reported an interest in trains, and two reported an interest in a specific animal (dogs, cats). Other interests held by autistic children (all *n* = 1) included an interest in astronauts, *The Avengers*, bugs, Panzer IV German tanks, and Lego; see Table 4.

Non-autistic children tended to prefer a variety of video games (*n* = 7), although some only liked one specific video game (*n* = 3), specifically *Fortnite* and *Call of Duty*. Three non-autistic children indicated a general interest in sports and two indicated an interest in reading (*Dear Dumb Diary*, *Harry Potter*). Other interests held by non-autistic children (all *n* = 1) included an interest in fossils, playing on the playground, ancient history, pop music, and photography (see Table 5).

In addition to the top interest that they were asked to provide, all non-autistic participants identified three to five additional interests. Most frequently, non-autistic participants began by saying their top interest followed by less specific interests of sports, reading, drawing, gaming, or playing with friends. As previously stated, 15 of the 30 autistic participants provided two to five interests including their top interest.

Table 4

List of Interests Held by Autistic Participants.

Primary Interests	*n*	Non-Primary Interests	*n*
Animal – Cat	1	Animals – General Interest	4
Animal – Dog	1	Astronomy	1
Astronauts	1	Card games	1
Bugs	1	Computer Programming	2
Laundry	1	Drawing	5
Lego	1	Entomology	1
Panzer IV German Tanks	1	Grass trimmers	1
Periodic Table of Elements	1	Greek Mythology	3
Public Transportation	1	Lego	4
Sport – Hockey	1	Math	2
Sport – Ping Pong	1	Public Transportation	2
Sport – Soccer	1	Reading	6
The Avengers	1	Science – General Interest	3
Trains	2	Sports – Gymnastics	2
TV Show – Mickey Mouse Club House	1	Sports – Mountain Biking	1
TV Show – Paw Patrol	1	Sports – Skiing/Snowboarding	2
TV Show – Pocoyo	1	Sports – Soccer	3
Video Games – Fortnite	2	TV Show – Looney Tunes	1
Video Games – General Interest	6	TV Show – The Blue Planet	1
Video Games – Minecraft	2	Video Games – General Interest	7
Video Games – Roblox	2	Zoology	1

Note. N = 30. Participants only reported one primary interest. Fifteen autistic participants reported between three and five interests in addition to their primary interest, the topics of which are included in the table above.

Table 5

List of Interests Held by Non-Autistic Participants.

Primary Interests	*n*	Non-Primary Interests	*n*
Ancient History	1	Drawing	11
Architecture	1	Greek Mythology	1
Fossils	1	Photography	2
Photography	2	Playing with Friends	16
Playing on the Playground	1	Reading	6
Pop Music	1	Sports - General Interest	12
Reading - Dear Dumb Diary	1	Sports - Gymnastics	2
Reading - Harry Potter	1	Sports - Hockey	3
Sports - Fly Fishing	1	Sports - Mountain Biking	1
Sports - General Interest	2	Sports - Skiing/Snowboarding	5
Video Games - Call of Duty	1	Sports - Soccer	4
Video Games - Fortnite	2	Video Games - General Interest	8
Video Games - General Interest	7		

Note. N = 22. Participants only reported one primary interest. All 22 non-autistic participants reported between three and five interests in addition to their primary interest, the topics of which are included in the table above.

3.3.3. Behaviours Associated with the Interest

Across the entire sample, talking with others about their interest, without the purpose of learning or teaching others about the interest, was the most common behaviour, reported by 20 autistic and 20 non-autistic children. Watching videos, typically through YouTube or DVD, was the next most common behaviour associated with interests across the entire sample, reported by 18 autistic and 20 non-autistic children. Twelve autistic and 18 non-autistic children reported reading as a common behaviour associated with their interest. One-third of autistic participants engaged in memorizing behaviours related to their interest (*n* = 10), with one non-autistic participant engaging in memorization for their interest in history. Lastly, seven autistic and eight non-autistic children indicated that talking with knowledgeable people was a common way for them to engage in their interest, such as talking to a parent or older sibling.

3.3.4. Start of the Interest

When asked if they remembered how they first began liking their interest, 18 autistic participants had a specific memory or event that spurred their interest. Most frequently, autistic participants stated that they received a gift from a family member that instantly captured their interest and attention. Other specific events were seeing an item at a toy store, seeing a YouTube video on that topic, or seeing their parent or a friend do that activity for the first time. In contrast, only three non-autistic children had a specific memory of what spurred their interest; all three participants stated that they had received a present of that specific item, and they stated that it immediately became their biggest interest.

3.3.5. Emotions when Forced to Stop

Autistic and non-autistic participants reported experiencing negative or neutral emotions when asked to stop engaging in their interest. More autistic participants (*n* = 15) than non-autistic participants (*n* = 5) reported that they would be “mad”, “angry”, or “upset” if they were forced to stop. For example, one autistic participant (male, 10-years old) provided a metaphor to describe his negative emotions:

> *Interviewer:* How do you feel when you’re told to stop playing with trains?
>
> *Participant:* <exhales> {raises eyebrows, drops jaw, tips toy train over onto the table} {after 2s looks back up at interviewer and smiles}
>
> *Interviewer:* Can you put that to a name of an emotion?
>
> *Participant:* Well, let’s say that I was a window, and a ball smashed STRAIGHT through me.

Similar negative emotions were expressed by non-autistic participants who held very strong and specific interests, using words like “confused” and “sad” to describe their emotions. Participants who held other interests in addition to their primary interest responded with more neutral emotions, indicating that they had other activities to do and that they weren’t compelled to keep going if someone asked them to stop. This sentiment was shared by both autistic (*n* = 15) and non-autistic participants (*n* = 17) who either felt less strongly about their interest or whose interest was healthily integrated into their identity or sense of self.

3.3.6. Interference in Other Activities

Five autistic and 12 non-autistic participants indicated that the interest is not intense enough to cause any interference; for example, one 10-year-old non-autistic boy stated that he "[does not] do it enough for it to be a problem". Those with an intense interest with a harmonious and healthy integration of their interest into their life and identity appeared to have less interference in other activities. This was identified for 10 autistic and five non-autistic participants. For example, one autistic participant (female, age 9) stated that although she loved the game *Roblox* and could play for hours, she felt that her gaming did not interfere with other activities:

> *Interviewer:* Do the things you like to do ever get in the way of your learning, or get in the way of you doing other things?
>
> *Participant:* No, no… I have time to do what I want to do after school and like now {in the summer}.
>
> *Interviewer:* Ok, yeah. So if you were told that you had to do something else and stop gaming, like having to do homework or some chores, how would you feel?
>
> *Participant:* Ummm well, I guess I'd be…. OK. Like I need to do something- like – like I help with laundry a lot and my sister also does… and I can go back to doing something like playing outside or with my dog when I'm done. I don't have to go back and play Roblox if my mom or dad doesn't want me to keep playing.

In contrast, 15 autistic and five non-autistic participants indicated that their interest interfered significantly in various areas of their life. For example, one non-autistic participant (male, age 9) reported that he often gets in trouble for spending more time than he is allowed on his tablet by secretly playing for hours after his bedtime. Several autistic and non-autistic participants stated that they would avoid non-desirable activities such as homework or household chores and would frequently fight with parents when they were forced to stop and do that activity. One autistic child (female, age 10) provided a salient example:

> *Interviewer:* How much do you play video games?

Participant: I play all the time. I…

Interviewer: All the time, all day?

Participant: {laughs} Yup. I'm a gamer.

Interviewer: Okay. Is being a gamer a big part of who you are?

Participant: Yep I am a gamer and everyone- everyone knows that I'm a gamer.

Interviewer: Does being a gamer sometimes get in the way of you doing other things? Like –

Participant: Ohhh yeah. Yeah. I- I -uh sometimes… wait don't tell my mom. Sometimes I stay home from school cause I pretend that I'm sick and I- so I get to play all day.

Interviewer: Oh, so you really want to play, huh? So sometimes being a gamer gets in the way of the things you need to do, like going to school, and sleep sometimes like you said.

Participant: {laughs} yeah it does.

3.4. Motivation and Reasons for Engaging

Four themes were created from the coded data to understand the reasons for, and motivation behind, the interests that participants held. As shown in Table 6, these main themes were Social Engagement and Interaction, Skill Development, Internal Pressure and Obsession, and Escape. Each main theme was present to some extent in both groups, and each main theme has multiple subthemes that focus on a specific, notable element of that theme.

Table 6

Identified Themes for Interest Motivations.

Superordinate Themes	Subthemes
Social Engagement and Interaction	"It's more fun with people"
	Shared interests create new friendships
	Social engagement for instrumental purposes
	Lack of reciprocity in sharing interests
	“No one wants to play with me”: Unfulfilled relatedness motivation
	Absence of relatedness motivation
Skill Development	Enjoyment from setting goals and overcoming specific challenges
	Improving general and transferrable abilities
	Developing skills and then teaching others
Internal Pressure and Obsession	Internal pressure to engage with the interest
	Intrinsically motivated despite negative consequences
Escape	“It’s an escape”: Primary coping strategy for negative emotions and situations

3.4.1. Theme 1 – Social Engagement and Interaction

The first superordinate theme, *Social Engagement and Interaction*, represents instances where the participant mentioned specific behaviours, feelings, thoughts, and motivators related to the engagement of their interest in the context of social interaction. The subthemes reflect both the inclination and disinclination that participants identified for sharing their interest with other people.

"It's more fun with people"

Participants in both groups frequently and emphatically stated that engaging in their interest with someone else was at least as fun, or more fun, than doing it alone. Specifically, twenty autistic and twenty non-autistic participants stated that it felt good to do interest activities with other people, and half of the autistic participants and 17 non-autistic participants stated that it was more fun with others.

Friends or similar-age peers were most often identified by non-autistic participants as the other person engaging in the interest with them. For autistic participants, family members were often the person engaging in the interest with the child. A common statement in these interviews was that their mother, father, or sibling shared their interest, so they played or learned about their interest together. When asked why it was more fun to play with other people, participants said that it gets boring when playing by themselves and that there are more fun things to do with other people than alone. One autistic child (male, age 7) specifically stated that playing with his older sister was more fun than doing it alone:

Participant: I like to play… [sister's name] is able to play on Minecraft as well as me at the same time.

Interviewer: Is it more fun to play with her, or is it more fun to play alone?

Participant: Yeah, with her, and, w– sometimes we join each other's world. We make castles and houses and we like to build things.

Interviewer: Why is it more fun to play with your sister rather than play alone?

Participant: I'm… it's boring when- when I play by myself. I already beat the game and I like building in creative mode with her. It's way funner.

Shared interests create new friendships

Sharing interests with another person to create and maintain friendships was a motivator for many non-autistic participants and a portion of autistic participants. Ten non-autistic children indicated that they went along with the activities of others and played games that others wanted to in order to maintain friendships with them. Four autistic participants viewed the development of a friendship from a shared interest as a happy outcome rather than an explicit motivator to engage in their interest. As discussed with an autistic participant (male, age 8):

> *Participant:* You know, you know that I learned that sports are more fun with another person.
>
> *Interviewer:* Yeah, it's fun to play with other people. Do these sports help you make friends?
>
> *Participant:* Yeah like [friend's name] and I both love ping pong and I didn't know he also liked ping pong and I was like <whisper yell> oh my god you like ping pong too! </whisper yell> and now he is my friend and we play ping pong together. Did you know that I get to play with [friend's name] tonight?

Social engagement for instrumental purposes

Unique to the interviews with autistic participants was a finding that three autistic children started or went along with social interactions with other people to facilitate access to activities or objects of interest. These participants indicated that their enjoyment was not necessarily derived from the engagement of interest activities with people themselves, but due to the associated benefit of doing the activity with that specific person. One autistic participant (male, age 9) stated that although he preferred to engage in sports activities alone, he would go on day trips with his friend's family to places that he could not go on his own:

> *Interviewer:* Do you like doing it with your friends more or by yourself?
>
> *Participant:* I get to do more fun stuff with them.
>
> *Interviewer:* Like what?

Participant: Uh we do the things that I can't do alone… like going to the rope course or skiing… swimming. My mom and dad don't ski or swim so I only go with [name].

Interviewer: If you could, would you rather do those things by yourself?

Participant: {shrugs} Yeah, probably.

Another autistic participant (male, age 9) stated that playing with a friend enabled him to access new and interesting toys that he did not have at home:

Interviewer: Do you have more fun playing with [friend's name]?

Participant: With my friend [name]? Umm. Yes.

Interviewer: Okay. Why is it more fun to play with [name] instead of playing alone?

Participant: Cause – cause – cause – it's more fun to play- with – with his Lego.

Interviewer: Okay, it's more fun to play with his Lego than your own?

Participant: Yeah cause- and he has different types that I don't have. So I play with his Lego.

Interviewer: Okay, so it's fun to play with him because he has different Lego sets? Do you guys play together or do you play with his Lego sets?

Participant: I play and he- he- he watches.

Lack of reciprocity in sharing interests

Present in the interviews of ten autistic participants and five non-autistic participants was the idea that other people would join the participant, but the participant would not join the activities of other people. Most of these participants cited examples with video games, whereby they would play with their friends in their favorite video game but would not switch to a different video game with their friends. In one example, a non-autistic boy (male, age 11) stated that he had no interest in playing any video games other than the one that he was specifically interest in:

Interviewer: Yeah? So why don't you play Fortnite with those friends?

Participant: Cause it so BORING.

Interviewer: What would you rather do instead?

Participant: Play COD {Call of Duty}.

Interviewer: What happens if you're playing COD with your friends and they want to play Fortnite or Apex {Apex Legends}?

Participant: I don't care, I'm not going to play those boring games. I'm only going to play COD cause if they- if they're going to play something that's so boring, then they can play that boring game and I'll stay.

In another example, an autistic girl (female, age 7) stated that she liked when she could look for bugs with her brother but had no desire to go with him to collect rocks. An autistic boy (male, age 7) liked it when his friend would play "Avengers" with him, however he would not continue to play with his friend if they wanted to play as a non-"Avenger" superhero.

"No one wants to play with me": Unfulfilled relatedness motivation

Despite many autistic and non-autistic participants expressing a desire to want to play or engage in their interest with another person, some were prevented by other people not liking or caring about the participant's interest. This was the case for six autistic and four non-autistic participants who held highly specific interests or interests that were uncommon for children of their age. In one example, a non-autistic child (male, age 10) with an intense interest in architecture stated that he wanted to share his interest with peers, but nobody shared his interest.

Interviewer: Do you ever talk to other kids about it?

Participant: Not really actually. {scrunches face up, shakes head} Like I can do other things normally like other kids. But I'm different from other kids I guess because they don't have a- a passion like I do. They don't know about it and don't have a passion in drawing and building like I do.

Interviewer: Do you wish other people knew more about architecture? Do you wish that you could do those things with other people?

Participant: Um … normally I just um... I don't really tell them anythi- I just say like you know I want to be an architect because I like building, you know- it's fun. And if I want to do something like that with them, then it's- um… well nobody cares.

In other instances, the participant's peers did not like the participant, so they would refuse to play or interact with them. One autistic child stated (male, age 11):

> *Interviewer:* Do other people know the {periodic table of elements} song? Maybe any friends or people in your class who like it too?
>
> *Participant:* I don't have friends
>
> *Interviewer:* Do other people say anything about it to you?
>
> *Participant:* Some kids like the song… but not really… people – kids- don't talk to me.

In a related statement, one autistic participant (male, age 12) lost the desire to share his interest with others:

> *Interviewer:* Do you wish you could talk to other kids about the SkyTrain?
>
> *Participant:* N- No. Not anymore. Other kids don't like it and they tell me to stop talking about it.
>
> *Interviewer:* Oh, I'm sorry. That's not very nice of them.
>
> *Participant:* It's not nice. {looks down} It makes me sad.

Absence of relatedness motivation

Specific to the interviews with autistic children was the lack of any desire for social interaction with other people. These five participants indicated that any activities that they engaged in related to their interest were only fun if they did it by themselves, and they had no desire for interacting with their peers or siblings. One participant plainly stated that he "doesn't do" social interaction, while two others stated that they "don't need any friends". These participants appeared not to derive pleasure from interactions with other people, so they did not see any reason to share in their interest activities with others.

3.4.2. Theme 2 – Skill Development

The second superordinate theme, *Skill Development*, represents instances where the participant mentioned the development of competency, skills, and abilities related to their interest activity.

Enjoyment from setting goals and overcoming specific challenges

A portion of autistic (*n* = 4) and non-autistic (*n* = 9) participants stated that they are motivated by setting specific and difficult to obtain goals and then working hard to overcome them. Most of these autistic and non-autistic participants stated that they develop their skills in a video game in order to beat the game or to reach their goal of earning a new rank to battle skilled opponents. These participants indicated that they might play a game for over 20 hours before they can reach the goal that they had set for themselves, such as earning a "Prestige" level in Call of Duty or completing Undertale as a "True Pacifist". Three non-autistic participants interested in sports stated that they have set goals for themselves to make a sports team at school and were spending the summer training to reach that goal.

Improving general and transferrable abilities

Specific to the group of non-autistic participants (*n* = 8) was the motivation to engage with their interest because they liked getting better at general skills applicable beyond their interest. These participants identified that their interest provided a benefit that extended to other areas of their life such as school or in other activities with friends. As discussed with one non-autistic participant (female, age 11):

> *Participant:* Some people think that… video games don't work for nothing. But sometimes they can teach you teamwork, uh- coordination, hand-eye coordination, and… sometimes survival. Like working together to solve problems.
>
> *Interviewer:* Yeah. Do you think you like to play video games because you get to learn those things?
>
> *Participant:* I think so. Well, they're fun too, but like – like it's nice to like learn about things too and get better at the game but also get like better at working with my team who are my friends.

Developing skills and then teaching others

At the core of some participant's activities with others was the motivation to teach friends certain skills or knowledge. Two autistic and three non-autistic participants indicated that it felt good to teach others and to show off their skills, but also stated that it made them happy to help others in an area within which the participant is

knowledgeable. One non-autistic girl (age 9) enjoyed helping her friends learn various gymnastics skills such as cartwheels and summersaults. Another non-autistic girl (age 8) liked teaching her mother about the stories that she reads. One autistic boy (age 8) stated that he liked improving his skills in a game so that he could help his younger cousins:

> *Participant:* [Cousins] ask me cause I am getting really good at the game I think.
>
> *Interviewer:* Yeah, does it feel good to help your cousins out and tell them tips and things?
>
> *Participant:* Yeah I like – like to help. It feels good cause I work hard to beat those levels so- so then I can tell them about how to beat them too.

3.4.3. Theme 3 – Internal Pressure and Obsession

The third superordinate theme, *Internal Pressure and Obsession*, represents instances where the participant indicated an internal compulsion to engage in interest activities. These statements by participants provided insight into obsessiveness, circumscribed engagement, and interference in daily life activities due to interest engagement.

Internal pressure to engage with the interest

Identified in both groups, although more frequent in autistic participants (n = 15) than non-autistic participants (n = 3), was the internal pressure to engage in their interest. This internal pressure was also associated with the desire to develop very specific skills related to their interest. The skill development was highly circumscribed without the desire to apply these skills to overcome a goal, extend these skills to other activities, or to help other people. At its core, this represented the development of competency from extensive and often solitary engagement in the interest. Despite an apparent intrinsic motivation to engage in their interest, it did not appear that this was consistent with the motivational concept of autonomy. An internal pressure to engage in interests was identified by participants' regular use of the words "need" and "have to" as motivation for their skill development, although they were often unable to provide a rationale for this pursuit. For example, one autistic girl (age 7) discussed her interest in bugs:

Participant: You know, I NEED to learn more about bugs- the little wood bugs- and where- and where they live.

Interview: Why do you need to learn more about the wood bugs?

Participant: I – I don't know. I just HAVE to.

Therefore, while there was an absence of external pressure for the child to engage in the interest, the internal pressure without an identifiable rationale or value undermines their ability to fully autonomously engage in the interest.

Intrinsically motivated despite negative consequences

Present in 12 autistic and two non-autistic participants was the finding that despite facing consequences for their behaviours, participants continued to engage in interest activities. Some autistic and non-autistic participants identified that they were scolded by teachers for disrupting class by talking about their interest (to others or to themselves). Others stated that they were grounded by continuing activities after a parent told them to stop. Two autistic children stated that they continued to engage in their interest at recess and with their peers in class despite being bullied and socially excluded. One autistic girl (age 10) described the consequences of playing the video game *Fortnite* on her phone in class:

Participant: I got my phone taken away

Interviewer: Were you playing it {Fortnite} in class?

Participant: Yeah.

Interviewer: Why were you playing in class?

Participant: I didn't want to do school anymore so I started playing and then [name] told on me and then Ms. [teacher's name] took my phone away.

Interviewer: What happened after that?

Participant: Mom got mad. I got grounded for- for like three whole weeks. She took my phone away.

Interviewer: Three weeks? Wow, that's a long time. Did you play Fortnite at all during those three weeks?

Participant: {laughs} I played it on the iPad.

3.4.4. Theme 4 – Escape

The fourth superordinate theme, *Escape*, represents instances where the participant indicated that their interest served the purpose of escaping from, or coping with, negative thoughts, feelings, emotions, situations, and life events.

"It's an escape": Primary coping strategy for negative emotions and situations

Five autistic and two non-autistic participants identified that they were motivated by the desire to escape or get away from negative thoughts, feelings, or situations. One non-autistic boy (age 11) stated that he spends a significant time playing video games when his father has custody every other weekend:

Interviewer: How much in a day do you think you play?

Participant: On daddy days… {pause 5 seconds} probably 24 hours.

Interviewer: 24 hours, okay. Why do you play that much on those days?

Participant: I don't know… I just want to.

Interviewer: How do you feel on those days?

Participant: {pauses 5 seconds} Sad, I guess.

Interviewer: How do video games make you feel then?

Participant: Better I guess. Probably less sad and so I play it more and stop having sad thoughts.

One autistic girl (age 12) identified that she returns to a show that she watched as a young child because she has difficulties controlling her emotions; as a result, she frequently watches that show at home and thinks about that show at school to help manage how she is feeling. One autistic boy (age 9) stated that his interest in animals has helped him deal with the difficulties of transitioning from public school to home school by providing him with a distraction during the day. Another autistic girl (age 12) identified that video games helped her cope with bullying that she faced at school:

Interviewer: How much would you say you play video games?

Participant: <laughs> Always depends on how long my mom and dad will let me.

Interviewer: Yeah, ok.

Participant: <giggles> Cause they love- I love- also it's sorta like, my own little hideout for me. For someone like me… I can hideout and create my own world!

Interviewer: Someone like you? What does that mean?

Participant: I get bullied… and- so I do it so I cannot have to deal with all that crap.

3.5. Evaluation of ADI-R Restricted Interests Criteria

The ADI-R (Lord et al., 1994) is a parent interview designed to collect information on the person being assessed for ASD. The interview collects the person's medical history, developmental milestones (e.g., age at which the person started walking without holding on), the history of speech and language development (e.g., reciprocal conversation abilities), and past and current behaviours (e.g., circumscribed interests, negative responses to sensory stimuli, adjusting to changes in routine). The following section compares the presentation of interests in the current study to the ADI-R conceptualization of RIs. A description and categorization of intense interests is then provided using examples from individual autistic and non-autistic participants in the current study. These alternative categorizations of interests utilize participants' self-identified motivators for engaging in their interests with consideration to the *Dualistic Model of Passion* by Vallerand et al. (2003), and include the *"Obsessive Passion" Restricted Interest,* the *"Harmonious Passion" Restricted Interest,* and the *Typical, Non-Restricted Interest*.

3.5.1. Criteria of the ADI-R

The ADI-R (Lord et al., 1994), which provides the current gold standard for autism assessment, was not administered in the current study. However, the interests of all participants can be evaluated using the criteria of the ADI-R (solitary engagement, lack of progression, highly narrow, not peculiar). Using these criteria, 15 of the 30 autistic participants and five of the 22 non-autistic participants could meet criteria for a restricted interest on the ADI-R. This is below the prevalence of 75 to 99% autistic

children estimated in previous studies (Klin et al., 2007; Nowell et al., 2021; Turner-Brown et al., 2011). However, specific to the current sample, the semi-structured interview provided participants the opportunity to identify if and how their interest is motivated by a desire for relatedness; this resulted in the exclusion of 15 autistic and 17 non-autistic participants who prefer to engage with their interest with other people rather than doing it alone. These participants who preferred engaging in their interest with other people may still meet the other criteria, such that there is a lack of progression, the interest is highly narrow or circumscribed, and the interest does not meet criteria for an unusual preoccupation.

It may be overly reductionistic to preclude the use of "restricted interest" label for participants whose interests are partially socially motivated. Rather, it may benefit the understanding of restricted interests to evaluate them in terms of their motivation in addition to their manifestation. As such, three general themes were created with influence from research by Vallerand et al. (2003) to characterize and explain different types of interests, their motivations, and their associated behaviours. These are the "Obsessive Passion" Restricted Interest, the "Harmonious Passion" Restricted Interest, and the Typical, Non-Restricted Interest.

3.5.2. The "Obsessive Passion" Restricted Interest

The "Obsessive Passion" restricted interest is present in both autistic and non-autistic children who have an intense and specific interest which meet the following criteria: they are characterized by an intense internal pressure ("need") to engage in their interest, there is repeated and an unusual amount of interference in other activities due to the interest, the person persistently engages in interest activities in spite of negative consequences, the person experiences negative emotions when forced to stop, and the person primarily engages in solitary activities related to their interest. These children present in a manner that is behaviourally and motivationally similar to the obsessive passion, as indicated by the Vallerand et al. (2003) dual model of passion.

In the current study, children who had an "Obsessive Passion" restricted interest tended to have one very specific interest and were uninterested in other recreational or leisurely pursuits. These children were particularly uninterested in activities with others and preferred solitary engagement without interruption. There was some interaction with

other people, such as peers or family, or strangers in an online game, however this was primarily for instrumental purposes (e.g., access to a new video game console that they do not yet own, or an online first-person shooter game requires up to 100 people per round).

Children with an “Obsessive Passion” restricted interest had an internal pressure to develop competency, however this likely led to the development of circumscribed skills, knowledge, or abilities that do not extend beyond the interest itself. The child may use the interest to cope with or escape from negative emotions. The “Obsessive Passion” restricted interest may be peculiar or age-inappropriate, such as an advanced interest in computer programming as a ten-year-old; however, these RIs spanned across a range of typical and age-appropriate topics such as sports, science, and video games.

In the current study, 15 autistic and three non-autistic children were identified as possessing an “Obsessive Passion” restricted interest. The following are two examples of participants from the current study who possessed an “Obsessive Passion” restricted interest in a video game; one participant is autistic (female, age 10) while the other is not autistic (male, age 11).

Autistic Participant Example

“Sam” is a 10-year-old autistic girl who identified a single, intense, and specific interest in the first-person shooter game *Fortnite*. Sam first began playing *Fortnite* when she was nine after she came across a person playing it in a YouTube video. She immediately downloaded the game on her console without parental permission and began playing for an average of 4 or 5 hours each day. Although the game requires up to 99 other people to play simultaneously, Sam did not speak or interact with these online strangers other than to play against them. Sam continued this pattern of intense engagement, stopping only to eat, sleep, and go to school. When Sam was given an iPhone at the start of the previous school year, she downloaded *Fortnite* to her phone and started playing while at school. She played this game in class despite repeated warnings by teachers and parents, until eventually her phone was confiscated by her teacher. Sam was promptly grounded for three weeks and her phone was taken by her mother. Not to be deterred, Sam took the family’s iPad and began gaming in secret. In her interview, Sam admitted to faking illnesses in order to stay home from school to play

Fortnite. She stated that being a gamer was a big piece of her identity and demonstrated a compulsion in her gaming habits.

Non-Autistic Participant Example

"Kevin" is an 11-year-old non-autistic boy who identified a single, intense, and specific interest in the first-person shooter game *Call of Duty*. Although Kevin does not remember when he first began playing Call of Duty, he indicated that much of the time he spent with his friends was focused on playing the game. As new games were released, Kevin's friends moved to other games. Kevin remained steadfast in his dedication to getting better at Call of Duty, spending over 100 hours in June 2019 playing this one game. When asked to explain why he played so much, Kevin stated that he *needs* to get better at quickly aiming and shooting without providing any further elaboration for why he needs to improve. Kevin's parents are divorced, and he spends every second weekend at his father's house. Kevin stated that playing games can provide an escape from sad thoughts related to his parents' divorce, which may motivate his persistent gaming. He stated that this gaming has put a strain on his relationship with his younger brother and his father who both wish to spend more time with Kevin.

3.5.3. The "Harmonious Passion" Restricted Interest

The "Harmonious Passion" restricted interest is present in autistic and non-autistic children, identifiable when the child holds an intense interest that is very important to them without the highly circumscribed and compulsive quality of "Obsessive Passion" restricted interests. The harmonious nature of these interests is characterized by frequent engagement in their primary interest, but there is room for other interests to be held. These harmonious interests are central to the child's identity and who they see themselves to be and are most consistent with the Vallerand et al. (2003) concept of harmonious passions.

"Harmonious Passion" restricted interests are motivated, in part, by competency pursuits. The desire to continuously engage in an interest can be partially motivated by setting and reaching goals, or to develop/refine skills that are applicable to the interest and to areas outside of the interest. Interests can be motivated by relatedness, and enjoyment in the interest is often amplified when engaging with friends and family who share the interest. An interest can be harmonious even if the child does not have social

motivation as long as the child maintains autonomous control of their interest pursuits, is not motivated by compulsion, and does not encounter adverse consequences for engaging in their interest.

"Harmonious Passion" restricted interests may be unusual, such as an interest that is below or above the expected age level. This may lead to social exclusion and bullying; although bullying would be a negative consequence of the child's passion, it does not preclude the ability for it to be harmonious unless the child persistently engages in the activity despite the negative consequence of bullying. If the interest is harmonious, and the child recognizes that they may face bullying or social exclusion for their interest, they will likely refrain from engaging with their interest in environments that would lead to negative consequences.

Central to the "Harmonious Passion" restricted interest is the preservation of the child's autonomy and the lack of interference in other areas of their life due to the healthy integration of this interest into their identity. This is inconsistent with the ADI-R conceptualization of RIs which states that RIs cause interference in various areas of the child's life. However, it is argued that an interest can be very specific and highly intense while maintaining appropriate boundaries such as attending school, completing homework, helping with chores, and attending to other recreation or leisure activities. Autistic and non-autistic children often have respect for following the rules and although their interests and passions are important to them, they also value rule following and doing as they are told.

In the current study, ten autistic and five non-autistic children held "Harmonious Passion" restricted interests. To illustrate the "Harmonious Passion" restricted interest, two participants from the current study are provided as examples: one autistic child (male, age 11) with an interest in tanks and one non-autistic child (male, age 10) with an interest in architecture.

Autistic Participant Example

"Moe" is an 11-year-old autistic boy with a specific interest in the Panzer IV German tanks and the mobile game *World of Tanks*. When Moe was asked to share his favourite thing to do in the world, he stated that he liked to draw, play *Roblox* and *World of Tanks,* and learn about Panzer IV tanks. Moe spends between 30 and 60 minutes

each day playing *World of Tanks*, which is his allotted screen time by his parents for weekdays and weekends, respectively. When he reaches his screen time limit, he chooses to read about tanks, draw tanks or other wartime vehicles, and play with army men toys with his younger brother. Moe stated that he does not play *World of Tanks* or any other game for more time than he is allowed, and he indicated that his interest has not infringed on his ability to do his homework or complete his chores each day after school. Moe stated that he is primarily motivated by his interest to learn more about tanks, develop competency in strategies and techniques to level up in the mobile game, and eventually become an engineer for vehicles used by the army. Moe agreed that his passion for tanks was very important to him and constituted a big part of who he is.

Non-Autistic Participant Example

"Mark" is a ten-year-old non-autistic boy who indicated that his favourite things in the world are to play games with friends and to build, draw, and learn about architecture. Mark self-described his interest in architecture as a "passion" and noted that although other children were not interested in his passion, he maintained friendships through other activities and interests. Mark has known for several years that he wants to be an architect when he grows up and takes any opportunity that he can to visit buildings and photograph or sketch them to develop his skills. Mark stated that his parents supported his interest because he respects the boundaries that they place on prioritizing his schoolwork before he can dedicate time to studying architecture. During his school day, Mark may sketch or daydream about buildings, but only if he has free time. Mark indicated that he was happy to share his passion during the interview and expressed his hope in finding other people in the future who share his passion.

3.5.4. Typical, Non-Restricted Interest

For the majority of non-autistic children and for a smaller portion of autistic children are the interests that are not particularly intense and do not have a high standing in a person's identity of sense of self. While the interests may occasionally interfere with other activities, such as spending a Friday night playing video games past their bedtime or spending time talking about their interest in class when they should be working, the child's pursuits are generally not very time consuming and do not prevent the child from fulfilling their needs and responsibilities.

In the current study, participants who held typical, non-restricted interests had some trouble identifying their top or most favourite interest or thing to do. Although all children did provide their most favourite activity/interest, their description of their associated behaviours, time spent thinking about and engaging in the interest, and contexts of interest engagement indicated that these interests were neither intense nor restricted. They did not indicate that they were fonder of any interest or activity more than another. For example, this was the case for two autistic children who said that animals were likely their favourite interest, but also reported similar enjoyment in multiple pursuits. For non-autistic and autistic children, the regular interest is not one that defined their identity or sense of who they were and was often engaged with in order to play with friends (e.g., video games, sports). In total, five autistic and 14 non-autistic children held typical, non-restricted interests.

Chapter 4. Discussion

The current study explored the restricted interests (RIs) of autistic children to compare them to the interests (typical or restricted) of non-autistic children and the typical interests of autistic children, and to better understand the meaning and purpose of these interests from information provided by children themselves. Three research questions were examined: (1) What are the characteristics of RIs in autistic children, and how do these interests differ from the restricted and non-restricted interests held by non-autistic children; (2) What purpose or meaning do RIs serve for autistic children, and how do these compare to the interests of non-autistic children; (3) To what extent do the interests described by autistic participants align with the Lord et al. (1994) ADI-R conceptualization of RIs (solitary engagement, lack of progression, highly narrow, not peculiar)?

The discussion section provides an overview of the findings by first reviewing the characteristics of participants' interests, the motivations that participants gave for engaging with their interests, and examining these findings with comparison to how interests are defined in the ADI-R. The limitations of the study are evaluated, followed by a reflection on the interpretive phenomenological analysis (IPA) procedures used in the current investigation, and ending with the conclusions of the study.

4.1. Manifestation of Interests

Overall, the results indicate that autistic and non-autistic children possess a range of interests. Most autistic participants easily identified one main or favourite interest in addition to several additional less intense interests. This is consistent with recent research which identified that many autistic people possess two or more concurrent intense or typical interests (Grove et al., 2018; Nowell et al., 2021; Uljarević et al., 2022). Some non-autistic participants in the current study held intense, specific interests similar in topic and intensity to those of autistic participants; however, most non-autistic participants held a range of non-restricted interests. Limited previous research has included a comparison group of non-autistic participants who hold intense interests; however, those studies have found that non-autistic people may hold interests that are similar in topic (Anthony et al., 2013) and intensity (Armstrong, 2014) to their

autistic peers who also possess an intense, specific interest, although this is less prevalent in non-autistic people.

Children in both groups engaged in their interest in similar ways described by previous research (Klin et al., 2007; Nowell et al., 2021; Turner-Brown et al., 2011). These behaviours included learning independently, learning from knowledgeable people, memorizing facts and information, watching videos on YouTube, and reading related to their interest.

The most prominent interest topic was video games in both groups: either video gaming in general or a specific and intense interest in a single video game. Other common interests held by autistic children included specific sports, trains, and animals, among others. Common interests held by non-autistic children included sports and reading, among others. Compared to studies that were conducted 10 to 15 years ago, the findings of the current study are consistent with the increased prevalence of intense and restricted interests in video games and media consumption such as YouTube (Coutelle et al., 2022; Nowell et al., 2021). It would be beyond the scope of the current study to comment on trends in the intense interests of autistic and non-autistic children, however, future researchers and practitioners may be advised to evaluate their own perception of what RIs might look like in modern youth. For example, while intense interests in mechanical objects, machinery, and technology may still be a popular interest in autistic youth, attention should be given to the increasing prevalence of intense interests in video games as to not miss or minimize the potential for highly restricted engagement by autistic youth.

Over half of the autistic participants had a specific memory of when their interest first began, while only a select few non-autistic participants could recall exactly when their interest started. It did not appear to be the case that interests started with an obsessive preoccupation with parts of an object or through sensory stimulation, instead, the interest was relatively consistent at the time of the interview as it was several years prior, as described by the participant. These findings have mixed support in the literature. Armstrong (2014) identified that half of the autistic SI group could identify an initial trigger for the interest, whereas the non-autistic SI group could always identity an initial trigger. The current findings are also inconsistent with Attwood's (2003) hypothesis that RIs might first begin as preoccupation with specific objects before developing into

intense, circumscribed interests. Although the current study is among the first to investigate the initial trigger for interests using information provided from children themselves, it is possible that they have an incomplete recollection of the start of their interest. Future studies would benefit from examining the circumstances around the start of intense interests using both child and caregiver report information.

4.2. Motivation and Reasons for Interests

4.2.1. Relatedness

Interests of children in both groups were motivated by the desire to engage with other people, such as to make or maintain friendships, to access items or activities that they cannot access by themselves, or because they find interest activities more fun with other people than by themselves. Research examining social motivation and strategies for making friends in autistic adolescents supports the findings of the current study, whereby autistic youth might use an interest that they share with another person in order to create opportunities for social interaction (Daniel & Billingsley, 2010; Sedgewick et al., 2016).

Some autistic participants reported a complete absence of motivation to interact with other people to share in interest activities. Likewise, some autistic children would accept others joining in their interest activities, but the participant was uninterested in joining the activities of others. This may be a factor of social anhedonia, or the lack of pleasure derived from social interactions, which is not uncommon in autism (Chevallier et al., 2012; Gadow & Garman, 2020). It may also be that negative past experiences such as bullying had extinguished the desire to interact with others, perhaps out of fear or anxiety for future negative experiences. However, some participants in both groups identified that they were unable to interact with others due to a lack of interest by their peers and by social exclusion; these participants were not the same as those who indicated no social motivation to share interests or interact with other people. Therefore, it is likely the case that some autistic people simply do not have the desire to share their interests with their peers (Chevallier et al., 2012; Gadow & Garman, 2020), while others have the desire but do not have the skills to create social opportunities or are ostracized

or excluded on the basis of some personal trait or characteristic (Boucher et al., 2022b; Causton-Theoharis et al., 2009; Cresswell et al., 2019).

Ultimately, engaging with RIs can be motivated out of the desire for social interaction and to fulfill relatedness needs similar to the description by Deci and Ryan's (1980) *Self-Determination Theory.* However, not all children can fulfill their relatedness needs due to bullying and exclusion. Some of these autistic children show a strong social motivation and desire to interact with their peers, and shared interests have been identified by autistic children in previous research as viable and effective strategies to make friends (Daniel & Billingsley, 2010; Sedgewick et al., 2016). In fact, previous researchers have demonstrated that using interests shared between autistic and non-autistic youth can facilitate play and social interactions (Boyd et al., 2007; Ninci et al., 2018; Ninci et al., 2020), which may lay the foundation for the development of social communication skills and friendships.

4.2.2. Competency and Autonomy

Autistic and non-autistic participants of varying interest intensity levels identified that the development of skills and setting and achieving goals was a motivating factor for engaging with their interests. This supports the findings by Grove et al. (2016) who identified that competency strivings are a motivating factor for engaging in intense interests by autistic adults. Also alluded to by Grove et al. was that autonomy underlies competency strivings as the individual is intrinsically motivated to pursue their interest, develop skills and learn about their interest, and take on challenges related to their interest. In contrast, a portion of autistic and non-autistic participants demonstrated a lack of autonomy in their interest activities. Instead, it appeared that these children were motivated by an internal pressure to engage in their interest. This is consistent with the concept of obsessive passions by Vallerand et al. (2003), where an individual feels compelled to engage with a specific and limited range of activities out of an internal pressure.

In the current study, both participants who demonstrated autonomy (the absence of pressure to engage in an activity) and participants who demonstrated internal pressure (feeling the *need* or *compulsion* to engage in an activity) showed competency strivings, although for different reasons. Those who showed a healthy integration of their

interest into identity, such that it was a harmonious passion, showed greater autonomy in engaging in their interest. They desired the development of competency to acquire skills that they found helpful towards solving problems, skills that can be applied to other areas of their life (e.g., problem solving in social interactions), and skills that can be applied to their future career (e.g., engineer). Conversely, those with an internal pressure to engage had undermined their autonomy because they felt compelled to improve highly circumscribed skills or to develop a limited range of knowledge in their specific interest. These participants are best described as having an obsessive passion (Vallerand et al., 2003). More autistic participants than non-autistic participants fell into the group of participants with minimal autonomy and internally pressured competency strivings. This finding supports preliminary research investigating harmonious and obsessive passions in autistic adolescents and adults indicating a “flow” state may be present across both harmonious and obsessive passion groups (Meilleur et al., 2022). Despite both groups reaching flow states, Meilleur et al. identified that harmonious passions had greater positive effects on optimal functioning (e.g., well-being, physical health, interpersonal relationships, performance). Along these lines, Grove et al. (2018) reports a similar finding that a proportion of their autistic participants’ high intensity of interest engagement was negatively related to a measure of well-being. More research is needed to understand the relationship between autonomy, internal pressure, competency, and the effects on well-being.

A unique finding of the current study was that some autistic and non-autistic participants were motivated to acquire more knowledge or improve their skills in order to teach other people. The desire to teach other people represents a relatively advanced level of social knowledge and social motivation. It demonstrates that the child has the ability to recognize and respond to the implicit or explicit desires of other people to learn more about something, the skills to effectively disseminate information or teach skills, and the desire to then provide these skills and knowledge to other people. It is possible that the motivation to develop competency in order to teach others may occur when the psychological need for competency is fulfilled while the need for relatedness is not. Additional research is needed to understand and explain the motivation for peer-instruction when pursuing interests.

4.2.3. Coping with Negative Emotions and Situations

Beyond the findings consistent with Deci and Ryan's (1980) *Self-Determination Theory* was the finding that participants were motivated to engage in their interest for the purposes of coping with negative emotions or to cope with life events or situations. Similar to findings by Armstrong (2014) and Winter-Messiers (2007), some autistic and non-autistic participants viewed interests as a way to escape the difficulties that they faced in their everyday life. For some participants, engaging with their interest appeared to be a maladaptive coping response to anxiety and stress that they experience within their family and at school. This is consistent with research by Spiker et al. (2012) who suggested that intense engagement with interests might be a default response for coping with negative emotions in the absence of more effective coping strategies. They posit that using RIs to cope provides temporary relief from negative emotions but may contribute to increased risk for mental health challenges.

It is plausible that persistent use of RIs to cope with negative emotions instead of alternative, adaptive coping responses might contribute to the internal pressure one experiences to engage with their interest. This may occur outside of the child's immediate awareness; if they persistently "escape" negative affect and negative events in order to alleviate distress, then the pattern of using RIs to control emotions can reinforce the belief that RIs must be pursued otherwise uncomfortable feelings and thoughts will occur. Research investigating obsessive passions has identified that people are more likely to turn to their intense passion when their psychological needs are not satisfied in important areas of their life (Lalande et al., 2017). For example, when one's needs for relatedness, autonomy, and competency are not fulfilled at school or work, the individual experiences an internal pressure to engage with their interest. In the context of RIs, if a child is struggling to fulfill psychological needs at school or in the family, then obsessive engagement with their interest may be a response to attempt to meet those psychological needs or cope with the resulting negative affect.

Although there is no panacea to the negative emotions and challenging situations faced by autistic and non-autistic children, it may be of value to promote effective coping strategies when RIs are used to deal with stress, anxiety, and uncertainty. For example, cognitive-behavioural therapy (CBT), which provides clients with the skills to recognize negative thoughts and feelings and respond with adaptive behaviours, has been

effective in improving regulation of anger and anxiety in autistic children (McNally Keehn et al., 2013; Scarpa & Reyes, 2011). Caregivers may also serve an important role in helping their child cope with negative emotions. Parents of autistic children are generally found to respond with support and empathy to their autistic child's negative emotions (Bougher-Muckian et al., 2016; McIntyre et al., 2022). However, when parents and family life are disrupted and in conflict (e.g., divorce), the capacity for effective coping strategies for both children and caregivers is diminished (Piro-Gambetti et al., 2021). Therefore, it may be beneficial for families to understand the possible antecedents of the maladaptive coping behaviours of RIs in order to better address and promote effective emotion regulation.

4.3. Beyond the ADI-R Conceptualization of Restricted Interests

Fewer autistic children in the current study met criteria for a restricted interest than was found in previous studies (e.g., Klin et al., 2007; Nowell et al., 2021) when the sample was evaluated using ADI-R criteria. Most autistic children in the study reported at least one interest that was specific, intense, and was the focus of much of the child's activities, thoughts, and conversations. However, the criteria of social isolation and interference in activities of daily living on the ADI-R precludes several of the participants' interests from meeting full criteria. In the current study, it was identified that most autistic children reported some level of social motivation related to their interest. Similarly, only a portion of autistic participants identified that their interest causes significant interference in other important areas of daily living. Although the other criteria may be met, many participants in the current study do not technically meet the ADI-R criteria as it is currently defined.

Perhaps most consistent with the ADI-R conceptualization of RIs within the interest and motivation literature is the Vallerand et al. (2003) concept of obsessive passions. As previously stated, obsessive passions are the relentless pursuit of an interest to the point where it overpowers the person and their self-control. Activities are engaged in rigidly and without compromise, are often the focus of the person's thoughts and conversations, and engaging with the interest is so intense that it prevents or demotivates the person from fulfilling other needs and responsibilities such as self-care, school, and work. Often, the person's self-worth and sense of identity is wrapped up in this obsessive passion, which creates an internal pressure to engage in related activities

regardless of potential consequences. When considering the description of RIs in the ADI-R by Lord et al. (1994) and by other researchers (e.g., Klin et al., 2007), the obsessive passion is consistent with their idea of an all-consuming pursuit of a limited range of interest activities which interferes in the child's activities of daily living.

In contrast, interest pursuits that are intense but involve a healthy integration into identity and sense of self can be harmonious passions (Vallerand et al., 2003). Rather than being motivated by an obsessive internal pressure to engage in the interest, a harmonious passion is maintained and motivated through autonomy and the willful engagement in interest pursuits. The person maintains balance between other areas of their life; while the passion has a high status in the person's identity or sense of self, their passion does not interfere with their ability to meet their needs, attend to their various responsibilities, or hold other interests.

If the purpose of identifying the presence of RIs in autism is to evaluate the interest's impact on well-being and functioning in various areas of life, then the ADI-R criteria is insufficient. RIs are a prevalent behaviour that can be identified by doctors, clinicians, and teachers as a symptom of ASD. The ADI-R is a very effective tool for assessing whether there is or is not the presence of a highly intense interests that causes clinically significant levels of interference in the person's life, as identified in the diagnostic interview with parents. Beyond the classification of whether someone does or does not have a restricted interest is the evaluation of the potential consequences (both positive and negative) on the person, their relationships, and their well-being. Evaluating RIs along the lines that I described, as influenced by the *Dualistic Model of Passion* (Vallerand et al., 2003), can be helpful to predict possible influences on well-being and understanding the motivations that children have for engaging with their interest. Parents may not have access to their child's unspoken motivations for engaging in interests, so clinicians may want to consider asking children about their interests directly.

4.4. Limitations

The current study has a few limitations. Selection bias, which is the systematic differences between participant groups, must be considered as a threat to internal validity (Kazdin, 2016). The autistic group has an average IQ that is slightly higher than the population. Autistic people with average and above average intellectual abilities have

been previously shown to hold restricted interests that are characterized by fewer sensory or repetitive behaviours (Anthony et al., 2013), although recent research does not support this relationship (Uljarević et al., 2022). Therefore, it is not known whether the inclusion of autistic participants with below average intellectual abilities may have influenced the findings of the current study. Autistic participants in the current study also have fewer behavioural disorders and medical conditions that are relatively common in ASD, such as oppositional defiant disorder or physical disabilities. Autistic youth with these conditions may have different motivations or reasons for engaging in RIs, such as to cope with their medical or behavioural challenges.

A similar potential for selection bias is present for non-autistic participants in the current study. A portion of non-autistic participants have autistic family members (siblings, cousins) which may have been a reason for attending the free camp for autistic and non-autistic children. Furthermore, although the range of family income was similar between autistic and non-autistic children, approximately half of participants' families reported their family's income to be higher than the Canadian national average of $57,700 and higher than the national median of $66,800 (Stats Canada, 2022). Families with higher income and socioeconomic status may influence the types of activities available to the child. For autistic children, this may extend beyond hobbies and influence the therapies and interventions that are available to them, such as social skills training, which could influence the motivations and characteristics of interests reported in the current study.

The data in the current study was collected in July 2019. Due to constraints caused by the COVID-19 pandemic, the sample contains fewer participants than was originally anticipated. This is particularly true for non-autistic participants who possess RIs and for autistic participants who do not possess RIs. However, I believe that the current participants provided data that was insightful and sufficient for the data analyses conducted in this study. Future research should aim to include a greater number of negative case participants to strengthen group comparisons, along with proactively following the principles of data saturation if relevant.

Given that data was collected in July 2019, it is unknown whether I would reach similar conclusions about the interests and motivations for interests than if I collected the data sometime between 2020 and 2022. Video gaming, a major interest in the current

study, had increased significantly during the COVID-19 pandemic (Donati et al., 2021). It is possible that video games might now be a primary interest for more preadolescent children than before as other interests could not be pursued (e.g., sports). Game usage and addiction increased significantly during the COVID-19 pandemic (Han et al., 2022); it is plausible that increase game use and addiction has led children who otherwise had harmonious and healthy passions for video games towards circumscribed and obsessive passions. The motivation for gaming during that time might have changed when compared to pre-pandemic motivation; for example, Han et al. (2022) identified that children and adolescents increased their gaming during the COVID-19 pandemic because they feared missing out in social interactions and due to increased feelings of loneliness.

4.5. Study Context

The use of IPA in the current study provided a way to scientifically examine the lived experiences of participants and to make sense of their data in an organized way. Inherent to this analysis is the subjectivity of each participant's thoughts and experiences from their own interaction with the world, which I explored through the semi-structured interview. Given the constitution of the study's data from the subjective experiences of participants, the context of their lived experiences and of my analysis must be considered.

As previously stated, this study represents a small slice of the possible experiences of autistic and non-autistic children, in terms of the participants' age, socioeconomic status, cognitive ability, geographical location, and time in history, among other variables. The Western-Canadian, urban, English-speaking sample is likely to have had experiences that are both similar and dissimilar to youth in other settings. Similarly, the study was collected in 2019, prior to the COVID-19 pandemic, and analyzed in 2021 and 2022; I am unable to state how this momentous experience shaped how children engage in their interests and the extent to which the findings hold true in a post-COVID-19 world. Both myself and the graduate student who provided support in analyses have training and experience in clinical child psychology, quantitative analysis, and qualitative analysis which may influence how we approach the interpretation of findings relative to other researchers. For these reasons, it is beyond the scope of IPA and the current study to generalize to any person, group, or context

beyond that of the current study. Rather, it is encouraged that readers of this paper consider the sample and methods employed in this study and personally evaluate the relevance to themselves and to their own experiences.

It is also beyond the scope of the current study to generate any models to further explain, hypothesize, or attribute causes for the descriptive and qualitative findings of the study. First, previous studies have already provided thorough investigations into the motivational and cognitive processes that are thought to underlie the development and maintenance of interests in autism; see Armstrong (2014) and Carter et al. (2020). Second, the current study aptly captures the specific experiences of the sample as intended using the semi-structured interview; while a replication and extension of a previously created motivational model of RIs would be an important contribution to the field of autism research, this would likely require a qualitative orientation other than IPA (e.g., grounded theory). Therefore, while the current study does not offer a more in-depth of explanation into the *"how"* of the motivational processes discussed above, it succeeds at capturing the individual participant's insight into their experiences and what meaning they have created from these experiences.

Ultimately, IPA was reasoned to be the best choice to examine the research questions of the current study. First, I sought out a large quantity of diverse experiences of people from specific groups of which I am not a member. While a narrative approach would allow for in-depth interviews and investigations to create an in-depth story of participant's experiences with restricted interests, it is not appropriate (or feasible) with more than two or three participants (Bhattacharya, 2017). For similar reasons, a case study would be insufficient for the current study. Second, given that I am an adult who is temporally removed from the age range of the current sample, an ethnographic approach would be inappropriate as I cannot immerse myself into the life and culture as a participant-observer. Finally, while there are quantitative measures that have empirical support in measuring the motivation for engaging with RIs (e.g., Grove et al., 2016), such measures have not been adapted or validated for youth. Furthermore, these questionnaires do not provide the depth and insight into the individual experiences of participants that was desired for the current study. While this is not an exhaustive list of methodological orientations that could have been followed for the current study, it highlights the strengths of utilizing IPA within the context of this investigation.

4.6. Conclusions

Overall, this study provides an exploration of the manifestation and motivations for the intense interests of autistic and non-autistic children which enriches our understanding of RIs in autism. It was identified that many autistic children may be motivated to engage in their interest for social purposes similar to those identified for non-autistic children. Similarly, fulfillment of the psychological needs for relatedness, competency, and autonomy can be motivators for RIs held by autistic children, which builds on previous research investigating the reasons for RI engagement (Armstrong, 2014; Grove et al., 2016). This study is among the first in the field to explore the concepts of obsessive and harmonious passion to better understand RIs, which begins to provide insight into *how* and *why* some RIs may be highly intense, interfering, and negatively affect well-being, while other interests provide positive benefits to well-being and one's sense of self.

One major strength of this study was the focus on collecting and interpreting the lived experiences of autistic youth to better understand this highly prevalent phenomenon. This provides the opportunity to gain insight into the unobservable thoughts, emotions, and motivations that are typically inaccessible with parent-report measures. Another strength is the inclusion of negative cases of autistic participants who do not possess RIs, and the inclusion of non-autistic participants who do and do not possess RIs. These participants enabled a comparison of the motivational factors that underlie interests in autistic and non-autistic children; this analysis contributes to the ongoing efforts to destigmatize RIs and to explore the strengths and benefits of these interests in autism.

Future research may look to expand upon the findings of the current study, particularly to understand the differential effects that harmonious and obsessive RIs have on the well-being of autistic youth. Likewise, clinicians, teachers, and service-providers may benefit from identifying the motivating factors driving a child's interest. For example, interests that are motivated to fulfill relatedness, competency, and autonomy psychological needs can be utilized to facilitate the development of interpersonal skills and learning in various academic and peer contexts. The current study is limited by data collection pre-COVID-19 which may have influenced the characteristics and motivational factors for interests, and the potential for selection bias in the sample of autistic and non-

autistic participants. The current study, nonetheless, provides a unique insight into the intense and restricted interests of autistic youth which benefits our understanding of the manifestation and motivations for these highly prevalent interests in autism.

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Appendix A. Consent and Assent Documents

Consent Form

DEPARTMENT OF P SYCHOLO GY
Autism & Developmental Disorders Lab
Simon Fraser University
RCB 5213, 8888 University Drive
Burnaby, BC, V5A 1S6
Phone: 778-782-6746
Fax: 778-782-3427

Consent Form – [2019s0072]

Special Interests Interviews in Children with and without ASD

Principal Investigator: Dr. Grace Iarocci, Professor, Department of Psychology, Simon Fraser University, Phone: [removed], Email: [removed]

Co-Investigators: Dr. Nichole Scheerer, Postdoctoral Fellow, Department of Psychology, Simon Fraser University, Phone: [removed], Email: [removed]

Troy Boucher, Honour's Program, Department of Psychology, Simon Fraser University, Phone [removed], Email: [removed]

Nicole Kauppi, Honour's Program, Department of Psychology, Simon Fraser University, [removed], Email: [removed]

Introduction and Purpose:

This study explores the relationship between social behaviours, special interests, and speech in children with and without Autism Spectrum Disorder (ASD).

Study Procedures:

If you choose to participate, you will be asked to report information about your child's personality traits as well as their behaviours in social situations, interests and hobbies, and language use. This information will be collected through various questionnaires that will include questions including basic demographic information, information about your child's personality traits, questions about how they feel in social situations, and information about their social behaviours

and social motivation. If you are unable to answer any questions on these questionnaires or wish not to answer, you may proceed to the next question without answering.

If you allow your child to participate in this study, he/she will be asked to complete a brief cognitive test where they will be asked to solve a puzzle and complete a vocabulary test. Your child will then be asked to participate in an interview about their hobbies and interests, and the activities they do related to these interests and hobbies. Your child will be taken to a separate room with a researcher to complete these tasks. Your child will receive a small toy for their participation in these activities.

Your child's time commitment, should he/she choose to participate, will be approximately 1.5 hours. You time commitment, should you choose to participate, will be approximately 1 hour. All of our staff and volunteers have undergone research training, criminal records checks, and have experience working with children. We cannot provide you with information about your child's performance on questionnaires or tasks as results are for research purposes only. However, if you wish, we are happy to send you a summary of our overall findings of the study. If you would like to obtain information about the overall findings, please contact the Autism and Developmental Disorders Lab by email at addl@sfu.ca or by phone at (778) 782-6746.

Dissemination of Results:
Overall findings based on group data from the study may be published within academic journals or presented at scholarly conferences. Overall findings in the current study may also be published within the ADDL annual newsletter in order to communicate results to individuals who participated in the study. Overall findings may also be used in educational presentations or for teaching purposes.

Confidentiality:
If you choose to participate, confidentiality of your questionnaire data will be assured. All data collected form this survey will be password protected on the Qualtrics server, and if downloaded, will be stored on a secure server in our lab. Only the principal investigator and her assistants will have access to this data. The data will have identifying information removed and coded by a numeric system, then analyzed as group data. Data, including the consent form, will be stored until 2030. Your privacy will be protected in any scientific publication or presentation resulting from this study and individual participants will not be identified.

This online survey is hosted by Qualtrics, which is US owned, and as such is subject to US laws including the US CLOUD Act and US Patriot Act. These laws allow government authorities to

access the records of host services and internet service providers. If you choose to participate in the survey, you understand that your responses to the survey questions will be potentially accessed in the US. However, the likelihood of the US government exercising their power to access data is very low in this case. The security and privacy policy for the web survey company can be found at the following link: https://www.qualtrics.com/security-statement/

There are no known risks involved in participating in this study. There are no immediate benefits to participating in this study. The findings are expected to identify motivational differences to engage in restricted and specific interests between individuals with and without autism, which may inform future programs for strengthening social skill development using the child's intrinsically motivated interests.

Contact for information about the study:
If you have any questions about this study or would like more information, please contact Dr. Grace Iarocci by phone at (778) 782 6746 or email addl@sfu.ca.

Contact for concerns about the rights of research subjects:
If you have any concerns about your treatment or rights as a research subject and/or your experiences while participating in this study, you may contact Dr. Jeffery Toward, Director, Office of Research Ethics by phone at (778) 782-6593 or email at jtoward@sfu.ca.

Consent:
Participation in this study is entirely voluntary. If at any point you or your child wish to withdraw from the experiment, before or after agreeing to participate, there will be no penalty and there will be no adverse effects on your ability to participate in future studies.

One section of the study will require your child to be videotaped. This data will be kept confidential. Do we have your permission to videotape this section of the study with your child?

YES **NO**

Sometimes we will contact participants after they have participated in order to clarify information (e.g. if there is a part of the data that is missing or unclear such as a missed item on a questionnaire). Do we have your permission to contact you in the future if such an instance arises (please circle one):

YES **NO**

In addition, the data may be stored for use in future research studies. Only de-identified data will be utilized in this case. Again, any of your personal information (i.e. your name, address, telephone number) that can identify you will be removed prior to the use of this data. Do we have your permission to use your data for future studies?

YES **NO**

Please feel free to email us with any additional questions you may have about the study. Your signature below indicates that you consent to participate in this study as outlined in the form above.

Your Name (First and Last Name): _____

Signature: _____ Date (mm/dd/yyyy): _____

Your signature below indicates that you consent for your child to participate in this study as outlined in the form above.

Your Child's Name (First and Last Name: _____

Your Name (First and Last Name): _____

Signature: _____ Date (mm/dd/yyyy): _____

Assent Script

DEPARTMENT OF P SYCHOLO GY
Autism & Developmental Disorders Lab
Simon Fraser University
RCB 5213, 8888 University Drive
Burnaby, BC, V5A 1S6
Phone: 778-782-6746
Fax: 778-782-3427

Assent Script – [2019s0072]

We are trying to learn about children's interests and hobbies as well as what they like to do in their free time. Are you willing to come talk with me about these things?

We also want to ask you to tell us what some words mean and help us solve a picture puzzle. Are you willing to come do this with us?

You can talk as much or as little as you want to. If there are any questions you do not want to answer, then we don't have to talk about it. If at any point you decide that you do not want to talk anymore, then we can finish our conversation. Do you have any questions?

Would you like to come with me and talk about your interests?

Researcher use:

CHILD NAME: _____

DATE: _____

WAS ASSENT GRANTED OR DENIED? (CIRCLE ONE)

ASSENT GRANTED **ASSENT DENIED**

Phone Call Script for Determining Study Eligibility

SFU SIMON FRASER UNIVERSITY
ENGAGING THE WORLD

Phone Call Script for Determining Study Eligibility

[2019s0072]

Hello, thank you for your interest in our study. We have a few questions to determine whether you and your child are able to participate in this study.

1. First, how old is your child? _____
2. Do they have a diagnosis of Autism Spectrum Disorder? _____
3. Is your child able to have a conversation with others? For example, can they respond and maintain a conversation? _____

Are all three criteria met? **YES** **NO**

Appendix B. Parent-Report Questionnaires

Demographics Questionnaire

Today's Date (month, day, year): _____

Name of person completing this form (first, last): _____

Relationship to child: _____

Name of **child** in study (first, last): _____

Birth date of **child** (month, day, year): _____

Gender of child: _____

Please list both and check which form of contact is most preferred

☐ Telephone: _____ ☐ Email: _____

Please select handedness of your child: ☐ Left ☐ Right

Do they wear glasses? ☐ Yes ☐ No

Are they colour blind? ☐ Yes ☐ No

What is your child's cultural or ethnic background? (E.g., Italian, Métis, Cantonese,

English, Canadian): _____

Child's parents are:

☐ Single ☐ Married ☐ Common Law ☐ Divorced ☐ Separated

With whom does the child live?

Name	Age	Date of Birth	Relationship (e.g., mother, brother, aunt)

Approximate gross family income:

□ Less than $20,000 □ $20-49,999 □ $50-79,999

□ $80-109,999 □ $110-139,999 □ Greater than $140,000

Which of the following does your child attend?

□ Child attends public school

□ Child is Home-Schooled

□ Other: _____

What grade is your child entering in September? _____

DIAGNOSTIC & MEDICAL INFORMATION

Does your child have any diagnosis? Please check one or more of the following:

□ **Autism Spectrum Disorders** (e.g., Autism, Asperger's Syndrome, PDD-NOS (Pervasive Developmental Disorder- Not Otherwise Specified)

□ **Other** (Please state all e.g., Intellectual Disability; ADHD, anxiety disorder, depression, learning difficulties, sleeping disorder): _____

□ **No Diagnosis**

Has your child had a:

□ Brain Injury

□ Brain Surgery: if yes, please state date and reason:
_____

□ Metal Implant

Does your child have **any other medical conditions**? (E.g., epilepsy, eczema, etc.):

□ Yes □ No

If Yes, what are they? _____

Does your child take any prescription medications regularly?

☐ Yes ☐ No

If Yes, please list: _____

Do any other family members experience significant medical or emotional problems, in particular, Autism Spectrum Disorder?

☐ Yes ☐ No

If Yes, please explain:

_____

*** If your child has <u>any diagnoses,</u> please complete questions (a), (b), and (c):**

a) Where was your child diagnosed: _____

b) Professional who diagnosed your child? _____

c) When was your child diagnosed (year and age)? _____

What kind of professional diagnosed your child?:

☐ Pediatrician ☐ Family Doctor ☐ Psychologist ☐ Psychiatrist

☐ Diagnosis received through the British Columbia Autism Assessment Network (BCAAN)

List all current professional services received: _____

_____

Which agency provides your family with funding for services?

☐ BC Ministry of Children and Family Development (Autism Funding Program)

☐ Community Living BC ☐ None ☐ Other

If 'Other,' please specify: _____

LANGUAGE INFORMATION:

Primary language spoken at home (First language): _____

Other language(s) spoken (Second Language): _____

What language(s) is your child fluent in? _____

Please list the approximate number of hours per week your child listens to the following:

Note: Children are usually at school 35 hours per week

- Listen to conversations in the *first* language (e.g., watching or overhearing people speaking, being read stories): _____ hours per week
- Listen to the *first* language (e.g., television, music, radio, internet): _____ hours per week
- Listen to conversations in the *second* language (e.g., watching or overhearing people speaking, being read stories): _____ hours per week
- Listen to the *second* language (e.g., television, music, radio, internet): _____ hours per week

*** If more than one language is spoken, please answer (a) and (b):**

a) How old was your child when he/she started hearing two or more languages on a regular basis? _____

b) How often is your child exposed to their second language?

□ Daily □ Weekly □ Monthly

In general, is there any other information we should know about your child?

Thank you very much for completing this form!

Autism Spectrum Quotient – Child (AQ-Child)

Sent by email in PDF format.

Autism Spectrum Quotient – Adolescent (AQ-Adolescent)

Sent by email in PDF format.

Social Responsiveness Scale, 2nd Edition (SRS-2)

Sent by email in PDF format.

Wechsler Abbreviated Scale of Intelligence, 2nd Edition (WASI-II)

Sent by email in PDF format.

Appendix C. Interview Questions for Children and Youth

SPECIAL INTEREST AREA RESEARCH STUDY—INTERVIEW QUESTIONS FOR CHILDREN AND YOUTH

Rapport-Building Questions:

1. What is your name? What grade are you in? What school do you go to?

2. What did you eat this morning for breakfast?

3. What is your favourite food, and why do you like it?

4. What food do you like the least, and why do you dislike it?

5. How are you enjoying your spring break / summer vacation? Do you have any things planned?

Special Interest Questions:

1. Tell me about your most favourite thing in the whole world.

    Prompts, if needed, or wording for older students:

    - What do you like to do best?
    - What is your favorite thing to do?

2. What do your parents think your favorite thing is?

3. How long has (answer to Question 1) been your favorite thing?

4. Do you remember how you started liking (answer to Question 1)?

    Prompt, if needed:

    - Tell us (more) about that.

5. When do you like to think about (answer to Question 1)?

6. What do you like to tell people you meet for the first time about (answer to Question 1)?

7. What do you wish that other people knew about (answer to Question 1)?

8. What is your favorite way to learn about (answer to Question 1)?

    Prompts, if needed:

    - Reading books

□ Going to the library

□ Doing Internet activities

□ Watching television

□ Watching DVDs

□ Asking other people

□ Asking experts

9. How much time do you spend each day thinking about (answer to Question 1)?

Prompts, if needed:

□ 1 hour

□ 2 hours

□ 3 hours

□ More than 3 hours

□ A little bit of the time

□ Some of the time

□ Most of the time

10. Do you ever talk to kids about (answer to Question 1)?

Prompt, for adolescents:

□ Peers

11. Do you mainly play with (answer to Question 1) by yourself or do you play with others?

If yes, with who?

12. How do you feel when you are told to stop playing with (answer to Question 1)?

13. What do your parents think about (answer to Question 1)?

Prompt, if needed:

□ Do they like to play with you?

□ Do they not like when you play with it?

14. What do you want to be when you grow up?

Prompt, for middle and high school students:

- What do you want to be after you finish high school?

15. Is there anything else you want to tell us about (answer to Question 1)?

16. Is there anything else you want to tell us about you?

    If yes, prompt, if needed:

    - Please tell us more.

Appendix D. Converging items on Yale Special Interest Survey and Special Interest Interview

Yale Special Interest Survey Question	Interview Question(s)
Q5. Which of these interests was the most intense?	Q1. Tell me about your most favourite thing in the whole world Q2. Why is _____ your favourite thing? Q3. Is _____ your only favourite thing? Do you have a few favourite things? Q4. What do your parents think your favorite thing is?
Q11. Some children seem to become interested in a topic at a certain moment, such as watching a movie about the topic or meeting someone whose work involves the topic. Was this the case for your child?	Q7. Do you remember how you started liking ___?
Q12b. How did your child react or feel when they were told to stop engaging in their interest?	Q12. How do you feel when you are told to stop playing with/doing _____?
Q13. When left by himself/herself, how much time did your Elementary School age child spend on their interest(s)?	Q14. How much do you do _____ by yourself?
Q15. How much of your Elementary School age child's interaction and conversation with his/her immediate family was related to the special interest?	Q17. How much of your time do you spend doing ____ with your family, like your siblings or parents? Q18. Do you ever talk to (other) people about ___ or do ____ with them?
Q18: How much of your child's interaction and conversation with his/her Elementary School age peers and friends was related to the special interest?	Q8. Who do you do _____ with? Q18. Do you ever talk to (other) people about ___ or do ____ with them?
Q20: How much of your Elementary School age child's interaction and conversation with other adults (such as parent's friends, new acquaintances) was related to the special interest?	Q19. Are there any adults that you do _____ with? Who are they? Q20. How much of your time do you spend doing ____ with that person?
Q24. How did you feel about your child's special interest as it developed?	Q16. What do your parents think about _____?

Appendix E. Transcription Instructions

Example in Transcription	Information for Transcription
Participant ID: Transcribed by: Checked by: Interview Transcription 1. C: 2. R: 3. C:	• Label participant ID and name of the transcriber • Each new number is when a new person starts talking no matter how many lines it takes up. If a child talks for two minutes consecutively without interruption, then that still remains the same line number. • Mark [name] if a personal or private name is mentioned to keep anonymity, such as name of the child, name of family members, name of school, name of friends, etc. • It is helpful to write the context of that person's name and their relationship to the child, such as [child's friend] or [child's brother]. • If the researcher's name is used, type in [researcher's name]. • Whoever is checking the transcription will need to look line by line to ensure that the words and the various behaviors, sounds, and emphasis the child and researcher make are correctly entered.
1. R: Your mom said you like to watch washing machines, do you — 2. C: {child slouches down in chair} 3. R: Can you please sit up nice and tall for me?	• Transcribe {behaviours} in which the child is not sending non-verbal communicative, i.e., they are engaging in a behaviour *not* for the purpose of communication.
1. R: What is your favorite food? 2. C: I really like uh when- to eat {unintelligible 1:09}	• Write {unintelligible 8:25} if words or phrases cannot be heard and mark the time in the video so another person can check it.
4. R: So you like to play basketball with [your friends?] 5. C: [With my friends and my sister!]	• If someone talks over another, then use brackets as shown in the example.
7. R: He likes dominoes- so do you — 8. C: — No I don't like dominoes at all.	• If someone is cutoff use a double dash "—" at the end of the utterance to show they were cutoff.

Example in Transcription	Information for Transcription
1. C: Can I have that back now? {asking for toy ball back from the researcher} {exits chair and stands next to researcher} 2. R: Can you answer a few more questions for me?	• Use {…} when describing helpful information to put the words in context
10. C: I don't really – no don't – I don't – my mom – watches – no to I only go- go it myself {"I only play with it myself"}	• When speech is garbled or segmented, write it as they actually said it and then write what they are trying to say in {..} • If the child has false-starts or stutters, summarize it using dashes
11. C: I REALLY don't like playing with my brother. 12. R: Why don't you like playing with him? 13. C: Well…cause he's my BROTHER!	• Use CAPITAL LETTERS to indicate emphasis on sounds, words, or phrases.
14. R: Why doesn't your mom let you play Fortnite? 15. C: Well she doesn't know but sometimes people say… <whispering> bad words like the f word and she doesn't let me use that word </whispering> 16. R: <whispering> so do you copy the bad language in the game? </whispering> 17. C: No I don't because my mom would say <imitating shrill voice> no saying bad words in my house </imitating> 18. R: Is that what she would say? 19. C: Well… she would probably <fast> send me to my room </fast>	• Utterances that are spoken in a particular mode (such as fast, soft, whispered, read, etc.) and are notably different from the speaker's normal speaking style should be marked using <pointed brackets>
1. R: So {clears throat} I'm [researcher] and I'm trying to learn about all the interests that kids have {coughs} 2. C: {smacks lips} I really like Lego	• Indicate {speaker noises}, such as coughing, sneezes, sniffles, or throat clearing
3. R: So you really like to play with Lego? 4. C: <nods head> 5. R: So just by yourself or with – 6. C: <shakes head> 7. R: - oh so you want to play with other people? 8. C: Yes I do- I- I play with my brothers	• Use <pointed brackets> to indicate non-verbal communication such as nodding or shaking the head
1. R: Okay, next question {pause 3 seconds} is {clears throat} do you remember when or how you started liking history? 2. C: Mmm {pause 5 seconds} no.	• If a speaker pauses for more than one second, use {pause 2 seconds} to indicate the length of time that they paused

Appendix F. Example Codes, Themes, and Definitions

Example Codes	Subordinate Theme	Superordinate Theme	Definition
Feels good/fun to do with family Feels good/fun to do with peers More fun with others than alone	"It's more fun with people"	**Social Engagement and Interaction**	Instances where the participant mentions specific behaviours, feelings, thoughts, and motivations related to interest engagement in interactions with other people.
Helps make friends Helps keep friends	Shared interests create new friendships		
Interact w/ others to access objects Interact w/ others because activity needs more than one person	Social engagement for instrumental purposes		
Not doing what others want to do Not initiating interaction with others	Lack of reciprocity in sharing interests		
No one else is interested in interest No one likes me	“No one wants to play with me”: Unfulfilled relatedness motivation		
I don't want to do it with someone else I don't need friends	Absence of relatedness motivation		
Setting goals I like the challenge	Enjoyment from setting goals and overcoming specific challenges	**Skill Development**	Instances where the participant mentions the development of competency and skills related to their interest activities.
Skill development for reason beyond interests	Improving general and transferrable abilities		
Teaching and helping others w/ interest	Developing skills and then teaching others		

Example Codes	Subordinate Theme	Superordinate Theme	Definition
"NEED" to get better Always thinking about it "NEVER" stop on my own	Internal pressure to engage with the interest	**Internal Pressure and Obsession**	Participant describes an internal compulsion/motivation to engage in interest activities which provide insight into obsessiveness, circumscribed engagement, and interference in their life.
Consequence - bullied Consequence - grounded/ reprimanded by parents	Intrinsically motivated despite negative consequences		
"Escape" sentiment "Only thing that makes me happy"	“It’s an escape”: Primary coping strategy for negative emotions and situations	**Escape**	Instances where the participant indicates that their interest serves the purpose of escaping or coping with negative thoughts, feelings, emotions, or situations/life events.