

Gifted children: What and how to care?

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Abstract

Gifted children may have a greater risk of experiencing mental health and socio-behavioural issues than the general child population. The present study investigates the protective and risk factors for the mental health and sleep patterns of gifted children and aims to determine if Meaning Mindset (MM), Mental Wellbeing (MWB), Sleep Patterns, Social Support, and Strengths and Challenges among gifted children are interrelated. Participants (N=17, 12 boys, 5 girls, $M_{age} = 11.50$ years, $SD = 3.78$ years) are gifted children ($IQ \geq 130$) recruited through 25 Facebook pages for parents of gifted children across Canada, Association for Bright Children branches across Ontario, and an association for Gifted Education. Primary caregivers provided ratings of child sleep patterns and disruptions using a sleep log and descriptions of their children's Gifted Strengths and Challenges (GSC). Demographic questions were also asked. Gifted children provided ratings of their MM and their MWB. Results from this study indicated that children's IQ scores were significantly inversely associated with MM, positively associated with frequency of nighttime awakenings and with GSC, but, notably, do not suggest any significant relationships with total sleep duration and MWB. Further, GSC was inversely associated with MWB and MM, as well as positively associated with IQ score and night awakenings. Notably, the findings from this study also highlight the moderating role of GSC not only in the relationship between child sleep duration and MM but also in the relationship between total sleep duration and child-reported MWB. Additionally, a mediation analysis revealed the mediating role of MM in the relationship between GSC and MWB. These results provide valuable insights into both the protective and risk factors that could potentially influence the well-being of gifted children.

Keywords: Gifted children, mental health, comorbidity, neurodiversity, socio-behavioral issues, Meaning Mindset theory, sleep patterns, spiritual experiences.

Acknowledgments

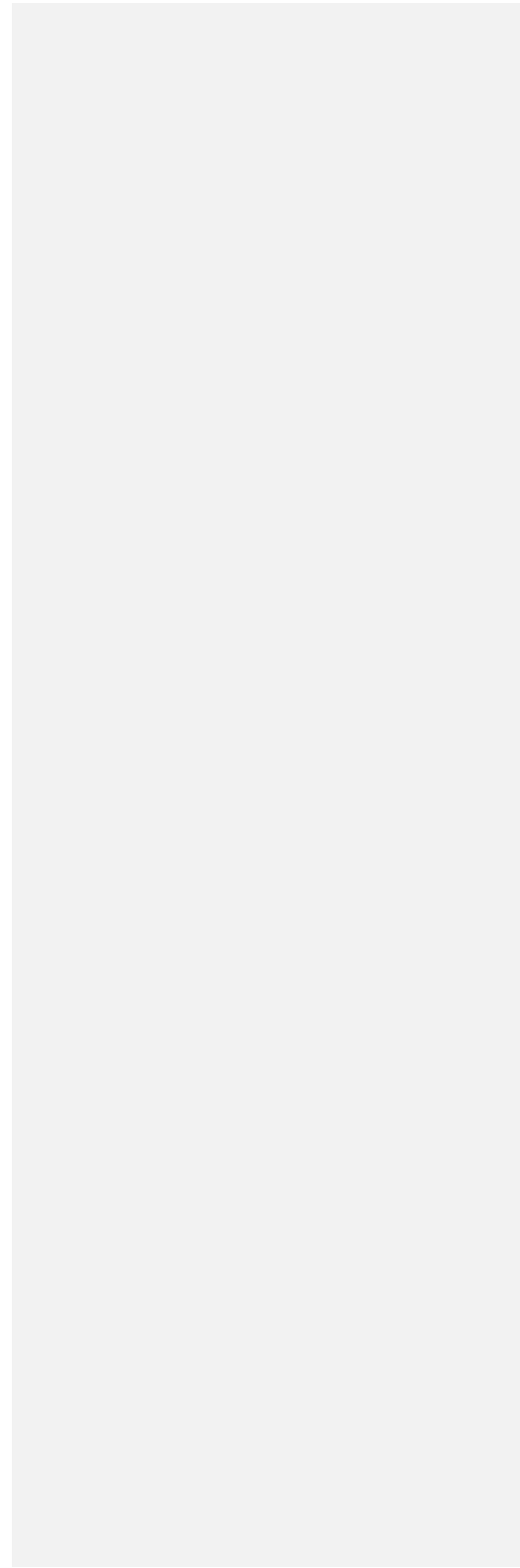
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Chapter 1
Literature Review



Chapter 1

Gifted children: What and how to care?

Giftedness

Giftedness can be conceptualized as the presence of outstanding abilities in one or several domains, such as creativity, intelligence, and artistic talents (Armstrong et al., 2018; Renati et al., 2022; Renzulli, 2021). It is a combined result of genetic, behavioural, and psychological characteristics (Armstrong et al., 2018; Renati et al., 2022; Subotnik et al., 2011). The hallmark of giftedness is asynchronous development, wherein children may learn and process information significantly faster than average, but may also possess skills that fall behind their same-age peers, such as social skills or handwriting (Kanevsky & Clelland, 2013; Renati et al., 2022). This asynchronous development can be seen in the speed of learning, advanced cognitive abilities, the production of inner experiences, and building awareness (Armstrong et al., 2018; Renati et al., 2022; Subotnik et al., 2011; Vaivre-Douret, 2011).

Although the criteria for giftedness may differ somewhat across school districts, a general characterization of giftedness involves an intellectual quotient (IQ) score higher than 130 points, at the 98th percentile (Aziz et al., 2021; Pfeiffer, 2012). In the Toronto region, more than 4% of students from the Toronto District School Board (TDSB) were identified as gifted through a universal screening process at Grade 3 (Parekh et al., 2018). However, many school boards do not conduct universal screening for giftedness, and school assessment resources are often prioritized for those with significant learning disabilities. Thus, children from families with private insurance or the means to afford a private psychoeducational assessment are predominantly identified as gifted in many regions. Furthermore, the standard measures for

universal screening, the Canadian Cognitive Abilities Test (CCAT), may not be appropriate for diverse populations, but innovative solutions are currently being explored (Yaluma & Tyner, 2018). To date, many gifted children remain unidentified, and their learning and social-emotional needs are not being met (Yaluma & Tyner, 2018). Until gifted identification and resources are improved, other ways of meeting the chronically unmet needs of gifted children are critical (Hornstra et al., 2023). Within the regular classroom, there exists a single universal mental health promotion program—Developing Resilience through Emotions, Attitudes, and Meaning (DREAM)—aimed at addressing the socio-emotional needs of unidentified and identified gifted children, while still providing skills that all children can use (Armstrong et al., 2018). This program is grounded in the theory of Meaning Mindset.

Meaning mindset

Meaning Mindset Theory (MMT) is a Third Wave Positive Psychology (PP3.0) approach, built on the foundations of the first and second waves of Positive Psychology (PP1.0 and PP2.0, respectively) (Armstrong & Potter, 2022; Henry et al., 2015; Lomas et al., 2020). PP1.0 shifted the focus from addressing disabilities and dysfunctions to highlighting positive phenomena, including positive emotions, traits, behaviours, and cognitions (Lomas et al., 2020). This first wave emphasized the importance of positive aspects of human experience as opposed to merely ‘fixing’ dysfunction. Conversely, the second wave, or PP2.0, introduced a more nuanced understanding of the interplay between the joyful and challenging aspects of life (Lomas et al., 2020). It acknowledged that well-being and flourishing involve a dynamic balance between enjoyable and difficult experiences. This wave emphasized the dialectical nature of well-being, where positive and negative elements coexist and contribute to a holistic sense of flourishing (Lomas et al., 2020). Building on these foundations, PP3.0 further expands the framework by

also considering the potential influence of social groups, cultural contexts, and ethical values on an individual's well-being and pursuit of meaning (Lomas et al., 2020). PP3.0 embraces diverse perspectives, understanding that well-being is shaped by various social, cultural, and environmental factors. It emphasizes ethical conduct, guided by values, principles, and individual strengths, and employs a wide range of methods, including qualitative, implicit, and computational approaches to study well-being (Lomas et al., 2020).

In this framework, there are two orientations to meaning: pursuing a meaningful life and avoiding failure (Wong, 2012). As PP3.0 has its existential roots in Frankl's Logotherapy, Wong's description focuses primarily on one of Frankl's pathways to meaning: Overarching meaning in life (Frankl, 1986). Additionally, Frankl (1986) also discusses recognizing meaning or value in every day life and in life's moments, which is meaning mindset (MM) (Armstrong & Potter, 2022).

The necessary ingredients to experience MM include *agency* over thoughts and behaviour, positive *self-concept*, *openness* to experience, and *hope* for the future (Armstrong & Potter, 2022; Dweck, 2015; Frankl, 1986; Stoddard et al., 2011; Van Tongeren & Green, 2010). First, *agency* over thoughts and behaviours denotes that one possesses the ability to choose and decide their attitudes and behaviours, even under extremely challenging circumstances, thereby potentially affecting emotions (Armstrong & Potter, 2022; Frankl, 1986). Moreover, a MM comprises a tendency for challenges to be viewed in a positive manner, such as opportunities for meaningful growth, creativity, motivation, and flourishing (Armstrong et al., 2018; Armstrong et al., 2019; Armstrong & Potter, 2022; Ivtzan et al., 2016; Lomas & Ivtzan, 2016; Parrot et al., 2021). Thus, challenges and painful experiences are considered by a MM to be potentially transformative, and a catalyst for growth. A MM and pursuit of meaningful contributions are

more regarded as a success-pursuing mindset, lead to better mental health outcomes, improved resilience, more positive coping, more self-compassion, and more meaningful social connection (Armstrong et al., 2018; Armstrong et al., 2019; Armstrong & Potter, 2022; Huang et al., 2023; Ivtzan et al., 2016; Wong & Worth, 2017).

Second, a positive *self-concept* includes and goes beyond the belief of the growth mindset—it underlies one’s inherent value and capacity to attain goals through diligence, effective strategies, and seeking assistance when necessary (Dweck, 2015; Van Tongeren & Green, 2010). Embracing a positive self-concept enables individuals to transcend mere “survival mode,” fulfill the need for belonging, exercise self-compassion, and find significance in everyday experiences (Armstrong & Potter, 2022; Dweck, 2015; Van Tongeren & Green, 2010).

Third, *openness to experience* encompasses a mindset of curiosity and a willingness to embrace new knowledge (Armstrong & Potter, 2022; Frankl, 1986; Stoddard et al., 2011). It entails an eagerness to understand both one’s own emotions and those of others, as well as a mindful engagement in pleasurable activities such as leisure, exploration in nature, spiritual connections, and social interactions. Openness facilitates the recognition of meaning in emotional bonds with others, in the process of learning and creativity, and in the appreciation of experiences characterized by moments of wonder, inspiration, and gratitude (Armstrong & Potter, 2022; Frankl, 1986; Stoddard et al., 2011).

Fourth, *hope for the future* embodies an expectation of a positive future, even amidst challenging present circumstances, along with a belief in the potential for positive outcomes (Armstrong & Potter, 2022, Stoddard et al., 2011). A person who holds a clear sense of purpose or motivation often feels they can endure any present hardship (Wong, 2012).

Transforming difficult experiences into something purposeful is crucial for leading a fulfilling life. As such, this process may serve as a vital factor for gifted children to achieve their maximum potential (Armstrong et al., 2018; Armstrong & Potter, 2022). However, aside from DREAM program research (Armstrong & Potter, 2022), minimal research has examined how MM mediates or moderates the challenges associated with giftedness (e.g., oversensitivities) in relation to well-being. One small-scale pilot study (N=13) found MM to mediate the relationship between gifted challenges and mental illness symptoms, but further research is needed to understand the associated underlying mechanisms (Champaigne-Klassen, 2024). Additionally, no current intervention except for the DREAM program specifically addresses the unique needs of gifted individuals through the lens of MM (Armstrong et al., 2018; Armstrong & Potter, 2022). This program is also one of the only existing transdiagnostic mental health promotion programs to address both internalizing and externalizing mental health concerns. As this program has demonstrated effectiveness over the past decade in enhancing mental health through MM, it is thus important to more generally understand the strengths and challenges associated with giftedness, in addition to potential avenues of risk and resilience, such as MM.

Strengths associated with giftedness

Previous studies indicate several dominant strengths associated with giftedness:

- Superior metacognitive skills and memory. These advantages enable gifted children to grasp concepts faster, tackle more intricate problems, retain minute details, excel in language proficiency, and demonstrate prowess in visual and performance arts (Alexander & Schwanenflugel, 1996; Armstrong et al., 2018; Aziz et al., 2021; Swanson, 1992; Tibken et al., 2022).

- Higher levels of intellect, perception, and imagination compared to peers not known to be gifted, alongside exceptional cognitive abilities, dedication, and creativity (Armstrong et al., 2018; Armstrong & Potter, 2022; Aziz et al., 2021; Renati et al., 2022; Renzulli, 2021). Moreover, previous research also suggests that gifted children can also experience heightened sensory or aesthetic enjoyment when exposed to art, nature, music, or other sensory stimuli (Vuyk et al, 2016).
- Gifted children often exhibit heightened emotional sensitivity and awareness, along with a profound empathy toward others (Al-Momani et al., 2015; Armstrong et al., 2018; Armstrong & Potter, 2022; Lupu, 2012; Renati et al., 2022; Renzulli, 2021; Sharifi & Sharifi, 2014).
- Gifted children are often intellectually mature compared to their peers with an IQ score falling into an expected range, and are capable of offering insightful perspectives when discussing various issues, reflecting an advanced moral understanding and a profound sensitivity to idealism (Armstrong et al., 2018; Armstrong & Potter, 2022; Aziz et al., 2021; Lovecky, 1997; Silverman, 1994; Sisk, 2008).

Ample evidence from previous research indicates that gifted children can learn and adapt to a variety of situations more easily and quickly than their peers with an IQ score in an expected range and have a higher learning potential more generally (Armstrong & Potter, 2022; Aziz et al., 2021; Calero et al., 2011, Jensen, 1963). Nonetheless, other studies indicate that gifted children are neurodiverse, and learn and acquire knowledge in a fundamentally distinct manner compared to the general child population (Armstrong et al., 2018; Armstrong & Potter, 2022; Aziz et al., 2021; Dunn & Price, 1980; Eysink et al., 2015). As such, the gifted student may only reach their

potential in learning, adaptation, and avoiding potential harm under circumstances and teaching styles that match their special learning requirements (Kanevsky & Clelland, 2013; Pfeiffer & Stocking, 2000; Reis & McCoach, 2002; Reis & Renzulli, 2004).

Challenges associated with giftedness

In addition to numerous cited strengths, the existing literature has highlighted various challenges linked with giftedness. In fact, some of these difficulties arise from the very strengths associated with giftedness—including but not limited to emotional sensitivity—which can lead to issues such as overexcitability, social maladjustment, boredom, and perfectionism. Such issues can compound and negatively impact self-confidence and self-compassion (Al-Momani et al., 2015; Armstrong et al., 2018; Armstrong & Potter, 2022; Lupu, 2012; Pfeiffer & Stocking, 2000; Renati et al., 2022; Renzulli, 2021; Reis & Renzulli, 2004; Sharifi & Sharifi, 2014; Winkler & Voight, 2016).

First, overexcitability refers to a genetic neurological trait involving an increased sensitivity to stimuli (Pfeiffer & Stocking, 2000; Reis & Renzulli, 2004; Winkler & Voight, 2016). Typical minor injuries and mishaps experienced during childhood may be magnified in emotionally heightened and exceptionally talented children, which could result in difficulties with social interaction and decreased self-confidence (Pfeiffer & Stocking, 2000; Reis & Renzulli, 2004; Winkler & Voight, 2016). Previous research reveals higher degrees of sensory overexcitability, such as physical sensations and perception, as well as intellectual overexcitability involving imagination, greater intensity of awareness and feelings, stronger emotional recalls of the past, and greater distress surrounding death (Armstrong & Potter, 2022; Pfeiffer & Stocking, 2000; Winkler & Voight, 2016; Zakreski, 2018).

Second, many gifted children experience challenges in social adjustment (Armstrong et al., 2018; Armstrong & Potter, 2022; Robbins et al., 2002). Previous research suggests that gifted children, especially those from disadvantaged backgrounds and ethnic and cultural minorities, may demonstrate particular challenges in adjustment and behaviour (Robbins et al., 2002). As asynchronous development is a hallmark of giftedness, some gifted children may be very advanced in their intellectual functioning, but be socially immature (Robbins et al., 2002; Robinson, 2008; Vaivre-Douret, 2011). However, contradictory research suggests that gifted children tend to show greater resilience and success in managing stress and achieving psychological and social adjustment than those falling within the expected IQ range (Kelly & Colangelo, 1984; Parker 1996). Thus, further research is needed to understand the social adjustment of gifted children, including identifying both the protective and risk factors involved.

Third, due to the advanced metacognitive functioning associated with giftedness, gifted children can experience the conventional classroom setting as uninteresting and insufficiently stimulating (Armstrong & Potter, 2022; Guenole et al., 2015). Moreover, the distinctive traits of giftedness can sometimes isolate children and result in a lack of understanding from parents, educators, and healthcare professionals (Armstrong & Potter, 2022; Aziz et al., 2021). When coupled with challenging situations, this can lead to interpersonal difficulties that are misinterpreted (Aziz et al., 2021), which can lead to a feeling of loneliness in the long run.

Fourth, perfectionism is a salient factor, though it can be both healthy and unhealthy (Armstrong & Potter, 2022; Aziz et al., 2021). For example, healthy perfectionism may drive remarkable accomplishment (Armstrong & Potter, 2022). By contrast, perfectionism can also be unhealthy and contribute to a fear of failure, procrastination, and a refusal to work (National Association for Gifted Children, 2018). The yearning for perfection combined with parental and

teacher expectations, jealousy, teasing, bullying, and potential isolation from peers can converge to create a fragile emotional state within gifted individuals (Armstrong & Potter, 2022; Aziz et al., 2021).

The hurdles encountered by gifted children can precipitate a range of social and emotional difficulties, including feelings of frustration, irritability, anxiety, boredom and loneliness, social isolation and rejection due to advanced concepts of camaraderie, diminished motivation, low self-esteem, development of phobias, pursuit of extreme perfection, limited resilience, fear of failure, and depression (Aziz et al., 2021). Thus, an intervention aimed at fostering a MM among gifted children may be needed to shift their focus from success-seeking and failure-avoidance to one centered on finding meaning (e.g., “What do I like about what I did? What could I do differently next time? What did I learn from this?”). This shift can aid them in overcoming challenges and realizing their full potential.

Mental health of gifted children

Between 30% and 40% of gifted children display significant symptoms of mental illness, behavioural challenges, and social difficulties compared to 20% of the general child population (Kroesbergen et al., 2016; Liratni & Pry, 2011; Pilarinos & Solomon, 2017). Moreover, gifted children are three times more likely to experience elevated stress levels than the general child population (Armstrong et al., 2018). However, appropriate supports that address their special needs may contribute to similar or better mental well-being (MWB) outcomes among gifted children (Armstrong et al., 2018; Perham, 2013; Richards et al., 2003). Thus, an assessment of gifted children’s unique emotional, social, and behavioural needs, strengths, and challenges is desperately needed.

Previous studies suggest gifted individuals experience higher rates of co-occurrence with neurodiversity, such as Attention-Deficit/Hyperactivity Disorder (ADHD), than their peers with an IQ score falling in a more expected range (Fugate et al., 2013; Healey & Rucklidge 2006; Ten et al., 2020), as well as Autism Spectrum Disorder (ASD) (Heaton et al., 1998; Masataka, 2017), Dyslexia (Von Karolyi et al., 2003); and other reading or learning disabilities (Johnston & Morrison, 2007; Romano et al., 2024; Yates et al., 1995). There are also significant overlapping traits between giftedness and these other neurodiversities, regardless of the presence of a co-occurrence (American Psychiatric Association, 2022; Gentry & Fugate, 2018; Heaton et al., 1998; Hoogman et al., 2020; Lee, 2022; Ten et al., 2020; Von Karolyi et al., 2003). These co-occurring disorders or traits can mask academic and professional performance and create barriers for gifted individuals in reaching their full potential (Heaton et al., 1998). Nonetheless, other studies either observe no significant differences between gifted children and their counterparts in the expected IQ range with ADHD, ASD, Dyslexia, and other reading or learning disabilities (e.g., Aleksandrovich & Zoglowek, 2014; Doobay et al., 2014; Jamey et al., 2019; Minahim & Rohde, 2015; Peyre et al., 2016), or note a higher association between these disorders and not scoring as gifted than between neurodivergent disorders and giftedness (e.g., Craig & Baron-Cohen, 1999; Oswald et al., 2016; Rommelse et al., 2017; Toffalini et al., 2017). Importantly, the comorbidity of these disorders among Canadian gifted populations is markedly understudied (Armstrong et al., 2018; Armstrong & Potter, 2022; Kontakou et al., 2022), making it a critical area for investigation.

The existing literature indicates a higher comorbidity of bipolar disorder, depression, anxiety, and other disorders in gifted children than in the general child population (Armstrong et al., 2018; Armstrong & Potter, 2022; Beljan et al., 2006; Eklund et al., 2015; Eren et al., 2018).

Nonetheless, if learning and socio-emotional needs are met, previous studies also suggest no significant differences in comorbidity rates of mood or other disorders between the gifted and general counterparts (Baker, 1995; Becker et al., 2014; Kermarrec et al., 2020; Metha & McWhirter, 1997; Peyre et al., 2016) or suggest higher comorbidity rates among individuals with average or below average IQ scores (Fillmore, 2019; Richard et al., 2013). Thus, further research is required to examine the correlation between mental illnesses and giftedness in Canadian populations. In addition to this, a similarly understudied area that must be addressed to fully understand challenges faced by gifted children is the relationship between sleep and giftedness.

Sleep concerns of gifted children

Sleep constitutes a crucial neurobiological activity regulated by both homeostatic and circadian rhythms, essential for maintaining optimal brain functionality (Anderson & Bradley, 2013). A typical sleep cycle consists of two main stages: non-rapid eye movement sleep (NREM) and rapid eye movement sleep (REM) (Fuller et al., 2006). NREM sleep, constituting 75-80% of total sleep time, primarily occurs during early-stage sleep and is divided into N1, N2, and N3 stages, as indicated by EEG patterns and wave frequencies. Conversely, REM sleep is characterized by higher frequency and lower amplitude waves. Previous research across populations indicates bidirectional associations between sleep disruption/ restriction and mental health illnesses such as major depressive disorder, bipolar disorder, and mood disturbances (Anderson & Bradley, 2013; Zhang et al., 2017). Sleep disruption also correlates with a number of cognitive and behavioural dysfunctions (Bastien et al., 2023; Blatter & Cajochen, 2007; Cook et al., 2020; Fortier-Brochu et al., 2012; Goel et al., 2009; Lim & Dinges, 2010).

Conflicting findings have emerged concerning the variances in sleep patterns between gifted children and the general child population (Bastien et al., 2023; Cook et al., 2020; Renati et al., 2013). According to Bastien et al. (2023), gifted children demonstrate increased instability in N1 sleep, but less instability in N2, N3, and REM sleep stages. When gifted traits overlap with autistic traits, one factor which may distinguish a gifted child from one with Autism could be REM deficits in Autism: REM sleep in children without Autism consists of approximately 23% of sleep time but only 15% in children with Autism (Buckley et al, 2010). Thus, potential N1 sleep deficits among gifted children compared to REM deficits associated with Autism may help to distinguish these neurodiversities, since children who are gifted can be misdiagnosed with Autism (Aggarwal & Angus, 2015; Baudino, 2010; Hus & Segal, 2021). Even with N1 challenges, higher rates of stage shifts are linked to both internalizing and externalizing problems (Bastien et al., 2023). According to Bastien et al. (2023), gifted children tend to experience more N1 sleep and less N3 sleep compared to the general child population, with increased N1 sleep correlating with heightened externalizing problems, and reduced N3 sleep correlating with increased internalizing problems. Although gifted children display higher levels of REM sleep, this is not significantly associated with behavioral scales (Bastien et al., 2023). In contrast, Cook et al. (2020) found no significant difference between gifted and children with more expected IQ scores in the prevalence of sleep problems at any age, and no associated mental health challenges with sleep in giftedness. Consequently, given the disparities in research, there is a pressing need for further investigation into the relationship between mental health and sleep-related issues for children and adolescents who are gifted. Additionally, conducting research to clarify these discrepancies would provide valuable insights into how giftedness influences mental health and sleep patterns in this population.

Exploratory Issues

In addition to sleep duration or quality, an area that remains unexplored in the literature on giftedness is the relationship between children's sleep arrangements and giftedness, highlighting the needs for further research (David, 2014; Ford et al., 2004). Regarding sleep, when children think deeply, this can disrupt their sleep (Araújo & Almondes, 2014; Spruyt, 2021; Steward et al., 2020; Wickens et al., 2015). This deep thinking can sometimes be related to spirituality: Gifted students have a distinct way of understanding spirituality, their world, and their connection to both. Research suggests that intellectually gifted children are more likely than their peers within the average IQ range to ask profound spiritual questions (Heshmati & Maanifar, 2018; Neihart, 2021; Silverman, 1994; Sisk, 2008). Currently, limited research has explored spiritual sensitivities within the gifted population (Heshmati & Maanifar, 2018; Rodríguez-Fernández, 2024).

The Present Study

Gaps in the Literature

Several gaps remain in the literature on giftedness and mental health. While interventions promoting Meaning Mindset (MM) have been demonstrated over the past decade to be effective in enhancing well-being, there is a need for a more comprehensive understanding of the strengths, challenges, and resilience factors associated with giftedness, including MM. In particular, research on the social adjustment of gifted children is limited, underscoring the importance of identifying both protective and risk factors that influence their overall well-being. A thorough assessment of their emotional, social, and behavioral needs is thus essential to better support their development.

One significant gap is the lack of research on the comorbidity of mental health disorders among Canadian gifted children (Armstrong et al., 2018; Armstrong & Potter, 2022; Kontakou et al., 2022). The correlation between giftedness and mental illness in Canadian populations remains largely unexplored, making it a critical area for future study. Similarly, the relationship between sleep and giftedness has received little attention, despite growing evidence of sleep's vital role in cognitive and emotional functioning. An initial exploration of sleep arrangement and spirituality may also be beneficial. Given these disparities in the literature, further research is needed to examine the interconnections between mental health and sleep-related issues in gifted children and adolescents.

Addressing these gaps would provide deeper insights into how giftedness shapes psychological well-being and sleep patterns, as well as insights into both the protective and risk factors that may influence the well-being of Canadian gifted children, ultimately guiding the development of more effective support strategies for this population.

Research Questions & Hypotheses

This research seeks to explore several key questions to address the noted gaps in the existing literature. First, how does IQ relate to Mental Well-Being (MWB), Meaning Mindset (MM), and sleep patterns in gifted children? Second, how are gifted challenges (e.g., socio-emotional traits) associated with MWB, MM, and sleep patterns? Third, do gifted challenges moderate the relationship between MWB and sleep disturbances? Fourth, does MM serve as a mediator or protective factor in the relationship between gifted challenges and MWB? Finally, what role do spiritual sensitivities and sleep arrangements play in the experiences of Canadian gifted children?

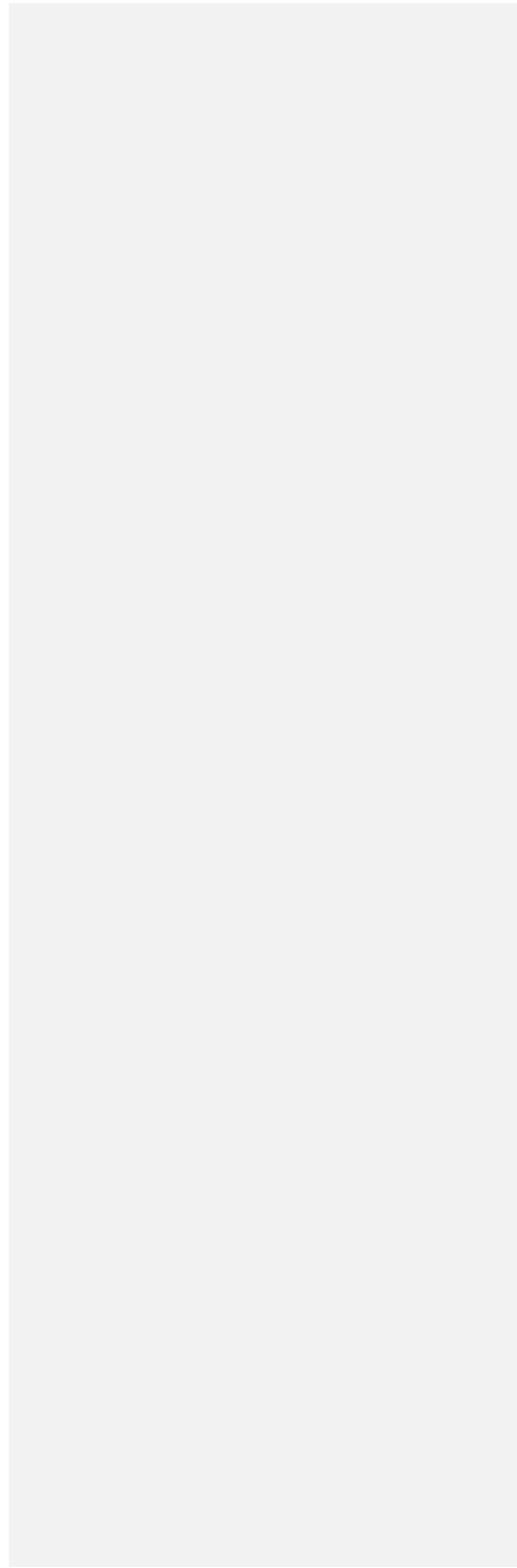
Given possible relationships between MWB, MM, and sleep with IQ score and gifted challenges observed by previous research (Al-Momani et al., 2015; Armstrong et al., 2018; Armstrong & Potter, 2022; Bastien et al., 2023; Buckley et al., 2010; Champaigne-Klassen, 2024; Stoddard et al., 2011), this current study aims to investigate the relationships between MM, MWB, sleep patterns, and challenges among gifted children. More specifically:

1. Given the literature that suggests IQ might be inversely associated with MWB and positively correlated with disrupted sleep patterns (Armstrong et al., 2018; Armstrong & Potter, 2022; Bastien et al., 2023; Beljan et al., 2006; Buckley et al., 2010; Eklund et al., 2015; Eren et al., 2018; Kontakou et al., 2022; Kroesbergen et al., 2016; Liratni & Pry, 2011; Pilarinos & Solomon, 2017), it is expected that the higher the IQ, the lower the child MWB and the greater the sleep pattern disruption. Given the relationship between MM and MWB (Armstrong et al., 2018; Armstrong & Potter, 2022; Champaigne-Klassen, 2024; Dweck, 2015; Frankl, 1986; Merrill et al., 2016; Stoddard et al., 2011; Van Tongeren & Green, 2010), IQ is also predicted to be inversely associated with MM.
2. As the literature notes that gifted challenges (socio-emotional traits) are inversely associated with MWB and positively related to disruptions in sleep patterns (Armstrong et al., 2018; Armstrong & Potter, 2022; Bastien et al., 2023; Beljan et al., 2006; Buckley et al., 2010; Campbell et al., 1986; Conger et al., 2010; Duncan & Magnuson, 2015; Eklund et al., 2015; Eren et al., 2018; Hodgkinson et al., 2017; Kontakou et al., 2022; Kroesbergen et al., 2016; Liratni & Pry, 2011; Pilarinos & Solomon, 2017; Reiss, 2013), it is predicted that, the more challenges gifted children present with, the greater the difficulties with MWB and sleep. Given the relationship between MM and MWB (Armstrong et al., 2018; Armstrong & Potter, 2022; Champaigne-Klassen, 2024; Dweck,

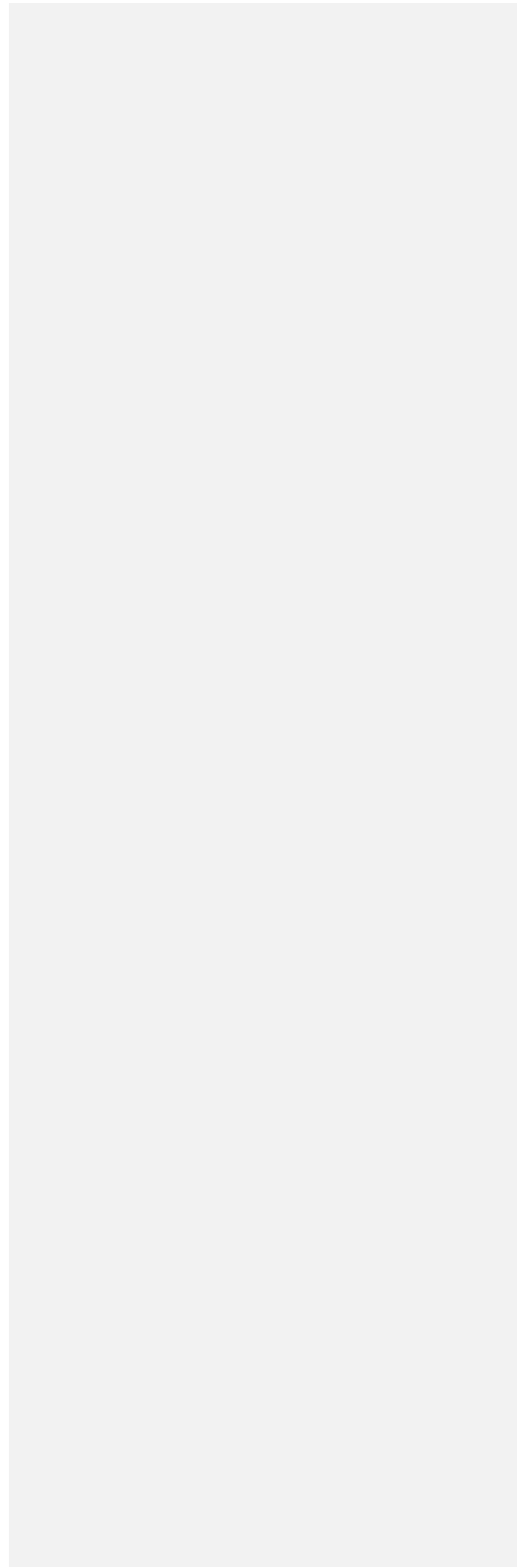
2015; Frankl, 1986; Merrill et al., 2016; Stoddard et al., 2011; Van Tongeren & Green, 2010), gifted challenges are also predicted to be inversely associated with MM.

3. Given the discrepancies in the literature between MWB and sleep disturbances for gifted children (e.g., Armstrong & Potter, 2022; Bastien et al., 2023; Buckley et al, 2010; Champaigne-Klassen, 2024; Cook et al., 2020), gifted challenges are predicted to act as a moderator between these variables.
4. During the pandemic, adolescents who engaged in meaning-making and finding meaning in life on a daily basis tended to thrive, whereas other adolescents had significantly poorer MWB (Velez & Herteen, 2023). Similarly, MM may be a resilience factor for gifted children (Armstrong et al., 2018; Watt, 2020). In addition to and extending existing research on MM, MM is predicted to be a mediator or protective factor between gifted challenges and MWB. If MM is a potential resiliency factor between gifted challenges and difficulties with MWB, then this is another factor that can help explain why some gifted children thrive, while others do not.
5. Exploratory analyses will focus on spiritual sensitivities in gifted children. Sleep arrangements (e.g., own room, time to bed, etc.) will also be explored to potentially help explain results.

This current research may contribute to the understanding of the distinctive emotional, social, behavioral, and educational needs of gifted children, as well as their unique strengths and challenges, and sleep-related difficulties. Ultimately, it is hoped that this research will support the development of resources to help meet the socio-emotional needs of gifted children and adolescents.



Chapter 2
Methodology



Chapter 2

Methodology

Participants

Participants (N=17, 12 boys, 5 girls, $M_{age} = 11.50$ years, $SD = 3.78$ years) were gifted children ($IQ \geq 130$) recruited from 25 Facebook pages for primary caregivers of gifted children across Canada, Association for Bright Children branches across Ontario, and an association for Gifted Education. In addition to child participants, primary caregivers of gifted children were invited to complete parental questionnaires. The majority of responding primary caregivers were Caucasian (76.7%), aged 41 to 45 years (48.3%), with a household income exceeding \$150,000 (72.4%). All had attained post-secondary education, and approximately 60% held a graduate degree or higher. Among their partners, all had at least a secondary education: 3.3% held a secondary school diploma as their highest academic achievement, 50% held a college or undergraduate degree, and 40% obtained a graduate degree or higher. In the remaining 6.7% of cases, partners either chose not to disclose their educational background, or the primary caregiver was a single parent.

Measures *Meaning Mindset (MM)*

Children's meaning mindset (MM) was measured via the *Child Identity and Purpose (ChIP) Questionnaire* (Armstrong et al., 2020). The ChIP-1 is a 12-item self-report questionnaire assessing MM in children. This measure assesses agency over feelings, behavior, and thoughts; self-concept; openness to feelings, to learning, engagement, and connection; and hope for the future. For each item, participants selected their level of agreement with a particular character (Ceira or Chip) during a particular scenario. Participants used a slider bar ranging from 0

(completely agree with Ceira) to 10 (completely agree with Chip) after viewing a short video clip demonstrating each item (e.g., “When things aren’t going well for Chip, he thinks he can come up with ways to fix the problem; When things aren’t going well for Ceira, she thinks she can’t come up with ways to solve the problem”). For children capable of reading, the text corresponding to each video was included, allowing them to opt for reading the text to answer the items instead of rewatching the videos, which is particularly helpful for repeated measures. A video-based item sample image is provided in Appendix A. This measure has demonstrated evidence of reliability and validity among Canadian children ($\alpha = 0.83$) (Armstrong et al., 2020). In the present sample, this MM scale demonstrated high internal reliability ($\alpha = 0.87$).

Mental Well-Being (MWB)

Child MWB and mental illness were measured via the Interactive Symptom Assessment (ISA) questionnaire, consisting of 12 self-reported items assessing MWB and mental illness in children (Armstrong et al., 2022). The mental illness symptoms assessed in this questionnaire are: obsessions and compulsions, anxiety and mood symptoms, explicit behavioural symptoms such as attention deficits and other conduct concerns, self-esteem including body image, sense of personal accomplishments and achievements, and social self-esteem. For each item, participants can slide the bar underneath two characters (Isa and Eibe) presented side-by-side depending on their perception of how much their own experience matches with that character. The score of the slide bar ranges from 0 (absolutely matching the experience of the character on the left—Isa) to 10 (absolutely matching the experience of the character on the right—Eibe) after a short video clip demonstrating each item was presented to them (e.g., “Isa was cheerful this week; Eibe was grouchy this week.”). A video-based item sample image is provided in Appendix B. This measure has demonstrated evidence of reliability and validity among Canadian children ($\alpha = 0.81$)

(Armstrong et al., 2022). In the present sample, this MWB scale demonstrated high internal reliability ($\alpha = 0.88$).

Additionally, the questionnaire includes two items that qualitatively assess the child's previous formal mental health diagnoses, if any: “Has there been any formal diagnosis (e.g., ADHD, Autism, depression, etc.)?” and, if so, “What is the specific diagnosis?”

The Gifted Strengths and Challenges scale (GSC)

The strengths and challenges faced by the gifted child were measured by the parental reported Gifted Strengths and Challenges (GSC) scale (Armstrong, *unpublished data*; Champaign-Klassen, 2024), consisting of 35 items (e.g., From a very early age, my child was able to recognize other people's feelings) that measures the strengths and challenges in gifted children and adolescents. It measures perfectionism, concern with fairness and justice, spirituality, and oversensitivity (including emotional, physical, spiritual, imaginal, and intellectual oversensitivity) cohesively. Each item is scored with a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree) (see Appendix C). This measure has demonstrated evidence of reliability and validity among Canadian children and adolescents ($\alpha = 0.91$) (Armstrong, *unpublished data*; Champaign-Klassen, 2024). In the present sample, this GSC scale demonstrated high internal reliability ($\alpha = 0.89$). For item twelve—My child has had a spiritual experience—an additional qualitative clarifying input was required (“If yes, please describe:”).

Sleep patterns

Child sleep patterns were measured via a 12-item sleep log that documents children's sleep patterns (Iwasaki et al., 2010; Phillips et al., 2021), including: responder identity, child sleep arrangement, positions, duration, night waking, stability, and the presence of sleep

problems. Items assessing child sleep arrangement, positions, stability, and the presence of sleep problems followed a multiple-choice format. Caregivers were asked to input a time, location, or duration for items assessing child sleep patterns (Appendix D). This measure has demonstrated evidence of reliability and validity among preschool children, as compared to the results from actigraphic assessments of sleep patterns (Iwasaki et al., 2010; Phillips et al., 2021).

Methodology

This study makes use of a mixed-methods approach to understanding gifted children's strengths and challenges, as it uses differing integrations of both qualitative and quantitative elements in questionnaire development and data analysis, depending on the measure. For example, the child MWB measure is obtained via the Likert scale ISA scale, while some participants further qualitatively described existing diagnoses such as autism spectrum or attention deficit concerns. Similarly, the spirituality items within the GSC measure have been expanded to enable written qualitative descriptions of spiritual experiences that help explain the results, and lay the foundation for future research in this specific area. Finally, Sleep Patterns are assessed using several qualitative observations (e.g., positions, presence of sleep problems, etc.), which are interpreted as descriptive data, such as frequencies, that are used alongside the other measures to look for any observable effects.

Procedure

The study was approved by Saint Paul University Research Ethics Board (SPUREB) in November 2024. A signed consent form from the children's legal guardian(s) was received before being enrolled in the study. Primary caregivers were asked to fill out a sleep log and GSC questionnaire, while child participants were asked to complete ChIP and ISA measures. Data

were collected in January 2025, and all measures were collected using SurveyMonkey (<https://www.surveymonkey.com/>).

Data Analysis

Data screening & cleaning. Data were screened for potential errors and missing values, followed by testing of assumptions. Data screening and cleaning were conducted using SPSS 29.0 for Windows. The data were reviewed for accuracy, univariate outliers, distribution patterns, missing data, and normality assumptions. Univariate frequencies identified scores outside valid ranges, and any data errors were cross-checked with original questionnaires. A Missing Data Analysis assessed missing patterns, and data were found to be missing at random. Multiple imputation with regression-based data augmentation, following Allison's (2002) guidelines, was used to handle missing data, showing no significant mean differences ($p > .01$) between imputed and non-imputed datasets.

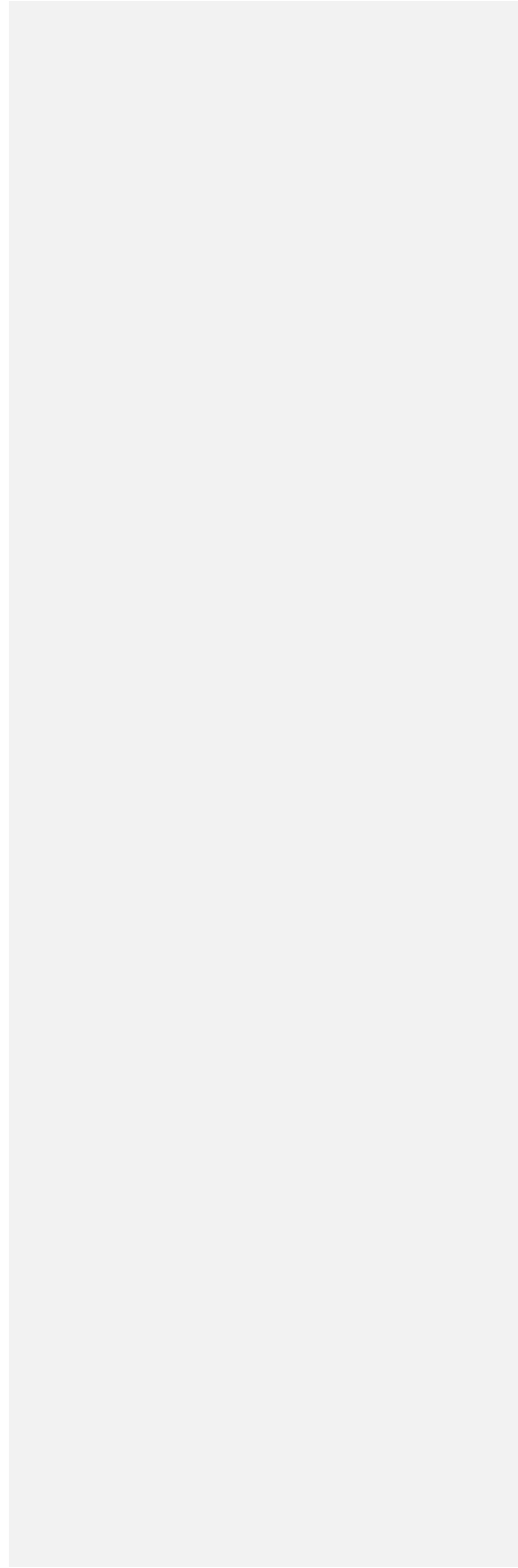
Skewness and kurtosis were examined to assess the distribution characteristics of each variable. Child MM exhibited a positive skewness of 0.54 and a kurtosis of 1.258, suggesting a moderately right-skewed distribution with a slight tendency toward heavier tails. In addition, MWB also showed a positive skewness of 0.473 and a kurtosis of 0.978 ($SE = 0.363$), indicating a slight right-ward asymmetry with a relatively normal distribution shape. Total sleep duration displayed a positive skewness of 0.416 and a kurtosis of 0.628, suggesting mild right-skewness and light tails. GCS had a negative skewness of -0.296 and a negative kurtosis of -0.670, implying a slight left-skew and a relatively flat distribution. Lastly, the number of night wakings exceeding five minutes per night showed a pronounced positive skewness of 2.163 and a kurtosis of 4.134, indicating a highly right-skewed distribution with substantial positive kurtosis,

suggesting the presence of extreme values. The valid listwise sample size for the analysis was 172. Skewness and kurtosis tests revealed some significant non-normality for variables, but transformations were avoided due to issues such as heteroscedasticity. Therefore, given some non-normality and the small sample size, non-parametric statistics were used, as they are better able to handle extreme variables and non-normality than parametric statistics (Orcan, 2020).

In addition to descriptive statistics and frequencies, Spearman's rho correlations were carried out. Moreover, moderation analysis was conducted using the SPSS PROCESS macro (Hayes, 2013) for a Bayesian non-parametric analysis to further probe the significance of the relationship between disturbance and child mental health under the moderating effects of giftedness challenges. For a Bayesian non-parametric analysis, a minimum sample size of 10 participants is required for large effect sizes, but small or medium effects may not be detectable at this size (Kelter et al., 2020). Next, a hierarchical multiple regression analysis was used to analyze the potential mediating effect of meaning mindset on the relationship between gifted challenges and mental well-being.

Chapter 3

Results



Chapter 3:
Results

Preliminary Analyses

Descriptive statistics and correlations among study variables are presented in Table 1.

Table 1

Spearman's rho Correlations among IQ Percentile, MM, MWB, Times of Night Waking, Total Sleep Duration, and GSC.

	1	2	3	4	5	6
1. IQ Percentile	-					
2. MM	-.24**	-				
3. MWB	.08	.84**	-			
4. Times of Night Waking	.28**	-.35**	-.36**	-		
5. Total Sleep Duration	.08	-.28**	-.17*	.27**	-	
6. GSC	.25**	-.19**	-.16*	.41**	0.30*	-
<i>Mean</i>	98.29	32.90	36.00	1.43	561.17	
<i>SD</i>	1.56	27.66	27.69	0.81	113.23	

Note. * $p < 0.05$, ** $p < 0.01$

Hypothesis 1: The higher the Intelligence Quotient (IQ), the more difficulties there would be regarding child's Meaning Mindset (MM), Mental Well-Being (MWB) and disruptions in sleep patterns.

The findings of this study demonstrated that several tested variables were significantly correlated with child IQ scores. Firstly, a negative significant correlation was observed between child IQ scores and child MM. Secondly, child IQ scores were positively associated with the frequency of nighttime awakenings among gifted children but showed no correlation with total sleep duration or MWB. Thirdly, child IQ scores also exhibited a positive relationship with parent-reported Gifted Strengths and Challenges (GSC).

Hypothesis 2: The more challenges gifted children present with, the greater the difficulties with MM, MWB, and sleep.

Additionally, the results indicated several significant correlations among the tested variables—specifically child MM, MWB, parent-reported GSC, and sleep patterns. Results indicated that GSCs were inversely associated with MM, MWB, sleep duration, and that they were positively associated with the frequency of night awakenings. Additionally, a strong, positive, and significant correlation was found between child MM and child MWB. Furthermore, the frequency of nighttime awakenings also demonstrated negative correlations with child MM and MWB and similarly, child sleep duration was negatively correlated with child MM and MWB.

To further investigate which specific strengths or challenges for gifted children were associated with child MM and MWB, each strength and challenge was analyzed in relation to child MM and MWB. Results from this study revealed numerous common strengths and

challenges, and indicated significant negative correlations between GSC items with both MM and MWB (Table 2 and 3, respectively).

Table 2

The Specific Parental-Reported Strengths and Challenges significantly correlated with Child-Reported MM

Parental-Reported Strengths and Challenges	Child-Reported MM
From a very early age, my child was able to recognize other people's feelings	-.16*
My child has a great appreciation for beautiful things (e.g., in writing, music, art or nature)	-.24**
My child worries about issues in the world more than most children because they can imagine these things so clearly	-.14**
My child is curious, asking many deep questions about the world around them	-.25**
My child has had an imaginary friend	-.2**
My child is often invited to things (e.g., to join groups in class or is regularly invited for playdates or birthday parties)	-.17*
My child is clumsy or has some difficulty in sports compared to peers	-.21**
My child has difficulty with geographic directions (e.g., how to get places or knowing where things are located in their environment)	-.18**
My child has obsessive or intense interests	-.28**
My child notices details that other children don't seem to notice	-.35**
My child needs the reason for rules explained to them	-.19**

Note. * $p < 0.05$, ** $p < 0.01$

Table 3

The Specific Parental-Reported Strengths and Challenges significantly correlated with Child-Reported MWB

Parental-Reported Strengths and Challenges	Child-Reported MWB
My child has a great appreciation for beautiful things (e.g., in writing, music, art or nature)	-.21**
My child is more bothered by a particular texture, clothing item, sound, or smell than most children	-.15*
My child worries about issues in the world more than most children because they can imagine these things so clearly	-.19**
My child is curious, asking many deep questions about the world around them	-.23**
My child, from an early age, asked spiritual questions, such as about death or how things came to be in the world	-.16*
My child has had an imaginary friend	-.30**
My child is socially immature	-.14*
My child is often invited to things (e.g., to join groups in class or is regularly invited for playdates or birthday parties)	-.26**
My child is clumsy or has some difficulty in sports compared to peers	-.18**
My child has difficulty with geographic directions (e.g., how to get places or knowing where things are located in their environment)	-.14*
My child has obsessive or intense interests	-.21**
My child notices details that other children don't seem to notice	-.36**
My child needs the reason for rules explained to them	-.18*
My child has a need for precision in their activities or in their social interactions (e.g.,	-.19**

corrects others when they don't say something exactly right)

My child struggles with perfectionism -.15*

Note. * $p < 0.05$, ** $p < 0.01$

Hypothesis 3: Moderating effects of parental-reported GSC.

Parent-reported GSC was explored as a moderator in the relationship between total sleep duration and child-reported MM. The results, presented in Table 4, aligned with the correlational analyses. Notably, a significant interaction effect was observed between total sleep duration and parent-reported GSC in relation to child-reported MM ($\beta = -0.003$, $p \leq 0.05$) (see Table 4), indicating that the relationship between total sleep and MM was moderated by gifted challenges scores. Further, the simple slope of total sleep and child-reported MM was not significant at low and moderate levels of parental-reported GSC but significant at high levels of parental-reported GSC ($\beta = -0.07$, $p < 0.01$) (see Table 5).

Table 4

Moderating Effects of Parent-Reported GSC in The Correlation between Total Sleep Duration and Child-Reported MM

Predictor	Child-Reported MM		
	B	SE	t-value
Total Sleep Duration	.30*	.13	2.30
Parent-Reported GSC	1.28*	.56	2.30
Total Sleep Duration x Parent-Reported GSC	-.003*	.001	-2.66

Note. * $p < 0.05$, ** $p < 0.01$

Table 5

Simple Slope of Total Sleep Duration and Child-Reported MM Estimation across Different Parent-Reported GSC Levels.

Parent-Reported GSC	Child-Reported MM			
	Mean	B	SE	t-value
Low	97.00	.04	.04	1.09
Moderate	121.50	-.03	.02	-1.28
High	138.00	-.07*	.02	-3.27

Note. * $p < 0.05$, ** $p < 0.01$

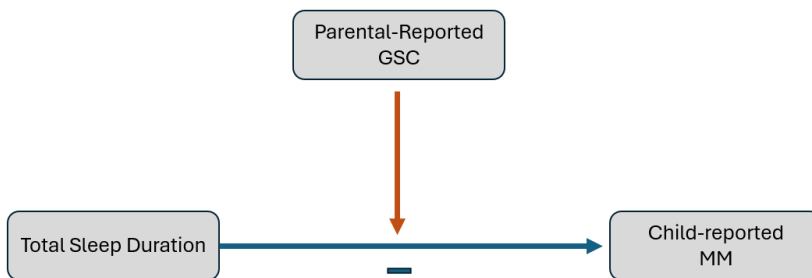


Figure 1. Moderating Effect of Parental-Reported GSC on Child Sleep Duration and Child-reported MM

Parent-reported GSC was also entered as a moderator between total sleep duration and child-reported MWB. Results are displayed in Table 6. There was a significant interaction effect between total sleep duration and parental-reported GSC in the relation between child-reported MWB ($\beta = .02, p \leq 0.05$) (see Table 6), suggesting that the relationship between total sleep and

MWB was moderated by gifted challenges scores. Additionally, the simple slope of total sleep and child-reported MWB was not significant at low levels of parental-reported GSC, but was significant at moderate and high levels of parental-reported GSC ($\beta = 0.05, p = 0.01$ and $\beta = 0.08, p < 0.01$, respectively) (see Table 7).

Table 6

Moderating Effects of Parent-Reported GSC in The Correlation between Total Sleep Duration and Child-Reported MWB

Predictor	Child-Reported MWB		
	B	SE	t-value
Total Sleep Duration	.19	.13	1.47
Parent-Reported GSC	.85	.55	1.55
Total Sleep Duration x Parent-Reported GSC	-.002*	.001	-1.97

Note. * $p < 0.05$, ** $p < 0.01$

Table 7

Simple Slope of Total Sleep Duration and Child-Reported MWB Estimation across Different Parent-Reported GSC Levels.

Parent-Reported GSC	Mean	Child-Reported MWB		
		B	SE	t-value
Low	97.00	-.001	.04	-.36
Moderate	121.50	-.05*	.02	-2.49
High	138	-.08**	.02	-3.86

Note. * $p < 0.05$, ** $p < 0.01$

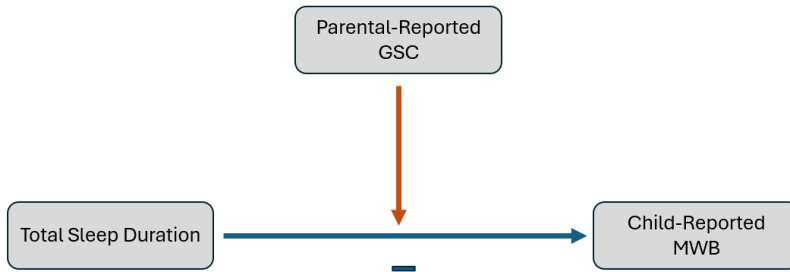


Figure 2. Moderating Effect of Parental-Reported GSC on Child Sleep Duration and Child-Reported MWB

Hypothesis 4. MM is a mediator or protective factor between gifted challenges and MWB.

A hierarchical regression analysis was conducted with parent-reported GSC entered in Step 1 and MWB as the outcome variable. In Step 2, MM was added to examine its mediating effect. The results showed that MM fully mediated the relationship between gifted challenges (GSC) and mental illness symptoms (see Table 8), with the regression model yielding an R^2 of 0.74. In Step 1, GSC significantly predicted mental illness symptoms ($\beta = 0.22$, $p = 0.001$). However, after MM was introduced in Step 2, the relationship between GSC and mental illness symptoms became non-significant ($\beta = 0.08$, $p = 0.05$). Thus, the findings indicate that low MM predicts lower MWB ($\beta = 0.846$, $p < 0.001$), supporting that MM negates the relationship between GSC and MWB. Since the effect of GSC became non-significant when MM was included in the model, with MM remaining the dominant predictor of MWB, higher MM and lower GSC are believed to be associated with better MWB. These findings support the fourth hypothesis, suggesting that MM mediates the relationship between GSC and child MWB.

Table 8

Mediating Effects of Child-Reported MM in The Correlation between Parental-Reported GSC and Child-Reported MWB

Predictor	Child-Reported MWB		
	B	SE	t-value
Parental-Reported GSC	-.22*	.11	-3.00
Child-Reported MM	-.08	.06	-1.97
Parent-Reported GSC x Child-Reported MM	.85**	.04	21.59

Note. * $p < 0.05$, ** $p < 0.01$

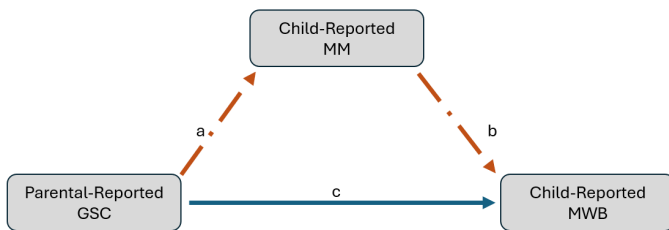


Figure 3. Mediating effect of Child-Reported MM on Parental-Reported GSC and Child-Reported MWB

Exploratory Findings

Child Sleep Patterns

The findings reveal distinct patterns in children's sleep arrangements, sleep stability, and bedtime routines. The majority of parents (83.3%) reported that their children slept in their own

bed, while 10% of primary caregivers shared a bed with their child. The remaining 6.7% indicated mixed sleeping patterns, where children either alternated between sleeping in their own bed and sharing a bed with their parents or initially slept in their own bed but later moved. When examining the perceived causes of sleep instability among parents reporting a child's unstable sleep patterns, 50% attributed the instability in sleep patterns to the child themselves. Additionally, 37.5% cited an unknown cause, while 12.5% identified the primary caregiver as the contributing factor. In terms of bedtime routines, 74.2% of parents reported that their child had a flexible bath time, whereas 25.8% maintained a fixed bath schedule. Additionally, most children had a bedtime around 9:00 PM and woke up between 6:00 and 7:30 AM, suggesting a general structure to their sleep schedule despite differences in bedtime routines and sleeping arrangements.

Parent-Reported Child Spiritual Experiences

More than 30% of parents reported that their children had experienced a spiritual encounter. The findings from this study highlighted a range of spiritual encounters experienced by gifted children, including encounters with unseen entities, precognitive insights, and recollections of past lives or pre-birth memories. These experiences appeared spontaneous and were often deeply personal, sometimes aligning with family traditions or beliefs. A common theme in these reports is the perception of unseen presences or entities. Several children described seeing figures that others could not, such as "a man" or a "witch" in their room. One child laughed while watching "two hippos dance on the ceiling" at a family cottage, a significant location connected to deceased relatives known for their playfulness with children. The family interpreted this as a spiritual connection with their ancestors. Another child reported feeling the

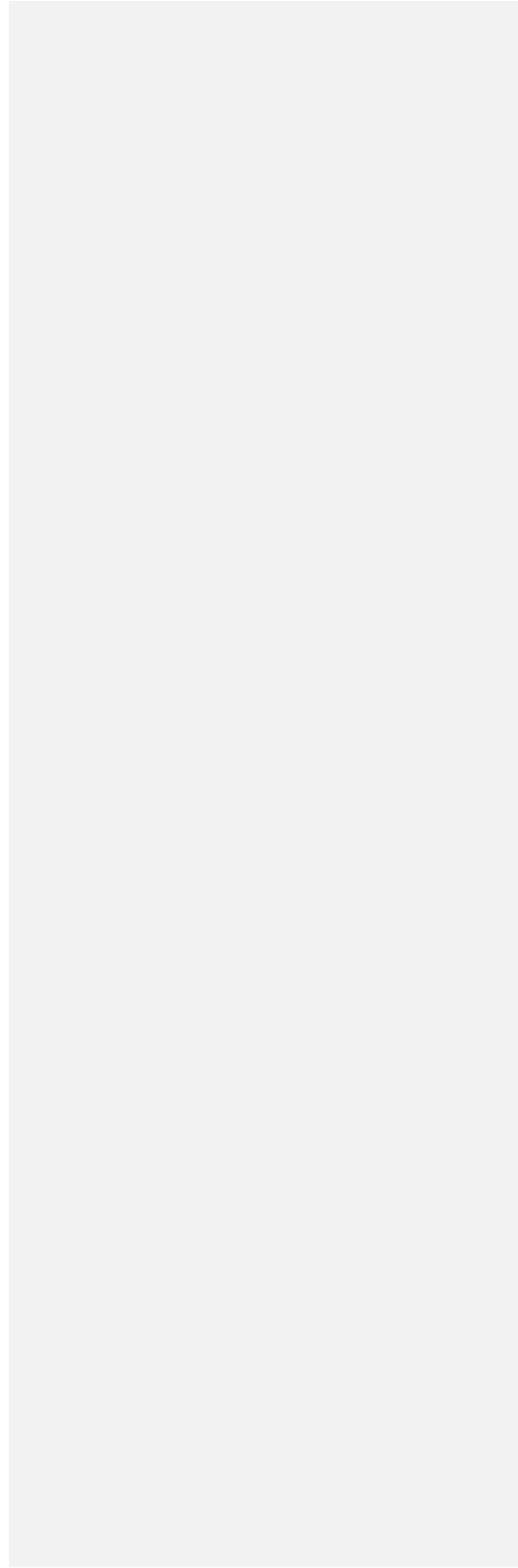
physical sensation of hugs from a deceased uncle, reinforcing the presence of unseen forces that interact with the child.

Another prominent theme is precognition or intuitive knowing. One child seemed to anticipate events before they happened. While these instances were not frequent, parents noted that whenever they did occur, the child's insights were accurate. Memories of past lives and pre-birth experiences also emerged in the narratives. One child, at the age of three, described past life memories, while another recounted vivid details of the moments before birth. This child recalled transitioning from warmth to cold, noticing the presence of four individuals in the room (which accurately reflected the birthing environment), and seeing alternative versions of himself who "waved goodbye" before disappearing.

Finally, early spiritual or religious awareness was evident in some children. One child frequently spoke about God and even had dreams about God, suggesting an early engagement with spiritual concepts.

Chapter 4

Discussion



Chapter 4

Discussion

The present study explored correlations among GSC, MM, MWB, and sleep patterns. Additionally, this study examined the moderating role of GSC in the relationship between total sleep duration and child MM, and in the relationship between total sleep duration and child MWB. Notably, this current study revealed the mediating role of MM in the relationship between GSC and child MWB.

Hypothesis 1: The higher the Intelligence Quotient (IQ), the more difficulties there would be regarding child Meaning Mindset (MM), Mental Well-Being (MWB) and disruptions in sleep patterns.

The study's findings indicate significant correlations between child IQ scores and several tested variables. First, a significant negative correlation was identified between child IQ scores and MM. Second, higher IQ scores were associated with increased nighttime awakenings among gifted children but showed no significant link to total sleep duration. These correlations indicate that MM and sleep struggles were more prevalent among children with higher IQs. Third, IQ scores also demonstrated a positive correlation with parent-reported GSC, which suggest that parents of children with higher IQ tended to report that their children lived with greater strengths and challenges. Thus, this supports our first hypothesis that the higher the IQ, the lower the child's MM score, the more disruptions in sleep patterns, and the more challenges experienced. These findings also align with previous research (Armstrong et al., 2018; Armstrong & Potter, 2022; Alexander & Schwanenflugel, 1996; Aziz et al., 2021; Calero et al., 2011; Jensen, 1963; Reis & Renzulli, 2004; Pfeiffer & Stocking, 2000; Robbins et al., 2002; Robinson, 2008; Vaivre-Douret, 2011; Winkler & Voight, 2016).

Nonetheless, the correlation between IQ and child MWB was not significant in the present study, which did not align with our hypothesis or previous research stating that the higher the IQ, the greater the prevalence or severity mental illness symptoms (Armstrong et al., 2018; Armstrong & Potter, 2022; Beljan et al., 2006; Eklund et al., 2015; Eren et al., 2018; Kontakou et al., 2022; Kroesbergen et al., 2016; Liratni & Pry, 2011; Pilarinos & Solomon, 2017). Several explanations might contribute to these observed inconsistencies. First, the participants in this study were from middle- to high-SES backgrounds and had relatively high levels of education. Families with higher SES might have greater access to resources, including mental health services and social or community support systems, which could help them manage challenges effectively (Campbell et al., 1986; Conger et al., 2010; Duncan & Magnuson, 2015; Hodgkinson et al., 2017; Reiss, 2013). Previous research suggests that when gifted children receive appropriate support tailored to their unique needs, they can experience similar or even better mental MWB outcomes (Armstrong et al., 2018; Perham, 2013; Richards et al., 2003), potentially enhancing their overall MWB. This potential reason aligns with findings that when gifted children's learning and socio-emotional needs are met, no significant difference occurs in the prevalence of mood or other disorders compared to their non-gifted peers (Baker, 1995; Becker et al., 2014; Kermarrec et al., 2020; Metha & McWhirter, 1997; Peyre et al., 2016). Second, the sample size of this study was relatively small, which reduced statistical power, increasing the risk of false negatives and failing to detect the correlation between IQ score and MWB (Ercikan, 2009). Third, other underlying resilience or protective factors that are as of yet unknown might contribute to participants' ability to manage their mental health concerns.

Additionally, the results reveal significant correlations among child MM, MWB, parent-reported GSC, and sleep patterns. Thus, it is evident that our first hypothesis—the greater the

Commented [1]: Is this in the right place? These look like limitations. -Adam

challenges associated with giftedness, the more a child may experience difficulties in MWB and MM—aligns with previous research. Hypersensitivities linked to giftedness, including heightened physical and emotional sensitivity, might contribute to challenges such as overexcitability, social maladjustment, boredom, and perfectionism (Al-Momani et al., 2015; Armstrong et al., 2018; Armstrong & Potter, 2022; Lupu, 2012; Sharifi & Sharifi, 2014; Reis & Renzulli, 2004; Renati et al., 2022; Renzulli, 2021; Pfeiffer & Stocking, 2000; Winkler & Voight, 2016). These difficulties could accumulate over time, potentially undermining self-confidence, self-compassion, and overall mental well-being in children. Additionally, previous research suggests that finding purpose and deriving positive meaning from challenges could serve as an effective coping strategy for adversity, reducing mental health concerns and fostering post-traumatic growth (Melin et al., 2019; Merrill et al., 2016).

Hypothesis 2: The more challenges gifted children present with, the greater the difficulties with MM, MWB, and sleep.

Furthermore, a strong positive correlation was observed between child MM and MWB with both variables also significantly associated with parent-reported GSC, which is consistent with our hypothesis and previous research findings (Armstrong et al., 2018; Armstrong & Potter, 2022; Champaigne-Klassen, 2024; Dweck, 2015; Frankl, 1986; Merrill et al., 2016; Stoddard et al., 2011; Van Tongeren & Green, 2010).

Notably, to simply explore which gifted challenges may be associated with MWB and MM, our study's results revealed numerous common GSC items that exhibited significant correlations with both MWB and MM. Interestingly, nearly all items that showed a significant correlation with MM were also significantly correlated with MWB. However, additional items were identified that were significantly and inversely correlated with MWB but not with MM. More

specifically, children exhibited more challenges with MM and MWB when parents reported they possessed greater empathy in early childhood. In the literature, it is noted that gifted children often worry deeply about the world (Boatman & Boatman, 2021; Peterson et al., 2018), which may influence well-being. Similarly, noticing details others do not seem to notice or noticing the beauty in the world in writing, music, art, and nature more than other children is also associated with more challenges, as the inverse is likely also true: Gifted children also note the darker aspects of the world (Armstrong & Potter, 2022; Boatman & Boatman, 2021; George & Gallagher, 1978; Peterson et al., 2018).

Additionally, curiosity is a challenge associated with giftedness, and can get gifted children into trouble, particularly if adults do not understand their need to investigate the world around them (Aziz et al., 2021; Guilbault, 2025; Ulatowska, 2018). Furthermore, having an imaginary friend and not being invited for playdates were both associated with challenges, including loneliness (Aiken, 2012; Champaigne-Klassen, 2024; Gatto-Walden, 2022). Similarly, other things that can make some gifted kids stand out socially, like clumsiness, difficulty with geographic directions, obsessive interests, needing reasons for rules explained to them, were associated with challenges (Armstrong & Potter, 2022; Aziz et al., 2021; Champaigne-Klassen, 2024). Importantly, not all gifted children face all of these challenges (Aziz et al., 2021; Armstrong & Potter, 2022; Aziz et al., 2021; Borland, 2015; Champaigne-Klassen, 2024; Pfeiffer, 2003). Interestingly, nearly all items that showed a significant inverse correlation with MM were also significantly inversely correlated with MWB. However, additional items were identified that were significantly correlated with MWB but not with MM. This finding suggests two key points: First, MM may serve as a link between the strengths and challenges faced by gifted children and their MWB, aligning with our hypothesis that MM functions as a moderator

in the relationship between GSC and MWB. Second, additional factors may mediate or moderate the influence of specific strengths and challenges on children's MWB, highlighting the complexity of these interactions and thus the importance of further research.

Nighttime awakenings showed moderate correlations with parent-reported GSC, child MM, and MWB, being positively linked to GSC but negatively correlated with MM and MWB. Similarly, total sleep duration at night exhibited a negative correlation with MM and MWB but was positively associated with parent-reported GSC. These findings align with previous research suggesting that gifted children tend to experience sleep disruption (Bastien et al., 2023; Buckley et al, 2010) and are inconsistent with past studies indicating no significant link between sleep issues and mental health challenges in giftedness (Cook et al., 2020). Thus, these results clearly highlight the importance of studying sleep quality and concerns among gifted children.

Hypothesis 3: Moderating effects of parental-reported GSC.

This study's results indicate a significant interaction effect between GSC and child sleep duration in predicting child-reported MM, which display a moderating effect of GSC on the relationship between child sleep duration in predicting child-reported MM (see Figure 1). Specifically, at high levels of GSC, children's total sleep duration and MM were significantly and negatively correlated, but not at moderate or high levels. This finding supports our second hypothesis that giftedness challenges and strengths act as moderators in the relationship between MM and sleep disturbances. Thus, child GSC might be a protective factor for MM during sleep deprivation. The unique experiences of gifted children appear like they can be both strengths and challenges.

Given that our finding suggested that GSC is negatively correlated with MM, one possible explanation for GSC acting as a protective factor at its high levels in supporting MM during

sleep deprivation is the role of parental attunement involving recognizing and appropriately responding to another person's emotions. Parents who are more attuned to their child's giftedness might be more aware of their child's sleep struggles, such as frequent awakenings, difficulty falling asleep, or disrupted sleep cycles. This heightened awareness could lead parents to provide increased emotional support during periods of sleep deprivation, creating more opportunities for meaningful parent-child interactions than in the general child population (Dombrowski et al., 2005; Francis et al., 2016; Philbrook & Teti, 2016; Ryan et al., 2017; Townshend, 2016). Increased parent-child conversations and emotional validation during these moments might help children process their emotions, regulate their moods, and promote MM. Thus, future research is needed to explore the role of parenting styles, parent-child communication, and parental interventions and child MM on sleep-related issues in gifted children.

Additionally, parents with a high level of attunement to their child's unique challenges and strengths tended to notice both high GSC and signs of sleep deprivation. These parental observations might also create opportunities for these parents to intervene in challenging situations proactively, adjust routines, avoid child behavioural difficulties, promote better emotion regulation, foster mental well-being, or foster MM, especially when parents are MM oriented (Armstrong et al., 2025; Bolis et al., 2022; Dombrowski, Francis et al., 2016; 2005; Rees, 2007; Ryan et al., 2017; Townshend, 2016). These findings highlight the importance of parental responsiveness in recognizing and supporting the needs of gifted children, particularly in managing the interaction between sleep disturbances and mental health outcomes.

The results of this study reveal a significant interaction effect between GSC and child sleep duration in predicting child-reported MWB, demonstrating that GSC moderates this relationship

(see Figure 2). Specifically, at moderate and high levels of GSC, children's total sleep duration was significantly and positively correlated with MWB, whereas no such relationship was observed at low GSC levels. This finding supports our second hypothesis, suggesting that the challenges and strengths associated with giftedness moderate the link between sleep disturbances and child mental health. Consequently, child GSC might act as a protective factor for the mental health of gifted children during sleep deprivation.

Considering a negative correlation between GSC and MWB suggested by our research, which aligns with the previous research (Al-Momani et al., 2015; Armstrong et al., 2018; Armstrong et al., 2025; Armstrong & Potter, 2022; Bolis et al., 2022; Dombrowski, 2005; Francis et al., 2016; Pfeiffer & Stocking, 2000; Rees, 2007; Reis & Renzulli, 2004; Renati et al., 2022; Renzulli, 2021; Sharifi & Sharifi, 2014; Townshend, 2016; Winkler & Voight, 2016), one possible explanation for the protective role of GSC, which was not directly examined in the present study, is the role of parental attunement or the quality and style of parenting in shaping both the recognition and management of gifted children's needs. Parents who are more attuned to their child's unique strengths and challenges may be more likely to recognize, report, and respond to these characteristics, leading to a higher GSC score in parent reports. These parents might also be more aware of their child's sleep struggles and sleep deprivation, enabling them to intervene more effectively to support sleep stability and, consequently, mental well-being. Moreover, parental attunement might not only increase awareness of gifted children's specific challenges but also improve the quality and suitability of the support provided. Previous research suggests that when gifted children receive appropriate and tailored support for their cognitive, emotional, and social needs, they experience similar or even better mental well-being outcomes compared to their non-gifted peers (Armstrong et al., 2018; Perham, 2013; Richards et al., 2003).

Commented [2]: Removing here, repetition. -Adam

This targeted support could explain why children with higher GSC scores—whose parents likely have a deeper understanding of their giftedness—experience a stronger protective effect against the negative consequences of sleep deprivation. Future research should explore the role of parenting styles, parental responsiveness, and the quality of parent-child interactions in moderating the impact of sleep disturbances on the mental health of gifted children.

Hypothesis 4. MM is a mediator or protective factor between gifted challenges and MWB.

The mediation analysis revealed a significant indirect effect of GSC on MWB through MM, highlighting the mediating role of child-reported MM in this relationship (see Figure 3). These results align with our third hypothesis, which proposed that the challenges associated with giftedness serve as a mediating factor in the relationship between GSC and the mental health of gifted children. These findings suggested despite significant potential challenges associated with giftedness, MM can act as a resilience factor, potentially, playing a crucial role in shaping mental well-being.

This finding is consistent with previous research (Champaign-Klassen, 2024), demonstrating that MM mediates the relationship between GSC and MWB. Fostering a stronger MM helps mitigate mental illness symptoms among gifted children despite the challenges associated with giftedness (Champaign-Klassen, 2024). Furthermore, past studies suggest that finding purpose and constructing positive meaning from challenges can be an effective coping strategy, contributing to reduced mental health concerns and promoting post-traumatic growth (Melin et al., 2019; Merrill et al., 2016).

Exploratory Findings

The spiritual experience-related findings from this study contributes to the limited body of research on spirituality in gifted children by highlighting the diverse range of spiritual experiences they report. More than 30% of parents indicated their children having experienced spiritual encounters, including interactions with unseen entities, precognitive insights, and recollections of past lives or pre-birth memories. These experiences suggest that spirituality may play a unique role in the lives of gifted children, reinforcing past research indicating that they perceive their world and spirituality in distinct ways (Heshmati & Maanifar, 2018; Neihart, 2021; Silverman, 1994; Sisk, 2008). Intellectual giftedness had been associated with an increased tendency to engage in deep existential and spiritual questioning, which might partly explain why gifted children report a broader and more profound range of spiritual experiences compared to their peers with average IQs.

The diversity of these encounters further underscores the complexity of gifted children's inner experiences. Reports ranged from interactions with unseen beings, such as spirits, ancestral figures, or imagined entities, to intuitive perceptions that allowed children to sense or predict future events with surprising accuracy as reported by their primary caregivers. Some children described vivid pre-birth memories, including recollections of existence before entering the physical world. Others experienced a sense of connection to unseen forces or heightened spiritual awareness at a young age, demonstrating a unique engagement with metaphysical concepts that often surpassed that of their similarly aged peers.

Despite this emerging understanding, research on spiritual sensitivities in the gifted population remains scarce (Heshmati & Maanifar, 2018; Rodríguez-Fernández, 2024). While previous studies recognize the depth of existential questioning in gifted children, few examine

how these sensitivities manifest as lived experiences, such as those reported in this study. Given that spirituality may shape a child's worldview, emotional resilience, and coping mechanisms (Barnes et al., 2000; Manning et al., 2019), further research is needed to explore how spiritual encounters influence gifted children's psychological and emotional development. Additionally, understanding the factors that contribute to these experiences—whether cognitive, emotional, or environmental—could provide valuable insights into how gifted children navigate their inner and outer worlds.

Another underexplored area in the literature is the connection between spirituality, sleep patterns, and giftedness. In this, research on gifted children's sleep arrangements is limited (David, 2014; Ford et al., 2004), yet sleep plays a crucial role in cognitive and emotional development (Goldstein & Walker, 2014; Killgore, 2010; Walker, 2009). If gifted children have heightened spiritual sensitivities, these experiences may intersect with sleep-related phenomena, such as vivid dreams, nighttime awakenings, or altered perceptions during sleep. Investigating how spiritual experiences related to sleep behaviors in gifted children could provide a more comprehensive understanding of their development and well-being.

Overall, these spiritual experience-related findings underscore the importance of expanding research on spirituality in gifted children. Future studies should explore the underlying cognitive and emotional mechanisms that contribute to spiritual sensitivities, the role of environmental influences, and the potential connections between spirituality, sleep patterns, and well-being. By addressing these gaps, researchers can understand more thoroughly how spirituality shapes the experiences and development of gifted children.

Additionally, the sleep pattern-related findings from this study suggest that variability in bedtime and bath routines might play a role in differences in sleep stability and overall sleep

quality among children. Inconsistent sleep schedules, including flexible bath times and variations in where children sleep, could contribute to irregular sleep patterns, potentially affecting both sleep duration and restfulness (Boivin et al., 2007; Brick et al., 2010; Brown et al., 2002; Choe et al., 2011; Meltzer et al., 2014; Yuwen et al., 2016). Children with more structured bedtime routines might experience greater sleep stability, while those with less consistency might be more prone to nighttime awakenings or difficulty maintaining restful sleep. These results highlight the importance of routine in supporting healthy sleep habits among gifted children and suggest that interventions aimed at improving sleep quality in children should consider the role of bedtime consistency.

Moreover, the exploratory insights from this study provide a deeper understanding of children's sleep arrangements and the potential factors contributing to sleep instability. Differences in sleep locations, such as whether children sleep alone, share a bed with a caregiver, or have mixed sleeping patterns, might influence their overall sleep experience. Similarly, parental perceptions of what causes sleep disruptions—ranging from child-driven behaviors to unknown factors—indicate the complexity of sleep-related challenges. By examining the flexibility of bedtime routines alongside these factors, this study offers valuable insight into the interplay between environmental influences, family practices, and gifted children's sleep behaviors.

Limitations and Future Direction

This study is the first to investigate sleep patterns and concerns among gifted children in North America, including the Canadian population. It is also the first to explore the relationship between child GSC and sleep disturbances and to examine the moderating effect of GSC on the

link between sleep disturbances and MWB. Nonetheless, some limitations should be considered regarding the results' interpretation.

First, one limitation of this study is its relatively small sample size, which is more susceptible to the influence of outliers or systematic missing data, potentially skewing the results and reducing the external validity of the results (Ercikan, 2009; Qu & Pei, 2024). Additionally, the reduced sample size lowers statistical power, which could increase the likelihood of Type II errors (false negatives), making it more difficult to detect true effects (Ercikan, 2009). As a result, the findings should be interpreted with caution, and future research should aim to replicate these results using larger, more diverse samples to enhance reliability and generalizability. Moreover, due to the limited sample size, this study was unable to examine the comorbidity between giftedness and neurodiverse conditions such as ADHD and Autism, as well as the unique strengths and challenges associated with giftedness given the overlapping symptoms among these conditions (American Psychiatric Association, 2022; Gentry & Fugate, 2018; Heaton et al., 1998; Hoogman et al., 2020; Lee, 2022; Ten et al., 2020; Von Karolyi et al., 2003). Therefore, further research should examine the hypothesis with a bigger sample size and explore these relationships in greater depth. Although this study was advertised widely, participants had to craft and send an email response to participate. Almost 70 emails with the survey link were sent, but the response rate was minimal. Ongoing research will explore this issue with a direct survey link and solely from parental perspective to enhance the sample size.

Second, this study utilized both parent-reported questionnaires to assess child GSC and sleep patterns and child-reported questionnaires to evaluate child MM and MWB, providing a more comprehensive perspective while minimizing response bias. However, only half of the children whose parents participated in the study and filled parental questionnaires completed child

questionnaires. On top of that, the skewness and kurtosis analysis exhibited moderate levels of skewness across all measuring variables, suggesting that the data distribution in this study was not completely random. This is important, given that the systematic missing data might lead to the disincorporation of outliers, especially when combined with a small sample size (Cokluk & Kayri, 2011; Dunbar-Jacob, 2012). This in turn could influence the internal validity and the significant interval of the moderating and mediating effects of the results. This limitation could be avoided by increasing the sample size and using parental-reporting MM and MWB questionnaires.

Third, the descriptive analysis of social economic status (SES) and educational levels of the primary caregivers disclosed that the participants in the present study were from the middle to high SES classes and had high levels of education, suggesting a sampling bias. Families with higher levels of SES often have access to more and better resources, such as mental health resources as well as social and communal supports, to cope with their challenges, which might lead to better MWB (Campbell et al., 1986; Conger et al., 2010; Duncan & Magnuson, 2015; Hodgkinson et al., 2017; Reiss, 2013). This might partially explain why the MWB results from the current study were right-skewed. This might in turn lower the external validity of our results.

Fourth and finally, one limitation of this study was the reliance on both child-reported and parent-reported questionnaires, which introduced potential biases and complicates the interpretation of findings. While child-reported data provided valuable insights into subjective experiences such as MM and MWB, self-reports were inherently influenced by developmental, cognitive, and emotional factors, potentially affecting response accuracy (Fryer & Dinsmore, 2020; Schwarz, 1999). Similarly, parent-reported GSC might be shaped by parental perceptions, awareness, and attunement to their child's experiences. This reliance on parent-reported GSC

made it difficult to disentangle whether the moderating effect of GSC in the relationship between sleep and MWB was due to actual gifted-related factors or parental attunement. As mentioned previously, parents who were more attuned to their child's strengths and challenges might also be more likely to report higher GSC scores, recognize sleep difficulties, and provide emotional or environmental support, influencing both sleep patterns and well-being outcomes. Without independent assessments or observational measures, it remains difficult to determine whether GSC acted as a true moderator or whether parental attunement played an indirect role in shaping these relationships. Future research should incorporate multi-informant reports, objective sleep measures, or direct behavioral observations to better isolate these effects and clarify the complex interactions between giftedness, parental perceptions, and child well-being.

Conclusion

This mixed-methods study provided valuable insights into the potential impact of cognitive, emotional, and environmental factors on gifted children's well-being. The findings indicate that Intelligence Quotient (IQ) was negatively associated with Meaning Mindset (MM), positively linked to Gifted Strengths and Challenges (GSC) and nighttime awakenings, but unrelated to total sleep duration and Mental Well-Being (MWB). Additionally, GSC was negatively correlated with both MM and MWB while moderating the relationship between sleep and mental health, suggesting its dual role as both a risk and protective factor. Mediation analysis further highlighted MM as a key mechanism linking GSC and MWB, reinforcing the importance of meaning-making in MWB.

Importantly, this study expanded research on spiritual sensitivities in gifted children, with over 30% of parents reporting their child having had at least one spiritual experience. Gifted children exhibited a heightened engagement with existential questions and unique spiritual

encounters, yet research in this area remains limited. Additionally, findings here highlighted the impact of bedtime routines and sleep variability on sleep stability, emphasizing the role of structured sleep schedules in mitigating disturbances.

Overall, these findings underscore the complex interplay between giftedness, challenges associated with giftedness, MM, MWB, spirituality, and sleep patterns. Future research should further explore MM's protective role, the role of spiritual experiences on well-being, and strategies to improve sleep stability in gifted children to better support their development and mental health.

Potential Clinical or Educational Implications

If the findings of this research are replicated with a larger, more representative sample, they could have significant clinical and educational implications for supporting gifted children's well-being. Clinically, understanding the links between IQ, mental well-being (MWB), Meaning Mindset (MM), and sleep patterns could inform targeted interventions to address mental health concerns, sleep disturbances, and socio-emotional challenges among gifted children. If MM is a key protective factor for gifted children, integrating meaning-centered therapeutic approaches into counseling or educational programs may help enhance resilience and psychological well-being in this population. The only program to date that incorporates meaning mindset for gifted children is the DREAM program (Armstrong & Potter, 2022; Champaigne-Klassen, 2024), noted previously.

In educational settings, recognizing the role of gifted challenges and sleep disruptions in MWB could encourage more tailored support systems, such as structured sleep hygiene programs, emotional regulation training, parental support training, and social-emotional learning curricula. Additionally, if gifted challenges moderate the relationship between MWB and sleep,

educators and clinicians may need to adopt personalized intervention strategies to address the unique needs of gifted students struggling with anxiety, perfectionism, and social adjustment. Finally, findings related to spiritual sensitivities could inform holistic approaches in education, encouraging open discussions about existential questions that many gifted children naturally explore. By addressing these factors, schools and mental health professionals could foster a more supportive environment that enhances both academic success and psychological well-being in gifted students.

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Appendix

Appendix A



Figure 4. Ch.I.P.-I sample item screen shot.

Appendix B



Eibe looked in the mirror this week and felt good about what he saw

Isa looked in the mirror and did not feel good about what she saw

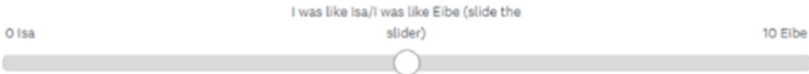


Figure 5. ISA sample item screen shot

Appendix C

Gifted Strengths & Challenges Scale:

Score on WISC or CCAT (percentile): _____

If your child did the WRAML (memory test), what was their score on the Picture Memory subtest: _____

My child has not been formally assessed for giftedness, but I think they might be gifted: Yes ___ No ___

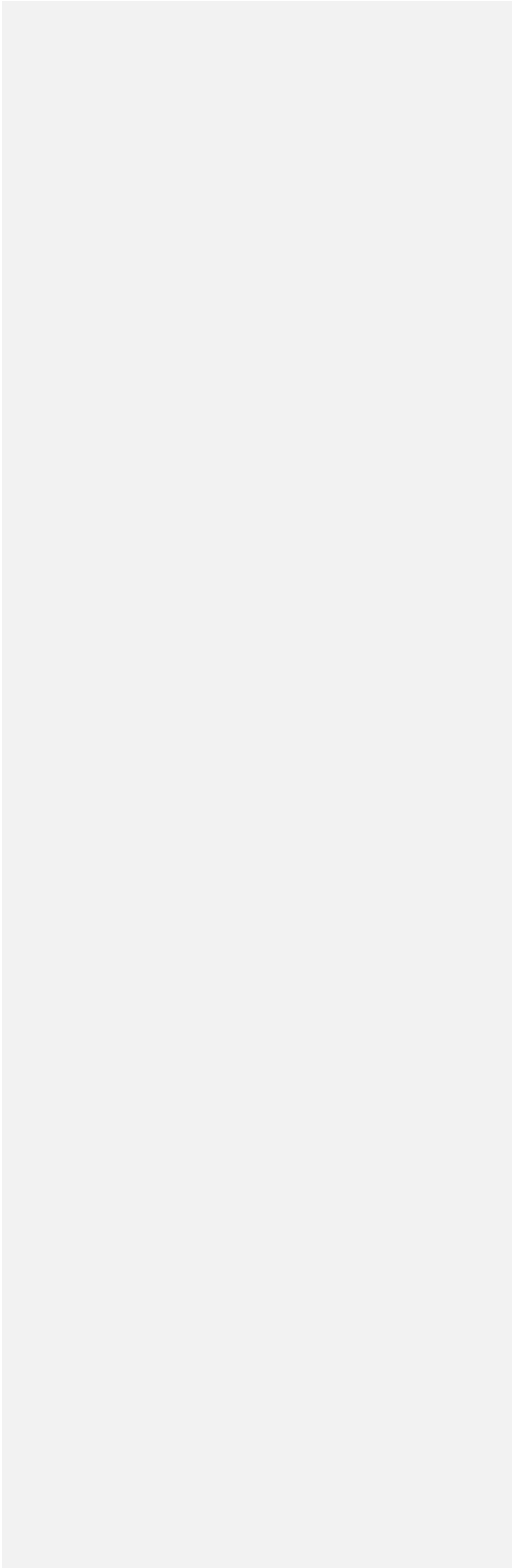
Has your child been diagnosed with ADHD: Yes ___ No ___

Has your child been diagnosed with ASD: Yes ___ No ___

Child age: _____

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. From a very early age, my child was able to recognize other people's feelings					
2. My child expresses their feelings intensely					
3. My child has a great appreciation for beautiful things (e.g., in writing, music, art or nature)					
4. My child is more bothered by a particular texture, clothing item, sound, or smell than most children					

5. My child seems to have a richer imagination than their peers					
6. My child worries about issues in the world more than most children because they can imagine these things so clearly					
7. My child has high levels of energy					
8. My child finds it hard to sit still if not intellectually stimulated					
9. My child is curious, asking many deep questions about the world around them					
10. My child thrives on learning new information					
11. My child, from an early age, asked spiritual questions, such as about death or how things came to					



be in the world					
12. My child has had a spiritual experience (e.g., heard a voice, seen a ghost/angel, said they've been reincarnated, or had a unique experience of déjà vu).					
If yes, please describe:					
13. My child has had an imaginary friend					
14. My child is socially immature					
*15. My child is often invited to things (e.g., to join groups in class or is regularly invited for playdates or birthday parties)					
16. Handwriting is effortful for my child					
17. My child is clumsy or has some difficulty in sports compared to					

peers					
18. My child has difficulty with geographic directions (e.g., how to get places or knowing where things are located in their environment)					
20. My child has obsessive or intense interests					
21. My child has some challenges with planning and organizing their school work					
22. My child has difficulty making choices or decisions					
23. My child has a messy room					
24. My child notices details that other children don't seem to notice					
25. My child can miss the "big picture" if they get caught up in details					

26. My child needs the reason for rules explained to them					
27. Fairness and justice are important to my child					
28. My child needs solo time for contemplation					
29. My child has a need for precision in their activities or in their social interactions (e.g., corrects others when they don't say something exactly right)					
30. My child sometimes does things impulsively that may bother others					
31. Right and wrong are important to my child					
32. My child is easily bored					
33. My child, at a young age, used rich descriptors for the world					

around them (e.g., use of similes or metaphors)					
34. My child has a lagging skill in verbally presenting their ideas to teachers or classmates					
35. My child struggles with perfectionism					

Appendix D

Please mark only one most appropriate answer referring to your child's habitual sleep for the last four weeks.

Name of responder: _____ Date: _____

Role of Responder: Father Mother

A. Sleep arrangement:

- Child's own bed (or equivalent sleeping surface) in separate room
 Child's own bed (or equivalent sleeping surface) in parents' room
 In parents' bed (or equivalent sleeping surface)
 Other (please specify): _____

B. In what position does your child sleep most of the time?

- On his/her belly On his/her side On his/her back

C. How much time does your child spend in sleep during the night?

() hr () min

D. What time does your child get into bed? () hr () min

E. What time does your child fall asleep actually? () hr () min

F. What time does your child wake up in the morning? () hr () min

G. Is the bath time of your child fixed or flexible? Yes () hr () min
 No

H. How many night wakings (longer than 5 minutes) are usually noticed per night with your child?
 ()

I. How much time during the night does your child spend in wakefulness?

() hr () min

J. Is your child's sleep pattern stable? Yes No

K. (Only for parents who answered No to Question J)

Who is the most responsible for child's unstable sleep patterns? :

- Child him/herself Parents Unknown

L. Do you consider your child's sleep as a problem?

- A very serious problem A small problem Not a problem at all

The brief infant sleep questionnaire developed by Sadeh (Sadeh, 2004) was modified and translated into Japanese (only the draft before translation is shown) to obtain the abbreviated sleep patterns of preschool children over a four-week period.