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Understanding The Interaction Of Intrapersonal And Interpersonal Dynamics: A Study Of Identity Development Among Highly Able College Students

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Understanding The Interaction of Intrapersonal and Interpersonal Dynamics: A Study of Identity

Development Among Highly Able College Students

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Anyesha Mishra

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Dedicated to

My guiding light, inspiration, and the heartbeat of my journey,

Dr. Paromita Roy

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Abstract

Understanding identity development among individuals with gifts and talents (IWGT) can empower its stakeholders to support their journey towards well-being and life success. In an era where educational institutions are struggling to prioritize students' social-emotional skills, it is imperative to prioritize the psychosocial development and identity achievement of IWGT. With the help of structural equation modeling, the present study aimed to assess how intrapersonal aspects (indicated by hope, purpose, curiosity, and exploration); interpersonal factors (indicated by school environment and family environment); and their interaction influence the identity development of IWGT. Convenience sampling was used to recruit 238 participants in the undergraduate program (18-25 years) at a university known for its high selectivity in admissions, which was used as an indication for giftedness. Among the total number of participants, 70% identified themselves as female, 62% were first-year students, and 67% identified themselves as White. The study found a strong positive relationship between intrapersonal factors and identity development within the hypothesized model. However, there was no significant relationship between interpersonal factors and identity development. This suggests that IWGT may rely more on intrapersonal resources for identity development, emphasizing the significance of understanding their internal dynamics in identity development during emerging adulthood. However, further research across diverse contexts is needed to explore the influence of family and school environments to understand the *ideology* and *relationship* domains. The findings suggest that interventions aimed at fostering the intrapersonal aspects (hope, purpose, curiosity, and exploration) may have a positive impact on identity development among IWGT.

Understanding the Interaction of Intrapersonal and Interpersonal Dynamics: A Study of

Identity Development Among Highly Able College Students

Chapter 1

Introduction

Education is the cornerstone upon which individuals build their futures, and societies construct their foundations for progress and prosperity. It occupies a fundamental position in society, having the capability of greatly influencing both individual lives and the broader social landscape (Meyer, 1977). At the individual level, education can serve as a powerful tool for personal growth and empowerment. It can equip individuals with knowledge, critical thinking abilities, and life skills (Botvin & Griffin, 2004), enabling them to make informed choices, pursue their aspirations, and contribute meaningfully to society (Apple, 2012). It can also foster social mobility by providing opportunities for personal and professional advancement, regardless of background or circumstances. On the societal front, education can act as a catalyst for progress and development (Apple, 2012). It cultivates a skilled and innovative workforce, which fuels economic growth and competitiveness (Psacharopoulos & Woodhall, 1985). Moreover, education can promote social cohesion (Green & Preston, 2001), tolerance, and understanding by exposing individuals to diverse perspectives and cultures, thus fostering a more inclusive and balanced society (Green et al., 2006).

Education is not merely a path to acquiring information but a transformative journey that plays a fundamental role in shaping one's identity. It can serve as a powerful vehicle through which individuals explore their self, interests, values, beliefs, motivation, and potential, thus contributing significantly to the formation of their identities. In educational environments such as schools, students can not only acquire knowledge but also engage in self-discovery and self-

reflection. They interact with peers, broadening their opportunities for exploration and commitment processes and developing interpersonal skills that can influence their sense of self (Ragelienė, 2016; Renn, 2020). Individuals can also be exposed to diverse cultural and societal contexts in their educational environment, encouraging them to question assumptions and discover their own values and beliefs (Brookfield, 2011). By nurturing self-concept, self-awareness, creativity, and social and emotional skills, education can empower individuals to navigate the complexities of identity formation (Kaplan & Flum, 2012; Roeser et al., 2006).

For individuals with gifts and talents[1] (IWGT), a nurturing and stimulating educational environment through "repersonalization" (S. R. Smith & Laura, 2009, p. 25) is essential to support their social, affective, and educational needs (Diezmann & Walters, 1997; Manasawala & Desai, 2019; S. R. Smith & Laura, 2009). Within educational settings, IWGT often navigate their general and academic self-concept (Košir et al., 2016; Loeb & Jay, 1987); engage in social comparisons (Wilson et al., 2014); and develop their identity (Baudson & Ziemes, 2016; Mahoney, 1998). An effective educational environment not only recognizes and nurtures them to maximize their potential (S. R. Smith & Laura, 2009) but also fosters autonomy, reflection, resilience, and a sense of competence through their identity development (Flum & Kaplan, 2006; Kroger et al., 2010). In such environments, it is expected that they will be provided with curricula that align with their intellectual capacities (VanTassel-Baska & Reis, 2003) and psychosocial needs (T. L. Cross et al., 2017), thus reinforcing positive self-concepts and self-efficacy (Clinkenbeard, 2012).

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[1]Although I have taken care to be consistent with the term IWGT, when citing extant literature, the terms *IWGT*, *gifted*, and *high ability* are interchangeable in this document.

Identity Formation and its Importance in Educational Settings

Identity development is a multifaceted and dynamic process that significantly influences a student's educational journey because of its implications for student motivation (Master et al., 2016; Oyserman & Destin, 2010); engagement (Deakin Crick & Goldspink, 2014); social interactions (Freese & Burke, 1994); academic achievement (Good & Adams, 2008; Hejazi et al., 2009); and overall life success. As individuals progress through their personal and academic journeys, they grapple with questions of self-discovery, values, and personal aspirations. The process of identity formation involves the integration of various facets of oneself, including cultural, social, and personal dimensions (Côté & Levine, 2014). In educational environments, students navigate not only academic challenges but also interpersonal dynamics, cultural influences, and evolving self-perceptions. Educational settings play a critical role in shaping this process by providing opportunities for self-exploration, diverse cultural experiences, and meaningful interactions with peers and educators. One fundamental aspect of identity development lies in its relationship with various psychological constructs, such as self-concept (Hamachek, 1988); self-esteem (Swann et al., 2007); meaning in life (Steger et al., 2013); and life satisfaction (Pavot & Diener, 1993). Hamachek (1988) highlighted the role of a secure self-concept, emphasizing its significance in individuals with a clearly defined sense of identity. Moreover, Oyserman et al. (2012) also demonstrated the close relationship of self-concept and identity by stating that "self, self-concept, and identity can be considered as nested elements, with aspects of the 'me' forming self-concepts and identities being part of self-concepts" (p. 75).

Rationalization for Focus on Identity Development

Identity development assumes a central role in supporting the psychological well-being (Ryff, 1989) among adolescents (De Lise et al., 2023), influencing their capacity for

"autonomous functioning and decision making, mastery of one's environment, seeking opportunities for personal growth, maintaining positive relations with others, having a sense of purpose in life, and accepting and thinking positively about oneself" (Bowman, 2010, p. 180). In the context of identity development, commitment implies a conscious and enduring attachment to specific life choices, values, and aspirations. Marcia's (1966) seminal work delineates identity commitment as a key stage in the process of identity formation, representing a stage when individuals not only explore various possibilities but also make firm decisions and align themselves with certain beliefs and goals. Robust identity commitments are correlated with favorable outcomes such as enhanced subjective well-being (Hofer et al., 2007; Waterman, 2007); psychological well-being (Abu-Rayya, 2006; Waterman, 2007); self-esteem (Basak & Ghosh, 2008; Schwartz, 2007; Waterman et al., 2013); and an internal locus of control (Adams & Shea, 1979; Schwartz, 2007; Waterman et al., 2013). Additionally, identity commitment is also associated with a decreased likelihood of experiencing symptoms of anxiety (Marcia, 1967; Schwartz et al., 2011) and depression (Waterman et al., 2013).

However, Schwartz et al. (2011) introduced a nuanced dimension by incorporating the quality (referring to the depth, strength, and positive nature) of identity commitments into their analyses. Commitment quality emerged as the key factor explaining the associations between identity commitments and psychosocial functioning. Interestingly, low-quality identity commitments were linked not with benefits but with psychological costs (Schwartz et al., 2011). Consequently, they discussed the implications of guiding emerging adults in making more informed identity choices to enhance their well-being, emphasizing the stimulation of identity exploration, commitment, or both. Similarly, Soenens and colleagues (2011) highlighted the significance of commitment quality in relation to self-determination theory (Deci & Ryan, 2009).

Their study revealed that autonomous motives, reflecting self-determined motivations, were positively associated with better adjustment, even after accounting for the strength of identity commitments. Conversely, controlled motives, driven by extrinsic factors, exhibited a negative impact on adjustment. This highlights the importance of the quality, rather than the strength alone, of identity commitments in influencing psychological well-being.

In the realm of education, a robust and positive sense of identity has been recognized as a catalyst for academic success (Good & Adams, 2008; Hejazi et al., 2009; Komarraju & Dial, 2014). Students with a strong connection to their identities tend to exhibit heightened self-confidence and motivation (Master et al., 2016), contributing to their academic achievements. As students navigate their educational journeys, maintaining a positive sense of identity becomes crucial for fostering intrinsic motivation and active engagement in the learning process (Deakin Crick & Goldspink, 2014; Erentaitė et al., 2018). Educators, recognizing the impact of students' identities, can tailor learning experiences to make them more relevant and engaging, leveraging individual identities and interests to enhance motivation. Furthermore, a well-defined sense of identity plays a guiding role in students' goal-setting and decision-making processes, supporting them in making informed choices about their educational and career paths (Greco & Kraimer, 2020). Waterman (2004) conducted a non-empirical, exploratory literature review to investigate the constructs that predict intrinsic motivation and their correlation with various measures of identity. Within this analysis, he identified subjective states such as interest, flow, and personal expressiveness as factors predicting intrinsic motivation. He speculated that this intrinsic motivation, in turn, influences self-determination, competence, and self-realization values, thereby playing a fundamental role in shaping the trajectory of identity formation (Waterman, 2004).

Identity Development of IWGT

The development of identity is a complex and challenging process for all young people, but it can be particularly demanding for those with gifts and talents. There are significant conceptual challenges in understanding the complexities of identity formation among IWGT. According to Mahoney (1998), it is first crucial to understand the diverse factors that shape the identity of an IWGT. These complexities deepen when we consider that IWGT often possess diverse talents and interests, raising questions about the potential multiplicity (Ramarajan, 2014) of their identities. The second and more intricate challenge lies in the practical implementation of strategies aimed at fostering a healthy and relevant identity for IWGT (Mahoney, 1998). This involves addressing issues of social isolation, underachievement, boredom (Gallagher, 2008), managing external expectations and stigma (T. L. Cross et al., 1991), and promoting holistic development that transcends their specific talents. IWGT may have a harder time figuring out their identity compared to their non-identified peers. This may be because they sometimes try to blend in with others instead of being distinct and presenting their own characteristics (J. R. Cross et al., 2016; J. R. Cross et al., 2019; T. L. Cross et al., 1991). The development of a strong and authentic sense of identity is linked to one's ability to navigate the social and psychological dimensions of life. It is possible that IWGT may encounter distinctive obstacles concerning the synchronization of their intellectual abilities with their social and emotional needs (Gross, 1994), thus influencing their identity development. For example, their cognitive prowess may set them apart from their peers, potentially leading to feelings of isolation or a sense of being different (J. R. Cross et al., 2019). Moreover, IWGT often face a unique challenge where their advanced intellectual abilities contrast with the expectations placed on them to conform to social norms that are deemed appropriate for their age (Gross, 1998). This contrast can create a significant

tension that requires careful navigation to ensure that the child's intellectual development is not hindered by societal expectations (Foust & Booker, 2007).

The Concept of Identity Development

Identity development is a dynamic journey that unfolds within the broader socio-cultural context and cannot happen in isolation. In his theory of psychosocial development, Erikson (1950, 1968) strongly emphasized the importance of social relationships in shaping the personality of an individual, thus focusing on the relationship between the individual and society. According to Erikson's theory, adolescence is a critical period for developing identity. Adolescents face a crisis of identity versus role confusion when they explore different roles to find their place in the world. It involves exploring different roles and finding one's place in the social system (Erikson, 1959), resulting in a sense of self-continuity and purpose. During identity exploration, adolescents may experience confusion and experimentation as they navigate the path of life. This phase was first described by Marcia (1966) as psychological moratorium. In this stage, individuals temporarily suspend their current identity and engage in explorations to discover their options for identity. Successful navigation of this stage culminates in the development of fidelity (Erikson, 1950, 1968) or identity achievement (Marcia, 1966), allowing individuals to commit to themselves and others, thus becoming active citizens in the society (Brittian & Lerner, 2013).

Fidelity encompasses loyalty, commitment, sincerity, genuineness, choices, beliefs, and a sense of duty toward others (Erikson, 1964; Markstrom & Kalmanir, 2001; Markstrom & Marshall, 2007). Achieving fidelity in adolescence can lead to personal and professional success (Côté, 2009; Markstrom et al., 1998) and well-being (Meeus et al., 1997; Meeus et al., 1999). However, while "the specific quality of a person's identity differs from culture to culture, the

accomplishment of this developmental task has shared elements in all cultures" (Muuss, 1968, p. 43). Marcia (1966) believed that exploration was the process that leads to the development of identity, while commitment was the result (leading to identity achievement). However, more recent models (e.g., Cieciuch & Topolewska, 2016; Crocetti et al., 2008; Luyckx, Goossens, Soenens & Beyers, 2006) consider both exploration and commitment as ongoing processes towards identity formation. These models use a process similar to Marcia's (1966) to identify identity statuses, providing a strong empirical foundation for capturing the process of identity formation (Schwartz et al., 2011).

Psychosocial Development among IWGT

The School-Based Psychosocial Curriculum Model (T. L. Cross et al., 2017; T. L. Cross & Cross, 2017a) offers a framework for the psychosocial development of IWGT. This model focuses on nurturing essential ego-strengths, as outlined by Erikson (1968), which are instrumental in supporting IWGT as they strive for their highest levels of achievement and personal growth. The School-Based Psychosocial Curriculum Model adopts the school-based conception of giftedness (Coleman & Cross, 2001; T. L. Cross & Coleman, 2014), suggesting that all students should have opportunities to develop and maximize their potential early on. Expanding upon this perspective, T. L. Cross et al. (2017) advocated that in addition to conventional academic curricula, schools (where the School-Based Psychosocial Curriculum Model is intended to be implemented) should actively address the development of intrapersonal and interpersonal dimensions. This encompasses nurturing students' self-awareness and cultivating positive beliefs, attitudes, and behaviors, which are integral to fostering self-acceptance. Additionally, schools should have a responsibility to foster a positive and supportive environment that encourages positive relationships with peers and teachers. This includes

developing students' social skills and their ability to work well with others. Similarly, it is also important that schools equip students with the necessary skills to effectively seek out opportunities for talent development while also teaching them how to navigate through challenges with resilience (T. L. Cross et al., 2017).

T. L. Cross and Cross (2017a) emphasize the essential role that a strong ego plays in talent development, as IWGT must possess the motivation to maximize their potential. They recommend prioritizing fidelity as the foundational principle in designing talent development programs. This emphasis on fidelity mirrors the concept of identity achievement proposed by Marcia (1993), highlighting the broader objective of promoting optimal psychosocial development of IWGT. Centering on Erikson's theory (1950, 1968), the School-Based Psychosocial Curriculum Model places particular emphasis on both intrapersonal and interpersonal dimensions. T. L. Cross and Cross (2017b) emphasize the creation of a nurturing educational environment that caters to the psychosocial needs of IWGT, including the provision of opportunities for fostering positive peer relationships, mentorship, and academic challenges.

The experiences of IWGT within their environment play an essential role in shaping their identity development since the messages and feedback they receive from their surroundings can introduce complexities to this process (T. L. Cross & Frazier, 2009). These external influences may either strengthen their self-concept or introduce doubt and confusion. When an IWGT grapples with conflicting messages (Coleman et al., 2021; T. L. Cross, 2011) about their abilities, it can lead to several negative intrapersonal consequences, such as poor self-concept, stress, and frustration. Additionally, these external messages can significantly affect their interpersonal relationships. When IWGT receive messages that either affirm or challenge their abilities, it can influence how they relate to their peers (J. R. Cross, 2021a, 2021b); teachers (Robinson &

Bryant, 2021); counselors (Peterson, 2021); and parents, potentially affecting their social interactions and support networks. This emphasizes the importance of prioritizing the development of identity during youth for their success (Zuo & Cramond, 2001) through the factors that contribute to it. By gaining a deeper understanding of how external messages impact IWGT and considering the complex interaction between these internal and external influences, the stakeholders can provide more effective support to help IWGT navigate their identity development journey, thereby facilitating their academic and identity achievement.

Interaction of Psychosocial Constructs for Identity Development

Erikson (1950) identified two distinct domains, *ideology* and *relationships*, which are crucial for the development of one's identity. This separation suggests that understanding the formation of identity requires considering both intrapersonal and interpersonal dimensions (Kroger & Marcia, 2011). In other words, the complex process of identity development occurs within and through these two dimensions. The intrapersonal dimension pertains to an individual's subjective experiences, including their feelings, thoughts, and values, which represents the internal, self-reflective aspect of identity. On the other hand, the interpersonal dimension is manifested in an individual's behaviors and interactions with others, representing the external, socially engaged facet of identity. And the interaction between these intrapersonal and interpersonal factors is a dynamic force that influences the trajectory of identity formation (Schwartz et al., 2015).

Several studies collectively emphasize the complex nature of identity development, influenced by individual, social, and familial factors. Bosma and Kunnen (2001) highlighted that this complex process of identity development is shaped by factors fostering openness to change, environmental support, and developmental history. Kroger (2006) posited personality

characteristics (e.g., low neuroticism and use of self-defense mechanism, high achievement

motivation, and self-esteem); cognitive processes (e.g., more purposeful higher levels of moral

reasoning and ego development, functioning best under stress); and interpersonal skills (e.g.,

high intimacy, self-disclosure, and most secure attachments) as correlates of identity

development during adolescence. Studies across diverse cultural contexts (e.g., Floyd et al.,

1999; Sandhu et al., 2012) have affirmed the correlation between parental attitudes,

psychological well-being, and identity formation among adolescents. Luyckx et al. (2007)

expanded on this by revealing that autonomy support positively associates with identity

formation, while excessive parental practices may impede exploration.

Building on the complex role of factors shaping identity development, recent studies

further illuminate the dynamics of this complex process. In a study by Bogaerts et al. (2019),

adolescents scoring high in identity synthesis exhibited increased proactive exploration and

commitment processes, with decreased ruminative exploration a year later. Conversely, those

high in identity confusion showed elevated ruminative exploration. Similar effects were observed

in adolescents identifying strongly with commitment, displaying lower identity confusion later.

Confirming these results, Becht et al. (2021) found daily identity dynamics in adolescence

predict long-term identity development in emerging adulthood. Adolescents with low daily

commitment and high identity reconsideration were more likely to have weak commitments and

high uncertainty in emerging adulthood. Similarly, those with strong daily changes in

commitments and ongoing identity uncertainty were more likely to have high uncertainty in

emerging adulthood, highlighting the link between short-term daily identity dynamics and long-

term development. Read et al. (1984) highlighted positive traits such as a well-developed

personality, self-directedness, cooperation, and a social-influence behavioral style associated

with a well-developed identity. Moreover, individuals who are either actively exploring or have achieved their identity demonstrate effective problem-solving skills (Leadbeater & Dionne, 1981). These attributes not only enhance their personal development but also contribute to their ability to tackle challenges, form meaningful relationships, and engage constructively with their environment, reflecting the resilience and adaptability associated with identity achievement and exploration.

Problem Statement

Erikson's (1959, 1968) concept of fidelity, encompassing the idea of staying loyal to oneself and significant individuals in one's life, presents a reflective lens through which to examine the psychological needs of IWGT. As IWGT navigate the challenges of intellectual and social development, they may encounter a distinctive set of hurdles related to their advanced intellectual abilities, including experiences such as boredom, underachievement, and social isolation (Gallagher, 2008). Furthermore, their journey becomes even more complex as they try to reconcile their extraordinary intellectual aptitude with their social and emotional demands, a complexity eloquently explored by Gross (1994). In an era where educational institutions are, unfortunately, facing challenges in prioritizing the nurturing of students' social-emotional skills (Abrams, 2023), it becomes increasingly crucial to advocate for holistic approaches that encompass both intellectual and emotional facets, thereby better supporting the psychosocial development leading to well-being and identity achievement of IWGT. Anwuzia (2023) states that investing in social and emotional learning in the early years of school helps children develop positively. But if we overlook its importance during adolescence, any progress made earlier can be lost, as adolescence is a challenging time with many tasks and emotional ups and downs due

to biological and hormonal changes, identity exploration, career decision-making, and relationship formations (Denham, 2018).

Understanding identity development among IWGT holds the potential to empower its stakeholders in providing necessary support to these students, especially at a younger age, as they embark on a path of self-discovery and self-actualization. While several intrapersonal factors have emerged as significant determinants of Eriksonian identity formation, constructs such as hope and purpose drive performance to translate goals into success (Bronk et al., 2018; Colla et al., 2022). These dimensions, shaped by an individual's experiences, beliefs, and values, can play a critical role in guiding one's pursuit of Eriksonian fidelity. Similarly, the interpersonal dimension representing the environment, particularly within educational (Rich & Schachter, 2012; Verhoeven et al., 2019) and family settings (Prioste et al., 2020), exerts an influence on identity development. A positive environment can provide appropriate resources, challenges, and support for the identity development of IWGT.

Early adulthood is a phase when the sense of identity of an individual undergoes a remarkable transformation (Arnett, 2000), which is shaped by the interaction between the person and experiences in the environment cultivated since the formative years. This phase is a time of exploration, growth, and discovery—when the individual begins understanding who they are and what they want from life (Eriksson et al., 2020). And once they find their footing, they settle into a pattern that feels uniquely our own. This study aimed to provide an opportunity to assess how intrapersonal aspects (hope, purpose, curiosity, and exploration); interpersonal aspects (school environment, family environment); and their interaction influence their identity development. The research questions guiding this study were:

1. What is the relationship between intrapersonal aspects (indicated by hope, purpose, curiosity, and exploration) and identity development among IWGT?

2. What is the relationship between interpersonal aspects (indicated by school environment and family environment) and identity development among IWGT?

3. How is the interaction between the intrapersonal aspects and the interpersonal aspects associated with identity development among IWGT?

Figure 1

Conceptual Framework
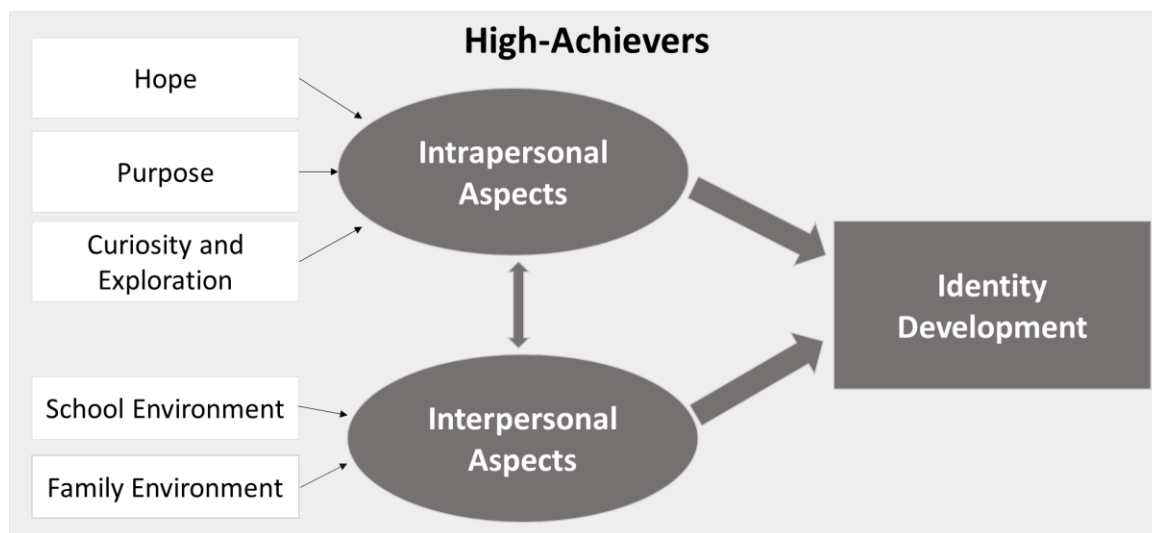
Significance of the Study

  Fostering healthy identity development among adolescents while equipping them with essential transversal skills (UNESCO-UNEVOC, n.d.) is a paramount challenge for educators, parents, and researchers in the 21st century. Education can play a fundamental role in this process by creating an environment that encourages self-reflection and self-expression, where students are encouraged to explore their interests and values leading towards the path of a

healthy identity development (Lannegrand-Willems & Bosma, 2006). This can be achieved through personalized learning experiences, mentorship programs, and inclusive curricula that respect and celebrate diversity, cultural backgrounds, and individual perspectives. The acquisition of transversal skills, encompassing collaboration and social, emotional, and civic competencies, is essential for preparing adolescents to confront the myriad challenges of our rapidly evolving world (Sá & Serpa, 2018). Identity development intervention has been seen to be fundamental for enhancing abilities, boosting academic achievement, and most importantly, expanding the range of interests, ensuring their coherence, and refining the decision-making process (Pellerone et al., 2015). Schools and educators should adopt innovative teaching methods that promote identity development through group projects, peer interaction, and civic engagement (Verhoeven et al., 2019). In partnership with parents, schools can nurture adolescents' holistic development, ensuring they are not only academically proficient but also possess the emotional intelligence, social awareness, and collaborative aptitude needed to thrive in the complex and interconnected 21st-century society.

The cultivation of psychosocial skills and identity development empowers students with the emotional intelligence and interpersonal competencies necessary to navigate the complexities of the modern world. They enable students to manage their emotions, build resilience, and effectively cope with stress, equipping them with essential life skills for personal well-being through a strong identity (Lipnevich et al., 2016). Moreover, psychosocial skills foster positive relationships, empathy, and effective communication, developing a supportive and inclusive school community (Reicher, 2010). Beyond the immediate benefits for individual students, the cultivation of these skills contributes to improved classroom dynamics, reduced bullying, and enhanced academic achievement (Sancassiani et al., 2015). In the present increasingly

interconnected global society, the ability to understand and collaborate with diverse perspectives is invaluable, and psychosocial skills can play a critical role in promoting tolerance and social cohesion. Teaching psychosocial skills in schools not only enhances students' personal growth but also prepares them to become responsible, compassionate, and resilient citizens who can thrive in the complexities of the 21st century (Lipnevich et al., 2016). For IWGT, because of their unique characteristics and needs, nurturance of these skills is crucial for them to be able to maximize their exceptional potential.

IWGT possesses unique talents and abilities that, when nurtured appropriately, can lead to substantial contributions to society. By supporting their holistic development from an early age, society can tap into the full potential of these individuals, resulting in innovations, advancements, and a richer cultural landscape. Through an exploration of these research questions, this study aimed to enhance our understanding of the multifaceted process of identity development among IWGT and its implications for their psychosocial development. The findings of this study can serve as a compelling argument for the early application of interventions and support mechanisms in educational settings to develop the identity of the students. By demonstrating the enduring impact of these factors on the lives of IWGT, we emphasize the importance of addressing their unique needs from the earliest stages of their educational journey. It can also offer valuable insights for educators, parents, policymakers, and all other stakeholders working with IWGT, thereby contributing to their holistic psychosocial and academic development. For example, the findings can inform the stakeholders on how to provide tailored support and create a positive environment to nurture the holistic development of IWGT, ultimately maximizing their potential through any talent development program.

Definition of Terms

Curiosity– "Curiosity refers to a more general desire to seek out new experiences and information" (Kashdan et al., 2009, p. 988). It is characterized by a strong desire to learn, explore, and understand the world. It involves an inquisitive and eager mindset, prompting individuals to seek out new information, experiences, or knowledge.

Exploration - "Exploration reflects an orientation toward seeking novel and challenging objects, events, and ideas with the aim of integrating these experiences and information" (Kashdan et al., 2009, p. 988). Driven by curiosity, it is an act of investigating or examining a particular area, subject, or concept in order to gain knowledge, discover new information, or experience the unknown.

Family Environment – The overall cohesion, expressiveness, and level of conflict within the family.

Cohesion: Family cohesion refers to the emotional closeness, bonding, and mutual support within a family unit. It encompasses the degree of interconnectedness, unity, and solidarity among family members (Moos & Moos, 2002).

Conflict: Family conflict refers to disagreements, disputes, or tensions that arise within a family unit. It can manifest in various forms, including verbal arguments, differences in opinions, or clashes of values and beliefs among family members (Moos & Moos, 2002).

Expressiveness: Family expressiveness refers to the extent to which family members openly communicate their emotions, thoughts, and feelings within the family unit. It involves the ability and willingness of individuals within a family to express themselves verbally and non-verbally, sharing their experiences, concerns, and emotions with each other (Moos & Moos, 2002).

Hope- Hope is a complex and multifaceted psychological and emotional state characterized by a positive expectation or desire for a desired outcome in the future (Snyder et al., 2002).

Agency: This is the cognitive aspect of hope, involving the individual's capacity to set and plan for goals. It reflects the person's belief in their ability to initiate and sustain actions toward achieving these objectives (Snyder et al., 1991).

Pathway: An aspect of hope, this represents the individual's perceived ability to identify and create routes or strategies to reach their goals. It involves the belief that there are viable paths or solutions that can be taken to overcome obstacles and move towards the desired outcome (Snyder et al., 1991).

Identity Development – Identity development refers to the dynamic lifelong process through which individuals form, shape, and integrate a coherent and stable sense of self. It is characterized by levels of commitment to chosen roles, values, and beliefs, and the exploration of alternatives. Balancing commitment with exploration is essential, as individuals navigate choices, experiences, and self-discovery on the path to forming a cohesive identity.

Purpose – Purpose is regarded as a sustained commitment with a forward-looking perspective, directed towards accomplishing objectives that hold personal significance while simultaneously carrying broader implications for the wider world (Damon et al., 2003). Bronk et al.'s (2018) conceptualization of purpose involves a long-term, forward-looking intention that transcends the self and reflects a commitment to achieving meaningful objectives with significance beyond personal fulfillment.

Meaningfulness: The personal significance and intrinsic value individuals associate with their pursuits.

Goal Orientation: The clarity and directionality of one's own objectives, reflecting the goal-directed aspect of purpose.

Beyond-the-self Dimension: The extent to which individuals are driven by purposes that extend beyond their personal interests, emphasizing a sense of contributing to something greater than themselves.

School environment – The school environment refers to the social and psychological context in which educational activities take place. It encompasses the social dynamics, including the interactions among students, teachers, administrators, and other staff. The psychological aspect of the school environment involves the prevailing attitudes, values, and culture within the educational institution (Gálvez-Nieto et al., 2021).

Chapter 2

Literature Review

It is important to understand the determining factors of identity development. This includes an exploration of identity development and its significance, particularly in the context of individuals with gifts and talents (IWGT). This chapter explores foundational theories, such as Erikson's (1950, 1968) psychosocial theory, Marcia's (1966, 1980) identity status paradigm, and Luyckx et al.'s (2005) model and extension of Marcia's paradigm, to establish a theoretical framework for understanding the complex nature of identity development. Additionally, the literature review examines empirically supported key factors influencing identity development, ranging from intrapersonal to interpersonal underlying forces focusing on the constructs of hope, purpose, curiosity and exploration, school environment, and family environment. Though there is a dearth of literature exploring these factors' influence on identity development among IWGT, the aim of the present chapter is to build a comprehensive understanding of the factors that can contribute to their unique identity development. By consolidating existing knowledge, this chapter establishes the foundation for the subsequent empirical investigation, aiming to address the identified gap in the literature.

Identity Development

The exploration of identity development has evolved significantly over time, with a departure from the historical emphasis on phylogenetic considerations (Hall, 1904) to a more contemporary focus on the nuances of adolescence (Steinberg & Lerner, 2004). Although Erikson's theory of psychosocial development (Erikson, 1950, 1968) provides a foundational

understanding of identity development, recent decades have witnessed a shift in attention towards the conditions of the modern world and an accumulation of research dedicated to unraveling the intricacies of adolescent identity (e.g., Kroger & Marcia, 2011; Meeus, 2011) and through emerging adulthood (e.g., Schwartz et al., 2013). Erikson's (1959) psychosocial theory prominently emphasized the significance of exploration in the process of attaining a sense of one's identity. According to Erikson (1968), the development of advanced cognitive abilities, such as formal operations, along with an increased awareness of one's surroundings and relationships, creates opportunities for shifts in perspectives and beliefs. The modification or transformation of beliefs and perspectives poses a challenge to identity in a philosophical sense. The phenomenon of identity synthesis only becomes apparent when behaviors exhibit predictability across various contexts and are rooted in an individual's existing commitments, reflecting a sense of self-sameness and continuity (Erikson, 1968). Erikson (1968) stated that the adolescent developmental process reaches its conclusive phase only when the individual successfully subordinates childhood identifications to a novel form of identification. These new identifications, in turn, compel the young individual to make choices and decisions that progressively lead to commitments lasting throughout their lifetime.

Although Erikson's (1950, 1959, 1968) concepts explicitly identify that the continuity achieved through identity development is a gradual process unfolding over time, empirical research in this field has pursued two primary approaches. One approach emphasizes snapshots to indicate an individual's position in the process (e.g., Marcia, 1966), while the other focuses on processes relevant to identity construction, without the structural framework provided by snapshot approaches (e.g., Ashforth & Schinoff, 2016; Habermas & Bluck, 2000). Marcia (1966) demonstrated that identity acquisition could occur without explicit identity exploration. Marcia's

(1966) fundamental contribution, articulated in his identity status model, suggested that

individuals might achieve a sense of identity through a process that does not necessarily involve

active exploration. This departure from Erikson's (1968) emphasis on exploration as a central

component of identity development opened up new perspectives on how individuals construct

and solidify their identities. Marcia's (1966) model, with its differentiation of identity statuses

such as foreclosure and diffusion, acknowledged that individuals could arrive at a committed

identity without engaging in a conscious exploration process. This perception has highlighted the

range of pathways individuals may take in their journey toward identity formation, challenging

the notion that exploration is the exclusive means by which one attains a psychosocial identity.

More recent efforts to explore identity development (e.g., McLean & Syed; 2015;

Vignoles et al., 2011) also illustrate the *content* aspect of identity (what identity looks like in

various domains [e.g., ethnicity, gender, religion, etc.], or the change in identity depending on

the kind of experiences an individual is reflecting on [e.g., parental divorce]; McLean & Syed,

2015) along with the focus on *process* of identity development (Crocetti, 2017). Although the

development of self-concept is a precursor to identity (Fivush & Zaman, 2015; Hammack, 2015),

identity starts developing during adolescence. The possible reasons for this assertion are,

> (1) the emergence of cognitive abilities that allow for the kinds of complex thought
>
> processes needed to construct an identity, (2) increased choices and/or responsibilities
>
> that individuals take on in adolescence and emerging adulthood, and (3) the accumulation
>
> of experiences that foster and demand a personal identity to be brought into existence.
>
> (McLean & Syed, 2015, p. 4)

Vignoles et al. (2011) argued that identity is multifaceted, involving personal, relational,

and collective aspects. They speculated that it could be both stable and fluid, shaping and

reshaping over individuals' lifetimes and the histories of social groups, and this identity

development happens through processes of self-discovery, personal development, and societal

influences. Some of these processes are deliberate and clear, while others occur more subtly.

Vignoles et al. believe that to grasp its complexities fully, a variety of research methods, both

quantitative and qualitative, are necessary.

The Status Approach to Identity

Marcia (1980) defined identity as a self-structure which is "an internal, self-constructed,

dynamic organization of drives, abilities, beliefs, and individual history" (p. 106). He posits that

four distinct identity statuses can emerge based on varying combinations of high and low levels

of exploration and commitment. Exploration (called *crisis* by Marcia, 1966) involves the process

of actively re-thinking, sorting through, considering, and trying out different potential identities

and options (Grotevant, 1987; Kroger & Marcia, 2011), while commitment pertains to the extent

of attachment or personal investment in a specific identity, action, or belief (Bosma & Kunnen,

2001; Kroger & Marcia, 2011; Marcia, 1966). Briefly, Marcia's (1966) paradigm operationalizes

Erikson's theory by introducing two key dimensions—exploration and commitment—to

categorize adolescents into four identity statuses: foreclosure, diffusion, moratorium, and

achievement. Research grounded in the identity status model has yielded valuable insights,

revealing consistent associations between identity statuses and various aspects of adolescent

development (Berzonsky & Adams, 1999; Meeus, 2011). Individuals at different stages of

identity formation—foreclosure, moratorium, diffusion, and achievement—exhibit distinct

patterns of intrapersonal aspects that shape their psychological well-being (Vleioras & Bosma,

2005) and overall development.

Identity foreclosure signifies the developmental stage wherein an individual has made a commitment to a specific identity without thoroughly exploring alternative options. This commitment often involves adopting the values and beliefs imparted by parents or other authoritative figures without engaging in critical examination. Although individuals in the foreclosure stage may experience a heightened sense of self-worth, this developmental stance is concurrently linked to traits such as rigidity, closed-mindedness, and authoritarianism (Kroger & Marcia, 2011). Thus, while foreclosure provides a sense of stability, it may also impose limitations on the individual's receptivity to novel experiences. Intrapersonal factors associated with foreclosure may manifest as a reliance on external validation, potentially impeding the processes of self-discovery and autonomy (Ickes et al., 2012). In contrast, moratorium signifies a phase characterized by active exploration without a definitive commitment. This stage is distinguished by heightened self-reflection and a willingness to embrace novel experiences. Individuals navigating through moratorium may grapple with internal conflicts and uncertainties (Waterman, 1988), yet concurrently exhibit elevated levels of self-awareness and the potential for significant personal growth. Identity moratorium specifically denotes a stage where individuals actively explore various options for their identity but have not solidified a particular commitment. During this phase, individuals may experiment with different roles and lifestyles. Moratorium is often positively correlated with desirable traits such as openness and curiosity (Luyckx, Soenens, & Goossens, 2006), but it also shows associations with negative aspects, including heightened levels of anxiety, depression, and low self-worth (Kidwell et al., 1995; Luyckx, Soenens, & Goossens, 2006; Schwartz et al., 2009).

Identity diffusion, characterized by a lack of commitment and exploration, is correlated with diminished levels of well-being (Waterman, 2007). Individuals in diffusion may struggle

with challenges related to self-esteem, self-control, and may exhibit signs of anxiety (Ryeng et al., 2013; Taylor & Goritsas, 1994). The absence of a clear identity direction can contribute to a pervasive sense of aimlessness and disconnection from personal goals. Identity diffusion specifically designates a stage where individuals have yet to explore or commit to any particular identity (Kroger, 2006). This may arise from a deliberate avoidance of the exploration process or being overwhelmed by the plethora of available choices. This stage is often linked to adverse outcomes such as low self-esteem, substance abuse issues, delinquency, and similar concerns (Adams et al., 2005; Luyckx et al., 2005; Schwartz et al., 2005). Finally, identity achievement is the stage where individuals have actively explored diverse options for their identity and have ultimately committed to a specific identity. At this juncture, they have made definitive decisions about who they are and the principles they stand for. Identity achievement is consistently associated with a well-balanced mindset, robust social connections, and a thoughtful contemplation of various life possibilities (Berzonsky, 2004; Zimmer-Gembeck & Petherick, 2006). Individuals at this stage typically exhibit elevated levels of self-esteem (Schumacher & Camp, 2010); a strong sense of self-control; and proficient problem-solving skills (Leadbeater & Dionne, 1981). These strengths contribute to the development of a more stable and well-rounded personal identity, fostering positive psychological outcomes.

Some scholars criticize the narrow approach to identity (e.g., Côté & Levine, 1988; van Hoof, 1999), while others expand on Marcia's work to offer more dynamic perspectives on identity formation (e.g., Bosma & Kunnen, 2001; Meeus, 1996), better suited for developmental studies. Although achievement is typically seen as the most advanced status and diffusion the least, scholars agree there is no fixed path for individuals through these statuses (van Hoof, 1999). Luyckx, Goossens, and Soenens (2006) further differentiates exploration and commitment

into separate dimensions. Exploration in breadth ("degree to which adolescents search for different alternatives with respect to their goals, values, and beliefs before making commitments," Luyckx, Schwartz, et al., 2008, p. 59) and commitment-making are the dimensions initially outlined by Marcia (1966) and further developed by others (Grotevant, 1987). On the other hand, exploration in depth ("an in-depth evaluation of one's existing commitments and choices," Luyckx, Schwartz, et al., 2008, p. 59) and identification with commitment are dimensions used to reassess and continually adjust existing commitments (Meeus, 1996). This perspective emphasizes adolescents' active role in their development (Lerner et al., 2005), which can influence their life paths (Schwartz et al., 2005). Nonetheless, prolonged exploration may cause confusion, especially in societies with overwhelming choices and little support for young people (Schulenberg et al., 1996; Schwartz et al., 2005). Some individuals might become stuck in perpetual exploration, unable to make firm commitments (Schwartz et al., 2005), resembling diffusion rather than achievement (Côté & Schwartz, 2002). This can lead to a cycle of rumination, characterized by hopelessness and lack of control (Nolen-Hoeksema, 2000). Although self-reflection is associated with personal growth and openness, self-rumination has often been linked to neuroticism and depressive symptoms (Joireman et al., 2002; Nolen-Hoeksema, 2000) and negatively related to self-generated plans and subsequent commitment to them (Ward et al., 2003). Hence, knowing the distinction between adaptive self-reflection and maladaptive self-rumination (Trapnell & Campbell, 1999), Luyckx, Schwartz, et al. (2008) introduced another identity dimension of ruminative exploration to the model (described further under the section Identity Status and Individual Characteristics). However, one must be cautious about the presence of variations among individuals about how much they

engage in these processes and how these processes evolve and interact over time (Luyckx, Goossens, & Soenens, 2006).

Identity Status and Individual Characteristics

Notably, individuals classified under the *achievement* and *moratorium* statuses tend to exhibit favorable characteristics, such as favorable personality, self-directedness, cooperation, social-influence behavioral styles (Read et al., 1984), and effective problem-solving skills (Leadbeater & Dionne, 1981). In contrast, the *diffusion* status emerges as the least favorable, linked to lower self-esteem, self-control (Kumru & Thompson, 2003), and an increased likelihood of facing psychological challenges. Research on identity exploration has revealed a nuanced relationship with well-being, incorporating both positive and negative dimensions (Kidwell et al., 1995; Luyckx, Soenens, et al., 2008). To explain this, Luyckx, Schwartz, et al. (2008) introduced the fifth dimension, known as ruminative exploration, alongside the two forms of reflective exploration (exploration in breadth and exploration in depth) discussed previously. Findings demonstrated a positive association between ruminative exploration and distress, as well as self-rumination, distinguishing it from the two forms of reflective exploration, which were unrelated to well-being and positively correlated with self-reflection (Luyckx, Schwartz, et al., 2008). Ruminative exploration involves a cognitive process characterized by persistent and repetitive contemplation of various identity facets, values, goals, or life experiences. This reflective approach often includes introspection and self-analysis, with individuals revisiting past events, contemplating current circumstances, and considering future possibilities. In the context of identity development, ruminative exploration contributes to a deeper self-understanding, involving introspection and internalized reflection (Luyckx, Schwartz, et al., 2008). While research acknowledges the importance of exploration styles, including ruminative exploration, in

shaping self-concept and identity trajectories, it emphasizes the need for a balanced approach. Excessive rumination without resolution has been associated with negative outcomes such as increased stress, anxiety, worry, shame, guilt, and indecisiveness (Piotrowski, 2019), underscoring the importance of a healthy exploration process for optimal personal growth.

In a study on identity structure and processes by Bogaerts et al. (2019), adolescents with high scores in identity synthesis, compared to their peers, also demonstrated elevated levels of proactive exploration and commitment processes and lower levels of ruminative exploration 1 year later. Conversely, those with high scores in identity confusion displayed increased levels of ruminative exploration in the subsequent year. The impact of identity processes on structure was evident in adolescents scoring high on identification with commitment, as they exhibited low levels of identity confusion 1 year later. Furthermore, adolescents scoring high on identity synthesis, compared to their own average, reported heightened proactive exploration processes 1 year later, suggesting the crucial role of achieving identity synthesis in promoting proactive identity exploration at both between- and within-person levels.

Proactive identity exploration at both between- and within-person levels refers to instances where individuals actively seek out and engage in experiences, challenges, or opportunities to learn more about themselves and their identity. At the between-person level, this could involve comparing oneself to peers or role models, seeking diverse perspectives, or intentionally exposing oneself to different cultures and ideas. At the within-person level, it may entail personal reflection, introspection, or setting specific goals for self-discovery. For example, an adolescent scoring high on identity synthesis might proactively seek out volunteer opportunities, engage in open-minded discussions with peers from diverse backgrounds (between-person level), and set aside regular journaling sessions for self-reflection (within-

person level). Building on these findings, Becht et al. (2021) conducted a longitudinal study to explore how daily identity dynamics contribute to identity formation. Their research revealed a dual-cycle process model of identity formation and maintenance during adolescence, operating within individuals across days. Individual differences in short-term identity processes during adolescence were predictive of variations in identity development during emerging adulthood. Adolescents with low daily commitment levels and high identity reconsideration were more prone to weak identity commitments and heightened identity uncertainty in emerging adulthood. Similarly, adolescents experiencing substantial daily changes in identity commitments and persistent identity uncertainty were more likely to face elevated identity uncertainty in emerging adulthood. These results substantiate the concept that there is a meaningful connection between short-term daily identity dynamics in adolescence and the long-term trajectory of identity development in emerging adulthood.

Furthermore, building on the exploration of identity development beyond adolescence, Arnett (2000) proposed a distinct life stage known as emerging adulthood, spanning roughly from ages 18 to 25. This transitional period is characterized by a unique set of challenges and opportunities, setting it apart from both adolescence and full-fledged adulthood. According to this perspective, emerging adulthood is the primary phase in which identity explorations predominantly occur. Meta-analyses of research employing the identity status model with participants from various contexts like university, high school, non-school, and so forth (e.g., Jespersen et al., 2013; Kroger et al., 2010) have indicated a noteworthy trend: the proportion of individuals in the moratorium status, signifying active identity exploration, increases during the teenage years, peaks around ages 18–19, and subsequently declines. This pattern suggests a concentration of identity explorations in the early years of emerging adulthood (Kroger et al.,

2010). However, the complexity of identity development demands a more nuanced and comprehensive understanding that goes beyond the confines of any single theoretical framework.

Identity Status and Ecological Characteristics

Human beings are inherently social creatures, and one cannot forget the role of their surroundings in their development. A successful identity development can occur in a safe and supportive environment that encourages exploration and expression of individuality, providing positive reinforcement, and being a positive role model (Kroger, 2006). The ecological environment in which individuals grow and develop serves as a crucible, multifaceted landscape of molding clay of their identities. This process is influenced by myriad factors, like family dynamics, cultural values, socioeconomic status, and educational opportunities, standing as pillars in the foundational structure of this ecological framework. Adolescents need positive connections with both parents and other adults, along with opportunities for exploring diverse roles and identities, a sense of belonging to a community or group, and exposure to constructive role models (Erikson, 1968; Kroger, 2006).

Nonetheless, the path to identity development in adolescence is often fraught with challenges that pose potential impediments to this transformative journey. There are different challenges that adolescents might face as they try to figure out who they are and what they want to be (i.e., develop their identity). Peer pressure, an intimidating force during this developmental stage, can tug adolescents in conflicting directions towards conformity or rebellion (Dumas et al., 2012; Ragelienė, 2016). Specifically, IWGT may experience a tension between fitting in with their peers and expressing their intellectual curiosity and passions (J. R. Cross et al., 2016). Establishing friendships with like-minded peers who appreciate their abilities can provide a supportive environment for their self-concept, intellectual growth, and social development (Košir

et al., 2016). This balance between peer conformity and individual expression is a critical aspect of the social landscape for adolescent IWGT (Rimm, 2002). Additionally, parental expectations or conflicts within the familial sphere may present substantial obstacles, influencing the adolescent's evolving sense of self (Kroger, 2006). The pervasive effects of social media and the prevalence of cyberbullying add further layers of complexity, shaping adolescents' perceptions of themselves and their place in society (Davis & Weinstein, 2017). Academic or career demands and uncertainties introduce yet another set of challenges, as adolescents grapple with defining their future paths amidst evolving aspirations and external expectations (Pifer & Baker, 2016). Moreover, the complex interplay of cultural or religious diversity and discrimination compounds the complexity of identity development for adolescents, as they navigate the complexities of their cultural and religious affiliations against a backdrop of societal expectations (Kroger, 2006).

These challenges are not merely theoretical constructs; they manifest tangibly in the lives of adolescents, contributing to what Kroger (2006) terms *role confusion*. This state of confusion can manifest in several ways, including difficulty forming meaningful relationships, a lack of clear direction in life, and overwhelming feelings of isolation, conflict, and meaninglessness (Brittian & Lerner, 2013; Markstrom & Kalmanir, 2001). The gravity of these challenges underscores the importance of understanding the complex nature of adolescents' experiences and the pivotal role ecological factors play in shaping identity.

Identity Development and Demographic Factors: Socio-Economic Status, Gender, Ethnicity/Race. Identity may be defined at different levels of self: individual, relational, and collective (Sedikes & Brewer, 2001). Vignoles et al. (2011) illustrate this while discussing identity as content and processes. They postulated that the difference between individual, relational, and collective identities can be seen as differences in what makes up the identity and

how it develops. Theories about these types of identities often concentrate on how individuals, relationships, or groups shape and alter identities over time. Theoretical approaches to collective identity often consider how group dynamics influence people's self-perceptions (Vignoles et al., 2011). This includes studying how interactions among different groups can affect the way individuals see themselves, sometimes making them feel more like part of a group than individuals (e.g., Turner et al., 1987). Alternatively, these approaches may examine broader societal changes that affect how ethnic, national, or gender identities are understood over time (e.g., Segal, 2010; Stepick et al., 2011). Thus, it may be posited that factors such as socio-economic status, gender, and ethnicity/race can influence the identity development of any individual. Understanding how people categorize themselves and others into social groups is important, but it is not enough on its own. It is also important to consider how individuals identify with these groups because this identification with groups shapes their sense of self and their relationship to the social world (Spears, 2011). Social identification with our groups helps define who we are and who we are not. This means that our social identity is formed through both categorization and the emotional connection we have with the groups to which we belong. In fact, Tajfel (1978) described social identity as the part of ourselves that includes knowledge of our group memberships and the value we attach to them emotionally.

Personal and sociostructural factors interact to shape individuals' perceptions of gender, which in turn affect their behaviors related to gender, guided by motivational and self-regulatory processes linked to gender identity (Bussey, 2011). Similarly, researchers examining ethnic minority group members in the United States have explored ethnic identity as a complex concept involving exploration, resolution, and affirmation of ethnicity (Umaña-Taylor, 2011). Researchers have found significant links between ethnic identity and various aspects of

psychological well-being. Ethnic minority individuals in the United States often face discrimination based on their ethnicity (Fisher et al., 2000), which in turn is linked to negative psychological effects such as anxiety and depression (Romero et al., 2007). Enlisting the domains that act as barriers to identity formation, Yoder (2000) states,

> Contemporary barriers identified in current literature and the media that often influence more than one domain include (but are not limited to): (a) geographic isolation; (b) childhood socio-economic status; (c) parental domination; (d) educational opportunity; (e) physical limitation; (f) political restriction; (g) ethnicity; (h) gender; (i) age; and (j) religion. (p. 100)

Likewise, several researchers have found socio-economic inequality (Sutton, 2009; Vosylis et al., 2021); ethnicity (Peck et al., 2014; Streitmatter, 1988; Yip, 2014); and gender (Cramer, 2000; Saewyc, 2017; Schwartz & Montgomery, 2002) influence identity commitment and exploration, shaping individuals' developmental trajectories in navigating their sense of self.

The Research Gap in Factors Influencing Identity Development Among IWGT

The domain of identity development research has witnessed substantial progress over recent years, marked by burgeoning literature exploring various facets of this process. However, research on identity development among IWGT has made only some advances in identifying key factors that contribute to this process. It is important to consider identity formation among IWGT, as appropriate identity development has been linked to adult achievement (Zuo & Cramond, 2001) and quality of life (Frank & McBee, 2003). Baudson and Ziemes (2016) found that the progression of identity development among gifted individuals shares resemblances with the stages outlined in the Cass (1979, 1984) identity model (confusion, comparison, tolerance, acceptance, pride, synthesis), which have been linked to wellbeing and attitudes toward one's

giftedness to varying degrees. However, Baudson and Ziemes (2016) also state that IWGT in this group exhibited distinct characteristics unique to this population related to the harmony/disharmony hypothesis (Preckel et al., 2015). To explain this, Baudson and Ziemes (2016) found that while negative stereotypes are prevalent in society and can be considered distal stressors, their influence on an IWGT's well-being as immediate stressors is contingent upon their stage of identity development. This stage of identity development, in turn, is associated with patterns of adjustment and coping mechanisms.

Dole (2001) underscored the role of support systems and involvement in extracurricular activities as fundamental to identity formation of IWGT. The author also suggested the significance of self-knowledge, self-acceptance, self-advocacy, and self-determination as part of their identity formation. Moreover, Zuo and Tao (2001) emphasized positive personality traits like perseverance, purposiveness, a desire to excel, and self-confidence as conducive to successful identity formation among IWGT. Interestingly, career exploration, commitment, life-role salience, and chronological age, particularly among gifted female adolescents have been found to influence identity development (Shoffner & Newsome, 2001), suggesting the need to expand opportunities of career exploration among IWGT. Lovecky (1997) expanded this understanding by exploring moral sensitivity, empathy, and the impact of asynchrony on the moral development and identity formation of gifted children. These studies collectively indicate that a combination of personal traits, robust support systems, career exploration, and moral sensitivity plays a vital role in the identity development of IWGT.

However, despite the progress in understanding identity development among IWGT, it is noteworthy that the literature in this field remains limited. A conspicuous research gap persists, notably in the examination of intrapersonal and interpersonal factors and their collective

influence on identity development, especially among IWGT. Further investigation and a more robust body of literature are essential to deepen our understanding of the complex interaction of factors influencing identity development within the IWGT population. It has been seen in literature that intrapersonal factors, encompassing aspects such as self-perception, emotional regulation, and cognitive abilities, play an important role in shaping an individual's identity. However, the way these psychological factors and attitudes intertwine with the external influences of social relationships, family dynamics, and broader cultural contexts are facets of the developmental process that require more in-depth exploration. The prevailing research often overlooks the dynamic interplay between an individual's internal psychological landscape and the external factors that mold their identity, leaving a substantial gap in our comprehension of the complexities involved. In the next sections, we will further explore the intrapersonal factors of hope, purpose, curiosity, and exploration, along with the interpersonal factors of family and school environment, to understand the existing body of knowledge related to identity development that may act as a background to understand the identity development among IWGT.

Intrapersonal Aspects

In the domain of identity development, the exploration of intrapersonal dynamics assumes a principal importance, offering a nuanced inquiry into the cognitive and emotional foundations that significantly contribute to the ontogeny of one's identity. In this section, a scholarly examination is conducted on the fundamental constructs of hope, purpose, curiosity, and exploration within the context of intrapersonal factors. These constructs, recognized as some of the crucial dimensions of the psychology of an individual, may have the ability to influence their self-perceptions, aspirational trajectories, and positioning within the broader sociocultural milieu.

Hope

Hope is a psychological and emotional state characterized by a positive expectation or desire for a desired outcome in the future (Snyder et al., 2002). It involves the anticipation of positive events or circumstances, along with a belief that one has the agency and capability to work towards and achieve those positive outcomes. Hope is often associated with optimism (Alarcon et al., 2013; Bryant & Cvengros, 2004); resilience (Lemay & Ghazal, 2001); and a sense of purpose (Stoyles et al., 2015). The key components of hope, as identified in the literature, encompass goals, pathways thinking, and agency thinking (Snyder et al., 2002). Goals serve as the focal points of hope, representing the specific outcomes or achievements that individuals aspire to realize. Pathways thinking involves the formulation of viable routes or strategies to attain these goals, reflecting a cognitive process that facilitates the planning and navigation necessary for goal attainment. On the other hand, agency thinking is a person's belief in their capability to execute the identified pathways and influence the realization of the envisioned outcomes, highlighting the active and self-determined nature of hope (Colla et al., 2022; Snyder, 2002). Research in positive psychology and related fields has explored the role of hope in promoting well-being (Murphy, 2023; Pleeging et al., 2021); coping with adversity (Onwuegbuzie & Snyder, 2000); and enhancing overall life satisfaction (Bailey et al., 2007).

While the body of research examining the relationship between hope and identity development, or psychosocial development is not extensive, existing studies have illuminated a positive connection between hope and identity development. Currin-McCulloch et al. (2021) affirms that the ability of young adults to develop the necessary strength and strategies to understand their identities relies on their engagement in various psychological processes detailed in their contingent hope framework, specifically dealing with uncertainty, experiencing distress,

coping with grief, finding direction, and reconciling their identity. Moe et al.'s (2008) investigation into LGBQ identity development revealed a significant relationship between hope, optimism, life engagement, and the development of sexual identity, with hope emerging as a notable predictor. Varahrami (2001) corroborated these findings by establishing correlations between meaning, hope, and psychosocial development. Moreover, Elliott and Sherwin (1997) and Brackney and Westman (1992) shed light on the sophisticated dynamics influencing hope, emphasizing familial and cultural factors. Brackney and Westman (1992) also highlighted the role of locus of control in the development of hope. These studies collectively suggest that hope may play a crucial role in shaping and enhancing identity development. However, the current body of literature leaves room for further exploration to establish a comprehensive understanding of the relationship between hope and identity development, especially in the context of IWGT. Future research endeavors could delve deeper into the specific mechanisms through which hope influences identity development, considering various contextual and individual factors. A more nuanced exploration of familial and cultural dynamics, as well as the interplay with factors like locus of control, would contribute to a richer understanding of the role hope plays in the complex process of identity development.

However, we may deduce that hope can indirectly play a significant role in identity development, influencing various aspects of an individual's journey toward self-discovery and personal growth. For example, hope involves the setting of meaningful goals and the belief that these goals can be achieved (Snyder, 2002). In the context of identity development, individuals with hope may be more likely to set and pursue goals related to self-exploration, skill development, and the establishment of a coherent sense of identity (Schmitt-Rodermund & Vondracek, 1999; Yeager et al., 2012). Hopeful individuals are often more open to new

experiences and are willing to explore different facets of themselves and their careers (Hirschi et al., 2015). This exploration is likely to affect identity development (Berman et al., 2001; Meeus et al., 2002), as individuals try out various roles, values, and relationships to better understand who they are and who they want to become. Hope is also often linked to positive self-perception and self-efficacy (Rand, 2018; Snyder et al., 2002). Individuals with a hopeful outlook on life may be more likely to view themselves as capable of shaping their own identity, making decisions, and overcoming obstacles. This positive self-perception contributes to a healthier identity development trajectory (Tsang et al., 2012).

Thus, hope can provide individuals with the motivation and belief that they can navigate challenges and work towards meaningful goals. This positive outlook is likely to contribute to a sense of purpose, as individuals with hope may be more inclined to identify and pursue goals that align with their values and aspirations. Burrow et al.'s (2010) identification of distinct profiles of youth purpose adds depth to this relationship. Stronger commitments to purpose are associated with a greater sense of personal agency, suggesting that individuals with a clear sense of purpose may feel more empowered to shape their identity. In this context, purpose serves as a guiding force that influences decision-making, goal-setting, and the overall direction of identity development. This relationship can be conceptualized as a linear process where hope fuels the motivation to seek purpose, and purpose provides a framework for shaping one's identity.

Purpose

Purpose represents a fundamental drive that propels individuals to find meaning and direction in their lives (Damon, 2008). Rooted in philosophy, psychology, and various cultural and religious traditions, the concept of purpose encompasses the deep-seated question of why one exists and the pursuit of significance in one's actions and contributions to the world (Frankl,

1959). It is an enduring and future-oriented commitment to achieve meaningful objectives that

hold significance for the individual and have broader implications for the world (Damon et al.,

2003). It goes beyond short-term goals and immediate gratification; it involves a deep and

enduring commitment to meaningful objectives that hold significance not only for the individual

but also for the larger community or world. Essentially, it implies a forward-looking perspective,

suggesting a sense of direction and intentionality in one's actions and decisions (Bronk, 2012).

Individuals with a strong sense of purpose are often driven by a desire to make a positive impact,

contribute to something larger than themselves, and find meaning in their endeavors. This long-

term, forward-looking orientation distinguishes purpose from more immediate or transient aims,

highlighting its enduring and transformative nature (Burrow et al., 2021).

       At its core, purpose involves a sense of intentionality and a connection to something

greater than oneself. It is not merely about achieving specific goals or objectives but about

understanding the broader context of one's life and the impact one can have on others and the

world (Bronk, 2014). Purpose provides a guiding principle that shapes decision-making,

influences behavior, and lends a sense of coherence to the numerous experiences that make up an

individual's life journey (Martela & Steger, 2016). It is a driving force that shapes identity

(Bronk, 2011); influences behavior; and contributes to subjective (Sumner et al., 2015) and

societal well-being. The pursuit of purpose involves a continual process of self-discovery, goal-

setting, and a recognition of the interconnectedness of one's actions with a larger, meaningful

context (Bronk & Baumsteiger, 2017). In this context, goal setting can also be seen as

intertwined with identity-based motivation (Oyserman, 2015), suggesting that individuals derive

motivation from their perceptions of who they are and who they want to become. Purpose not

only serves as a guiding principle but also as a source of identity motivation, influencing

individuals to align their actions with their evolving sense of self. This dynamic relationship between purpose and identity-based motivation contributes to a more comprehensive understanding of how individuals navigate their life journeys. As individuals and societies navigate the complexities of the modern world, understanding and fostering a sense of purpose emerges as a vital aspect of promoting personal fulfillment, resilience, and positive contributions to the broader human experience. One study (Bronk et al., 2010) found that high-ability youth tend to adopt self-oriented life goals at an earlier stage compared to their more typical counterparts. Additionally, these high-ability individuals identify different types of inspiring life purposes. This finding implies that gifted or high-ability youth may exhibit a precocious development of personal goals and a nuanced understanding of what inspires them in life. The early embrace of self-oriented life goals may contribute to their advanced cognitive and emotional development, potentially influencing their overall identity formation and sense of purpose.

Research in positive psychology has identified several dimensions of purpose that contribute to well-being (McKnight & Kashdan, 2009; Sumner et al., 2015) and life satisfaction (Burrow et al., 2014). These dimensions include having a clear sense of goals and direction, feeling that life is meaningful, and perceiving a connection between a person's actions and a greater purpose beyond the self (Bronk et al., 2018). Individuals who report a strong sense of purpose tend to experience higher levels of happiness, resilience, and overall life satisfaction. The pursuit of purpose is not limited to personal well-being; it also has broader societal implications. When individuals align their actions with a sense of purpose, they are more likely to contribute positively to their communities and engage in pro-social behavior. Purpose-driven

individuals often find fulfillment in making meaningful contributions to the well-being of others, whether through their professional work, volunteer activities, or personal relationships.

Research consistently suggests that having a sense of purpose serves as a catalyst for identity exploration. Individuals with a clear purpose are more likely to engage in self-discovery, exploring their values, interests, and aspirations. Bronk (2011) found that the two constructs reinforce each other with the purpose of supporting identity development and vice versa. Burrow and Hill (2011) further demonstrated that purpose mediates the relationship between identity and well-being, suggesting that a stable identity contributes to well-being through the cultivation of purpose. Additionally, Sumner et al. (2015) highlighted the importance of purpose commitment in predicting well-being, particularly in emerging adulthood. Another study also emphasized the positive impact of purpose on youth development, including life satisfaction, coping, and personality integration (Mariano & Going, 2011). These studies collectively suggest that purpose and identity are closely intertwined, with purpose playing a crucial role in the development of a stable identity and overall well-being. According to Damon et al. (2003), purpose acts as a guiding force, propelling individuals to ask profound questions about who they are and what they hope to achieve in life. This process of exploration aligns closely with Erikson's psychosocial theory (also confirmed by P. L. Hill & Burrow, 2012), where the search for identity is a fundamental task of adolescence and emerging adulthood. As individuals navigate the complexities of identity development, a sense of purpose emerges as a consolidating force. Research by Bronk (2011) and Waterman et al. (2013) highlighted that a well-defined purpose provides a framework for making life choices, aiding individuals in synthesizing the diverse aspects of their identity into a coherent narrative. It can act as a unifying factor, helping individuals integrate various identity components, such as career aspirations, personal values,

and social roles, into a harmonious whole. Moreover, identity commitment, a crucial aspect of

identity development, is closely associated with purposeful action. Côte and Levine (1983)

suggest that individuals who have a clear sense of purpose are more likely to commit to their

chosen identities. The commitment process involves aligning one's actions, beliefs, and values

with a chosen identity, and purpose plays a pivotal role in driving and sustaining this

commitment.

While much research has focused on the developmental stages of adolescence and

emerging adulthood, the association between purpose and identity development extends across

the lifespan. Damon et al. (2003) argued that purpose is a dynamic concept that evolves and

adapts to different life stages. In adulthood, individuals may experience shifts in their sense of

purpose as they navigate career changes, family responsibilities, and evolving personal goals.

Understanding the relationship between purpose and identity development throughout the

lifespan can offer valuable insights into how individuals continue to shape their identities as they

encounter new challenges and opportunities.

Curiosity and Exploration

Curiosity, the insatiable desire to learn and understand, and *exploration*, the active pursuit

of new experiences and knowledge, are integral components of human experience (Kashdan et

al., 2009) that facilitate positive subjective experiences and opportunities for personal growth

(Kashdan et al., 2004). These twin forces play a significant role in shaping identity development,

influencing how individuals navigate the complex journey of self-discovery and personal growth.

Curiosity serves as the spark that ignites the flames of exploration. From a developmental

perspective (Voss & Keller, 2013), curiosity is evident early in life, driving infants to touch,

taste, and explore their surroundings. As children grow, curiosity evolves into a cognitive and

emotional force that propels them to ask questions, seek information, and engage in novel experiences. The renowned psychologist Jean Piaget (2005) identified curiosity as a fundamental motivator for cognitive development, emphasizing its role in the construction of knowledge and understanding. Research by Kashdan et al. (2009) suggests that individuals with higher levels of curiosity are more inclined to engage in exploration. Curiosity acts as the cognitive impetus that fuels the desire to explore, prompting individuals to actively seek out new information, perspectives, and experiences (Loewenstein, 1994). This reciprocal relationship creates a dynamic feedback loop where curiosity begets exploration, and exploration, in turn, enhances curiosity. Moreover, it has been found that need for cognition, an individual's tendency or desire to engage in and enjoy effortful cognitive activities, is positively correlated with curiosity (Olson et al., 1984) and higher general, fluid, and crystallized intelligence (B. D. Hill et al., 2013). This aligns with the idea that cognitive engagement and a propensity for intellectual pursuits are interconnected with both overall intelligence and a curious mindset providing relevance to IWGT's mindset and motivation (Meier et al., 2014).

Some existing literature sheds light on the relationship between curiosity, exploration, and identity development among IWGT. Lehwald (1991) contributed to the discussion by emphasizing the role played by exploratory behavior in the development of cognitive abilities, indicating that fostering such behavior is crucial for the overall growth of IWGT. Moreover, Gross (1998) discussed the challenges faced by intellectually gifted individuals in identity development, addressing the need to balance innate differences with social acceptance. Collectively, these studies indicate that curiosity and exploration are integral components influencing the identity development of IWGT, particularly within the context of their unique abilities and social experiences. As we have discussed earlier, identity development, particularly

during adolescence and emerging adulthood, is characterized by a quest for self-discovery and the establishment of a coherent sense of identity (Erikson, 1959, 1968). Erikson (1959) highlighted the role of identity exploration as a crucial task during these developmental stages. Curiosity can become a driving force in this exploration, compelling individuals to question and probe various aspects of themselves, including their values, interests, and aspirations. Additionally, Luyckx, Schwartz, et al. (2008) emphasizes the connection between identity exploration and the willingness to embrace new and diverse experiences. Individuals with a curious disposition are more likely to actively explore different facets of their identity, whether through academic pursuits, relationships, or involvement in diverse social and cultural contexts. Accordingly, it can be said that curiosity serves as a catalyst for the exploration of alternative identities and the consideration of a wide range of possibilities.

Interpersonal Aspects

Considering that Erikson (1950) recognized not only *ideology* as an essential domain for identity development but also *relationships*, the exploration of interpersonal aspects stands as a significant inquiry into the external influences that shape an individual's sense of self. In this section, I consider an investigation into the influential constructs of the school environment and family environment. These represent critical areas where interpersonal interactions, societal expectations, and relational dynamics converge to mold an individual's identity. The school environment, as a microcosm of societal structures, and the family environment, as the primary crucible of early socialization, are formative arenas for understanding the external factors that contribute to the formation and evolution of identity. Al-Shabatat et al. (2011) demonstrated that environmental factors like family, peers, teachers, school, society, and resources have strong direct and indirect effects on nurturing intellectual giftedness. By understanding the interplay

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between individuals and their social contexts, we aim to unravel the complexities of how interpersonal dynamics within educational and familial settings exert important and lasting impacts on the development of identity.

Family Environment

Family, as the primary and earliest environment, plays a major role in shaping an individual's identity development (Audet et al., 2022; Grotevant & Cooper, 1985; Perosa et al., 1996). Beyond its fundamental function in socialization, the family environment encompasses a junction for experiences, relationships, and values that profoundly influence the construction of one's sense of self (Scabini & Manzi, 2011). This setting encapsulates diverse dynamics, interactions, and cultural nuances, including relationships between parents, siblings, and extended family members. It is further characterized by the emotional climate, communication patterns, and shared traditions that contribute to the family's unique characteristics (Schultheiss & Blustein, 1994). Mullis et al. (2003) found significant associations between identity exploration and commitment, as well as family cohesion and adaptability. Parents, as primary caregivers and role models, wield significant influence over the identity development of their children (Benson & Johnson, 2009). Family autonomy support (Audet et al., 2022) and parental attitudes, values, and behaviors serve as influential templates that children internalize, shaping their own beliefs, aspirations, and interpersonal styles (Bempechat & Shernoff, 2012). Prioste et al. (2020) found that family cohesion had varying effects on identity outcomes depending on whether the individuals were adolescents or emerging adults, as well as on their developmental trajectories—adaptive or non-adaptive. Similarly, family conflict had differing impacts on identity formation outcomes based on developmental outcomes. They noted that high levels of family conflict and cohesion were associated with higher levels of in-depth exploration. Thus,

the family environment acts as a canvas upon which the contours of identity are painted, heavily influenced by familial values and role modeling.

Although parental influence is well-documented, sibling relationships, an often-overlooked aspect of family dynamics, also exert a substantial influence on identity development. McHale et al. (2012) conducted research highlighting the significance of sibling interactions in social and emotional development. Siblings, as both companions and rivals, contribute to the formation of social skills, conflict resolution abilities, and an individual's sense of self in relation to others. The family environment, through the dynamics of sibling relationships, serves as a training ground for navigating interpersonal relationships that extend beyond the familial sphere.

Moreover, communication patterns within the family environment emerge as another critical factor in identity development. Open and supportive communication fosters emotional security and self-expression, enabling individuals to articulate their thoughts, feelings, and emerging identities (Campbell et al., 1984). In contrast, Koerner and Fitzpatrick (2002) suggested that restrictive or conflict-ridden communication patterns may hinder the development of a positive self-concept and impede the exploration of personal identity. Despite these insights, the existing literature on family communication patterns and their specific influence on identity development remains relatively limited, pointing to a notable gap in the understanding of this relationship. Further research in this area could enhance our comprehension of how experiences or perceptions of communication within the family environment contribute to the multifaceted process of identity development, especially for IWGT.

School Environment

      The school environment serves as a crucial backdrop for the identity development of individuals. Beyond its primary role as an institution for academic learning, the school environment acts as a dynamic social arena where students navigate a myriad of experiences, relationships, and challenges that significantly shape their sense of self and contribute to the ongoing process of identity development. Verhoeven et al. (2019) and Lannegrand-Willems and Bosma (2006) highlight the unintentional and intentional ways in which schools and teachers impact identity development, with the latter emphasizing the role of the school experience as a personal resource. Moreover, Kaplan and Flum (2012) described the importance of identity formation in education, particularly in the 21st century, while Abbasi (2009) illustrated the role of school design in creating a supportive environment and offering opportunities for developmental exploration. School-related experiences have been seen to have a great influence on the development of academic self-concept and motivation (Kulakow, 2020; Wigfield & Eccles, 2002). Successes and challenges in the academic realm can influence how students perceive their abilities, aspirations, and future trajectories, shaping a vital aspect of their overall identity. In fact, Rich and Schachter (2012), studying high school climate, found that schools possessing characteristics such as affirming student exploration and agency and school cultivating whole student promote identity development among the students, and the influence of teachers as role models surpasses teacher care in predicting student identity development. Rich and Schachter also found that engaging in meaningful academic pursuits significantly contributes to students' exploration and confidence in their identity.

      The school environment encompasses a multitude of dimensions, including academic, social, cultural, and extracurricular aspects. It is within these multifaceted layers that students

encounter diverse opportunities for growth, self-discovery, and the construction of their identities. The cognitive development during adolescence, coupled with increased self-reflection abilities, underscores the importance of school experiences in shaping identity (Erikson, 1968; Lightfoot et al., 2018). Vygotsky's (1955/1978) sociocultural perspective on the development of higher mental functioning has greatly influenced education, as evident in educational programs and research (Gee, 2000). While Vygotsky did not explicitly address identity in his work, Penuel and Wertsch (1995) highlighted conceptual common ground between Vygotsky's and Erikson's theories, offering an integrative sociocultural approach to identity formation.

The significance of school experiences in identity formation has been widely acknowledged in the literature; however, there remains a notable gap in research explicitly examining the relationship between identity and education. The limited attention to this important interface stresses the need for further exploration to better understand how schools function as social agents and developmental contexts in shaping individuals' identities. Lannegrand-Willems and Bosma (2006) also expressed concern, stating that the study of identity formation in the school context is often neglected. They described it as a "wasteland" (p. 87), suggesting a gap in research on the explicit interconnection between identity and education. Kaplan and Flum (2009) and Schachter and Rich (2011) echoes this sentiment, noting a scarcity of research explicitly focusing on the intersection of identity and education.

Social Interaction Within Schools. One of the primary elements within the school environment is social interaction, particularly with peers. Peer relationships become a significant lens through which students explore and refine their identities. Erikson (1968) emphasizes the role of peer interactions in the formation of a sense of identity during adolescence. The school setting provides a social laboratory where individuals experiment with different social roles,

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affiliations, and friendships, contributing to the complex mosaic of their identities. J. R. Cross (2021b), discussing peer relationships of IWGT, stated that friendships form through egalitarian interactions, where mutual liking is rooted in reciprocity and shared interests. That is, IWGT engage with each other on equal terms, cultivating connections that go beyond mere acquaintance and are enriched by common pursuits and reciprocal gestures. Similarly, Lee et al. (2012) demonstrated that the students did not view their giftedness as a detrimental factor influencing their relationships with peers. However, they evaluated their academic self-concept more favorably than their social self-concept. This suggests that, while they acknowledged and embraced their intellectual abilities positively, there might be areas of concern or challenges in their social identity or interactions within the peer context. This disparity in self-concept ratings underscores the nuanced nature of how IWGT perceive and navigate their identity in both academic and social domains.

Additionally, the quality of relationships with teachers and mentors within the school environment also influences identity development. Positive and supportive relationships with educators can provide students with a sense of validation, encouragement, and guidance. Wentzel (2016) emphasizes the role of teacher-student relationships in fostering a positive school climate and promoting students' social and emotional development. Mentorship within the school environment can offer valuable insights, helping students navigate challenges, set goals, and envision their future selves. The overall school climate, encompassing the attitudes, values, and norms of the institution, significantly influences identity development. Cohen and Lotan (2014) highlighted the importance of a positive school climate in fostering a sense of belonging, autonomy, and competence among students. Thus, a supportive and inclusive school climate

contributes to the development of a positive self-concept and a resilient identity, empowering students to navigate the complexities of their academic and social experiences.

Interaction of the Intrapersonal and Interpersonal Aspects for Identity Development

The interaction between intrapersonal and interpersonal aspects is a psychological process that can shape the identity of individuals and their relationship with the surrounding world (Erikson, 1950). Several researchers have reasoned that recognizing the interaction between these factors (Schwartz et al., 2015), holds a significant influence over the trajectory of identity development. Yet, there is no empirical evidence on how the interaction shapes the identity development in an individual. The way in which an individual's internal reflections align with or diverge from their outward behavior may play an important role in shaping their identity. The interdependence of these dimensions implies that personal thoughts and feelings not only influence individual identity but are also manifested and negotiated in the interpersonal sphere. As individuals navigate their internal world of emotions, thoughts, and values, these aspects are not confined solely to the self but extend into the external domain of social interactions. Likewise, behaviors exhibited in interpersonal relationships are not isolated actions but are deeply rooted in the individual's intrapersonal experiences and self-perceptions.

However, it is important to remember that many of the changes that unfolded during the early months of the COVID-19 pandemic have significantly reshaped the "unique relational landscape" (Rogers et al., 2021, p. 44) of adolescents. As noted previously, in their formative years, adolescents typically seek autonomy and independence as they explore and establish their unique identity. Rogers et al. (2021) found that the constraints brought about by social distancing measures during the COVID-19 pandemic disrupted the usual avenues through which adolescents foster autonomy, such as socializing with peers outside the family unit.

Simultaneously, the increased time spent at home with family members altered the dynamics of

familial relationships, introducing both opportunities for deeper connections and potential

challenges related to increased proximity. While it has not yet been proven empirically, such

limitations imposed on the internal and external stimuli due to the pandemic may have hindered

the exploration and experimentation that are integral to identity development. For instance, the

reduced exposure to diverse social contexts may limit the range of experiences and perspectives

that adolescents are exposed to, potentially affecting the breadth and depth of their identity

exploration. Thus, it is important to consider any possible effects of COVID-19 on the data and

the relationship among the variables observed in the present study. While interpreting the data, it

is imperative to recognize the need to contextualize the findings within the unprecedented

backdrop of the COVID-19 pandemic, considering the potential long-term implications of the

pandemic on identity development.

Chapter 3

Method

The primary aim of this investigation was to empirically assess a theoretical model that delineates the impact of intrapersonal and interpersonal aspects on the identity development of individuals with gifts and talents (IWGT). This chapter elucidates the research questions, research design, hypotheses, participant details, data collection tools, techniques, and the data analysis procedure. I employed a postpositivist approach (Leavy, 2017) to investigate the relationships among the variables related to the identity development of IWGT. This approach proves advantageous because it not only examines the empirical associations between variables, seeking to establish relationships, but also recognizes the potential influence of researchers, thereby pursuing objectivity. I selected a cross-sectional correlational research design (Creswell & Creswell, 2017) because data were collected at a single point in time from a sample of participants, and I examined the relationships between variables to assess the strength and direction of their associations. This design allowed for a snapshot view of the associations between variables without the need for resource-intensive longitudinal data collection (Levin, 2006).

Research Questions

I aimed to provide an opportunity to assess how intrapersonal aspects (hope, purpose, curiosity and exploration); interpersonal factors (school environment, family environment); and their interaction influence the identity development of IWGT, with the help of the hypothesized

structural model presented in Figure 2. The research questions and hypothesis guiding this study were:

1. What is the relationship between intrapersonal aspects (indicated by hope, purpose, curiosity, and exploration) and identity development among IWGT?

2. What is the relationship between interpersonal aspects (indicated by school environment and family environment) and identity development among IWGT?

3. How is the interaction between the intrapersonal aspects and the interpersonal aspects associated with identity development among IWGT?

Hypothesis 1a. There will be a significant positive relationship between hope and identity development among IWGT.

Hypothesis 1b. There will be a significant positive relationship between purpose and identity development among IWGT.

Hypothesis 1c. There will be a significant positive relationship between curiosity and exploration and identity development among IWGT.

Hypothesis 2a. There will be a significant positive relationship between school environment and identity development among IWGT.

Hypothesis 2b. There will be a significant positive relationship between family environment and identity development among IWGT.

Hypothesis 3: There will be a significant positive influence of interaction between intrapersonal aspects and interpersonal factors on identity development among IWGT.

Figure 2

Hypothesized Model
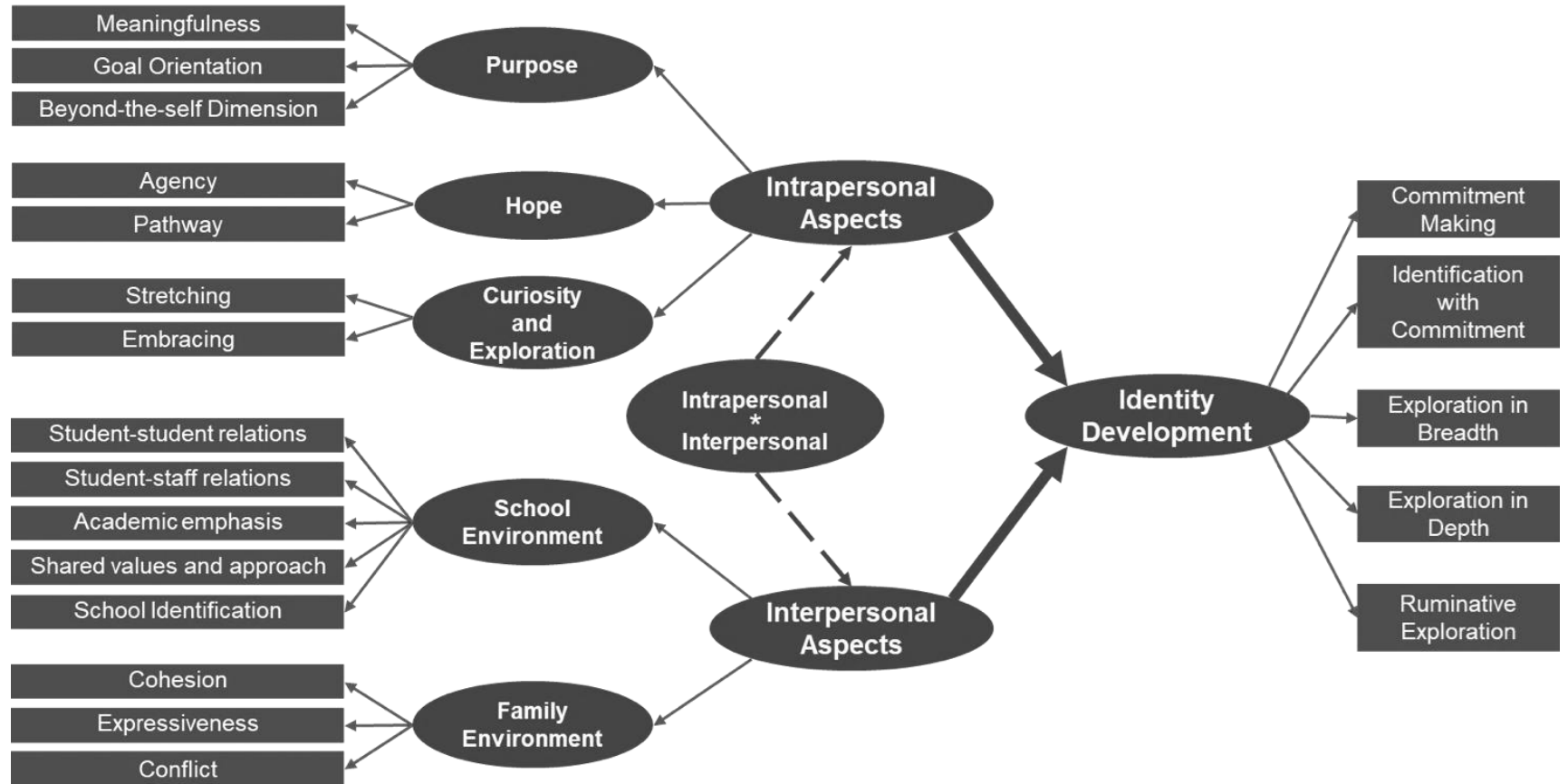
Participants

Convenience sampling was used to recruit 238 participants in the undergraduate program at a university known for its high selectivity in admissions which was used as an indication for giftedness in the present study. When reviewing applications, the admission office at the university considers all parts of the application, such as the strength of the high school curriculum, GPA, essay, extracurricular activities, and letters of recommendation. Although there was no predetermined minimum GPA or SAT/ACT score required for admission, the university prefers applicants who have taken challenging courses like Calculus, Physics, and at least 4 years of a foreign language. The acceptance rate at the university was 33% for the class of 2027 and remains around this for all years. The participants were recruited through the Sona Systems (a participant pool management system; https://www.sona-systems.com) in exchange for 0.5-hour research credit for courses. The Sona System at the university is a psychology research participation system open to students taking introductory courses in Psychology and a few courses in Linguistics. The number of students who took the survey was 239; however, one participant was removed due to missing data. Among the total participants ($N = 238$), 70% identified themselves as female, 62% were Freshmen, 67% identified themselves as White, and 89% were not Pell Grant recipients. Table 1 presents the reported demographic information of the participants in detail. According to Arnett (2000), the emerging adulthood phase (18–25 years) is distinct in terms of demographics, subjective perceptions, and identity explorations, indicating the need for scholarly attention to individuals in this phase.

Table 1

Demographic Characteristics of the Participants (N = 238)

Demographic Characteristic	*n*	%
Class		
Freshman	149	62.61
Sophomore	49	20.59
Junior	19	7.98
Senior	21	8.82
Age		
18 years	97	40.76
19 years	77	32.35
20 years	35	14.71
21 years	19	7.98
Other (22-25 years)	10	4.20
Gender		
Male	64	26.89
Female	167	70.17
Non-binary	5	2.10
Transgender	1	0.42
Prefer not to answer	1	0.42
Ethnicity		
Not Hispanic or Latino	215	90.34
Hispanic or Latino	19	7.98
Prefer not to answer	4	1.68
Race		
American Indian or Alaska Native	1	0.42
White	160	67.23
Asian	35	14.71
Black or African American	18	7.56
Multiracial	14	5.88
Other	5	2.10
Prefer not to answer	5	2.10
Pell Grant Recipient		
Yes	26	10.92
No	212	89.08

Data Collection Tools

I used psychometrically based measurement instruments designed to evaluate the key variables aligned with the study's objectives. The selected measurement instruments for the study variables are described in the sections that follow. Table 2 presents a glimpse of all the

scale descriptive statistics along with their reliability estimates for the present sample measured

with the help of Cronbach alpha.

Table 2

Scale Descriptive Statistics

Scale and Subscale	No. of Items	*M*	*SD*	α
Dimensions of Identity Development Scale (Luyckx, Schwartz, et al., 2008): Likert Scale 1 to 5				
Commitment Making	5	3.84	0.85	.92
Exploration in Breadth	6	3.80	0.65	.76
Ruminative exploration	4	3.31	0.94	.78
Identification with commitment	5	3.68	0.80	.87
Exploration in depth	5	3.87	0.62	.61
The Trait Hope Scale (Snyder et al., 1991): Likert Scale 1 to 8				
Hope	8	6.19	0.96	.87
Pathway	4	6.17	0.96	.78
Agency	4	6.21	1.13	.82
The Claremont Purpose Scale (Bronk et al., 2018): Likert Scale 1 to 5				
Meaningfulness	4	3.30	0.89	.87
Goal orientation	4	3.61	0.72	.86
Beyond-the-self dimension	4	3.78	0.87	.90
Curiosity and Exploration Inventory- II (Kashdan et al., 2009): Likert Scale 1 to 5				
Curiosity and Exploration	10	3.09	0.74	.89
Stretching	5	3.38	0.77	.83
Embracing	5	2.80	0.85	.82
School Climate and School Identification Measure (Gálvez-Nieto et al., 2021): Likert Scale 1 to 5				
Student-Student Relations	3	3.33	0.96	.89
Student-Staff Relations	3	3.60	0.99	.87
Academic Emphasis	3	3.84	0.86	.79
Shared Values Approach	3	3.48	0.93	.70
School Identification	3	3.36	1.15	.91
Brief Family Relationship Scale (Fok et al., 2014): Likert Scale 1 to 3				
Cohesion	7	2.63	0.41	.87
Expressiveness	3	2.41	0.54	.76
Conflict	6	2.43	0.45	.84

Identity Development

I used the Dimensions of Identity Development Scale (DIDS) by Luyckx, Schwartz, et al. (2008) to assess identity development. This self-report scale uses 25 items (see Appendix A), each of which is rated on a Likert scale ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). The DIDS is designed to capture the complexity of identity development by focusing on five distinct subscales, each consisting of five items. Commitment Making subscale measures the extent to which individuals are actively engaging in making personal commitments (e.g., "I know which direction I am going to follow in my life"). A high score indicates that individuals have a clear direction or purpose in life and are committed to pursuing specific goals or paths. Identification with Commitment subscales assesses the degree to which individuals identify with and integrate their commitments into their self-concept (e.g., "Because of my future plans, I feel certain about myself"). A high score suggests that the individual feels a sense of certainty and confidence in themselves because of their future plans and commitments. The subscale Exploration in Breadth examines the scope of individuals' exploration of various life options and possibilities (e.g., "I think actively about different directions I might take in my life"). A high score implies that the individual engages in diverse experiences, considers multiple paths, and is open to exploring various directions in life. The subscale Exploration in Depth examines the depth of exploration, focusing on the thoroughness of individuals' consideration of their options (e.g., "I think about whether my future plans match with what I really want"). A high score implies that the individual engages in reflective and introspective thinking about their future plans and aspirations. Finally, the Ruminative Exploration subscales assess the extent to which individuals engage in reflective and ruminative processes related to identity issues (e.g., "I am doubtful about what I really want to achieve in life"). Individuals with high scores on this

subscale may experience a heightened level of introspection and may grapple with existential

questions about their purpose and identity. They might find themselves pondering deeply about

their life direction, questioning their desires, and contemplating various possibilities. The DIDS

has demonstrated favorable internal consistencies with a reported alpha coefficient of .86 for

commitment making, .86 for identification with commitment, .81 for exploration in breadth, .79

for exploration in depth, and .86 for ruminative exploration (Luyckx, Schwartz, et al., 2008).

Hope

I used the Trait Hope Scale, developed by Snyder et al. (1991), to measure Snyder's

cognitive model of hope, which defines hope as "a positive motivational state that is based on an

interactively derived sense of successful (a) agency (goal-directed energy), and (b) pathways

(planning to meet goals)" (p. 287). This self-report scale consists of 12 items designed to assess

hope across two key dimensions: agency and pathway (see Appendix B). Four items measure

pathways thinking, four items measure agency thinking, and four items are fillers. For the

present study, the four filler items were removed to save the participants' time, thus leaving the

scale with 8 items. Filler items have often been used by researchers to disguise the trait being

measured by the scale. However, Kumar et al. (1991) found that the use of filler items is not the

key factor to disguise the true purpose of a scale.

The Agency subscale measures an individual's perception of their capacity to initiate and

sustain actions toward achieving their goals (e.g., "I meet the goals that I set for myself").

Among the four items of agency, one item reflects the past, two items reflect the present, and one

item reflects the future. A higher score on this subscale reflects a greater belief in a person's

ability to make things happen. The Pathway subscale evaluates the extent to which individuals

perceive viable routes and strategies for achieving their desired goals (e.g., "There are lots of

ways around any problem"). A higher score indicates a greater perceived clarity and feasibility in achieving those goals. Additionally, the scale provides a total hope score, which encompasses both agency and pathway, offering a comprehensive measure of an individual's overall trait hope. Participants respond to each item using an 8-point scale ranging from *definitely false* to *definitely true*. The Trait Hope Scale has shown reasonable internal consistency, with reported alpha coefficients of .71 for agency, .67 for pathway, and .75 for the combined hope score for college students (Snyder et al., 1991).

Purpose

I used the Claremont Purpose Scale (Bronk et al., 2018) to measure purpose and its three dimensions: goal-directedness, personal meaning, and a beyond-the-self orientation. Purpose is regarded as a sustained commitment with a forward-looking perspective directed towards accomplishing objectives that hold personal significance while simultaneously carrying broader implications for the wider world (Damon et al., 2003). The scale includes 12 items with 4 items in each of the subscales- meaningfulness, goal orientation, and beyond-the-self dimension (see Appendix C). The meaningfulness subscale delves into the personal significance and intrinsic value individuals associate with their pursuits (e.g., "How well do you understand what gives your life meaning?"). Individuals with high scores on this subscale are likely to derive a sense of fulfillment and contentment from the meaningfulness they attribute to their pursuits, fostering a positive outlook on life. Goal orientation explores the clarity and directionality of participants' objectives, reflecting the goal-directed aspect of purpose (e.g., "How hard are you working to make your long-term aims a reality?"). Individuals with high scores on this subscale are likely to exhibit a proactive approach to goal-setting and attainment, actively seeking opportunities to progress and succeed in their endeavors. The beyond-the-self subscale captures the extent to

which individuals are driven by purposes that extend beyond their personal interests, emphasizing a sense of contributing to something greater than themselves (e.g., "How important is it for you to make the world a better place in some way?"). Individuals with high scores on this subscale may be driven by a desire to contribute to the well-being of others, promote social justice, or address societal issues. They may feel a deep sense of fulfillment and purpose in dedicating their efforts toward making a meaningful difference in the world, serving a higher cause, showing a strong sense of altruism and social responsibility. Respondents rate each item on a 5-point Likert scale, with each item having different choices of the degree of attitudes (e.g., 1 = *Not at all important*, 2 = *Slightly important*, 3 = *Somewhat important*, 4 = *Quite important*, 5 = *Extremely important*). The subscales of the Claremont Purpose have demonstrated strong internal consistency and convergent validity with a reported alpha coefficient of .92 for meaningfulness, .86 for goal orientation, and .92 for beyond-the-self dimension (Bronk et al., 2018).

Curiosity and Exploration

I used the 10-item Curiosity and Exploration Inventory-II (Kashdan et al., 2009; see Appendix D) to measure the motivation to seek out knowledge and new experiences (*Stretching*; e.g., "I am at my best when doing something that is complex or challenging") and a willingness to embrace the novel, uncertain, and unpredictable nature of everyday life (*Embracing*; e.g., "I am the kind of person who embraces unfamiliar people, events, and places"). A high score in stretching indicates that the individual is likely to actively seek out opportunities for learning and growth, and a high score in embracing indicates that the individual is open-minded and adaptable, comfortable with uncertainty and change, and often views unfamiliar experiences as opportunities for growth and discovery rather than sources of anxiety or discomfort. The

Curiosity and Exploration Inventory-II is an adapted and improved version of the original

Curiosity and Exploration Inventory (Kashdan et al., 2004) with each subscale having five items.

The items of the scale are anchored on a Likert scale where 1= *very slightly or not at all*; 2 = *a*

little; 3 = *moderately*; 4 = *quite a bit*; 5 = *extremely*. The scale has been found to be valid and

reliable with the internal consistency of .85 for the total score, .78 for the stretching subscale, and

.75 for the embracing subscale (Kashdan et al., 2009).

School Environment

I used the School Climate and School Identification Measure-Student (Gálvez-Nieto et

al., 2021) to measure the school environment. Galvez-Nieto et al. (2021) defined school climate

as "the relationship between social and organizational factors" (p. 2) and noted that "school

identification is of vital importance because it allows students and the rest of the educational

community to develop a sense of belonging and connection with their school" (p. 2). The scale

consists of 15 items (see Appendix E) with three items in each of the five subscales: student-

student relations (e.g., "Students show understanding to each other"); student-staff relations (e.g.,

"Staff go out of their way to help students"); academic emphasis (e.g., "Teachers believe that

every student can be a success"); shared values and approach (e.g., "There is school spirit and

pride"); and school identification (e.g., "I feel a strong connection with this school"). The scores

of student-student relations, student-staff relations, academic emphasis, and shared values

approach combine to form a school climate. A high score on school climate suggests that

students perceived their school to be inclusive, welcoming, and conducive to learning, with

positive interactions among peers and staff members, and a high score on school identification

suggests that students felt emotionally invested in their school and considered it to be an integral

part of their identity. The items are rated on a Likert scale ranging from 1 *(Strongly Disagree)* to

5 (*Strongly Agree*). When administering, the items of this scale were changed to past tense and the instructions changed accordingly since the present study retrospectively measured the high school environment of the college students. The School Climate and School Identification Measure-Student has presented adequate indicators of reliability and construct validity. The reported Cronbach alpha value for the subscale student-student relations is .78, student-staff relations is .82, academic emphasis is .79, shared values approach is .78, and school identification is .90 (Gálvez-Nieto et al., 2021).

Family Environment

I measured the family environment with the Brief Family Relationship Scale (Fok et al., 2014). The scale was adapted from the 27-item relationship dimension of the Family Environment Scale by Moos and Moos (2002). It consists of 16 items and three subscales: Cohesion, Expressiveness, and Conflict (see Appendix F). The Cohesion subscale with seven items captures the degree of emotional closeness, bonding, and mutual support within the family (e.g., "In our family we really help and support each other"). A high score in this scale suggests that family members feel connected to each other, share a sense of unity, and provide each other with the necessary support and encouragement. It indicates a healthy and positive family environment where individuals feel loved, accepted, and valued. The Expressiveness subscale with three items assesses the extent to which family members openly express their emotions, thoughts, and feelings (e.g., "In our family we begin discussions easily"). A high score in Expressiveness suggests that there is a culture of open communication and transparency within the family, where individuals feel comfortable expressing themselves and discussing various topics. The Conflict subscale with six items assesses the dynamics of discord and tension that may arise among family members (e.g., "In our family we lose our tempers a lot") and is

reversed scored. Low conflict scores may indicate unresolved issues, poor communication, and strained relationships within the family. The participants respond to each of the items with the choices *not at all*, *somewhat* and *a lot*. The internal consistency of the cohesion and conflict subscale and the full scale were acceptable, with values of .83, .80, and .88, respectively (Fok et al., 2014). The expressiveness subscale had a weaker internal consistency with a value of .65. Fok et al. (2014) explained that the possible reason for the lower internal consistency of the Expressiveness scale is the poor fit of the construct to the sample, Alaska natives from rural and remote communities, on which the scale was explored. Though the scale has been used widely, no study reported the psychometric characteristics of the measure for their sample. Further studies are required to adequately determine the psychometric properties of the scale among diverse populations and age groups.

Data Collection Procedure

This study adheres to ethical principles and complies with the guidelines set forth by the Institutional Review Board (IRB) at the William & Mary School of Education. As a first step, institutional IRB approval was sought. Because the study was conducted through the Sona system at the Psychology department of the university, approval from the department to get data from 250 participants was also obtained. Once the necessary approvals were secured, the study was set up in the Sona System, and an automatic 0.5 credit granting was enabled. Once the study was activated, the data collection was facilitated through Qualtrics, which was embedded in the Sona System. The Qualtrics survey form included a comprehensive informed consent form at the beginning, which outlined the study's objectives, procedures, participant rights, and the potential risks and benefits associated with their participation (see Appendix G). The continuation to the next step by clicking on "I consent to participate in the study" ensured the respondents'

willingness to participate. Qualtrics automatically assigned a unique random identification number to each of the participants. The survey was open for 1 month, but the required data were collected within 2 weeks from the time the survey was activated in the Sona system. Access to the collected data was restricted to me and my committee.

Data Analysis

Once the required number of participants was reached, the data was downloaded in an Excel format from Qualtrics. The option "recode seen but unanswered questions as -99" was marked while downloading the data so that the missing values were replaced by "-99". In the downloaded Excel file, the unwanted columns provided by Qualtrics (i.e., start date, end date, location, duration, etc.) were all removed and only the response identification and the responses to the survey questions were kept. I then meticulously checked the data for missing values within Excel by counting "-99". The data of one participant were removed due to 100% missing data. It was then observed that there were very limited missing data (i.e., only 14 cells had missing data) within the entire dataset and they were *missing completely at random* (missingness probability is constant and it is independent of the observed and unobserved data; Little, 1988). The descriptive analysis and reliability estimate of the original scale for the present data were performed with the help of the statistical software R 4.2.2 (R Core Team, 2022) using the packages *tidyverse* (Wickham et al., 2019) and *psych* (Revelle, 2024). However, to answer the research questions the data analysis was conducted using MPlus Version 8.10 (L. K. Muthén & Muthén, 2017). MPlus handles missing data by implementing full information maximum likelihood (Enders & Bandalos, 2001) estimation which is an appropriate strategy when data are *missing completely at random*, as in this case. The frequency and percentage for the demographic information were all calculated and the responses of all items for the variable "conflict" were reverse coded in Excel.

Once the data set was prepared, it was saved into a .csv format for analysis in MPlus. The order of the items was saved separately for subsequent use in MPlus while defining the data.

The present study utilized Structural Equation Modeling (SEM) as the primary statistical technique to address the research questions and to test the hypotheses with the help of MPlus. SEM is a robust and versatile method for examining complex relationships between multiple variables, making it particularly well-suited for this investigation of the influence of intrapersonal and interpersonal aspects and their interaction on the identity development of IWGT. It is a "comprehensive statistical approach to testing hypotheses about relations among observed and latent variables" (Hoyle, 1995, p. 1). SEM possesses the flexibility to illustrate connections among various predictor and criterion variables and to evaluate predefined theoretical hypotheses using confirmatory analysis against empirical data (Chin, 1998). The hypothesized model represented in Figure 2 was tested using a structural regression model. "Structural regression (SR) models build on the CFA models by postulating specific explanatory relationships (i.e., latent regressions) among constructs. SR models are often used to test or disconfirm proposed theories involving explanatory relationships among various latent variables" (Khine, 2013, p. 4).

As a first step, the measurement model was assessed, where the relationships between observed items and their respective latent constructs (hope, purpose, curiosity and exploration, school environment, family environment, and their subscales) were examined through first-order confirmatory factorial analysis (CFA). This enabled us to ensure that the chosen indicators accurately reflected the latent variables. Once each of the measurement models were confirmed with the help of different configurations, similarly, the structure of intrapersonal and interpersonal latent aspects was confirmed with the help of second-order CFAs. If the initial

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model did not exhibit a satisfactory fit, model modification procedures (Whittaker et al., 2012) were implemented for the configurations to refine the CFAs. These modifications involved adjusting relationships between variables or reducing the latent constructs. Accordingly, the whole structural model was analyzed to test the relationship of intrapersonal aspects, interpersonal aspects, and their interaction with identity development for the present dataset. More specifically, the steps of model specification, identification, estimation, evaluation, and modification were followed to test the hypothesized model (Kline, 2023; Schumacker & Lomax, 2010) at different stages.

Marsh et al. (1988) put forth a set of criteria for ideal fit indices, which encompass attributes like being relatively independent of sample size, the ability to assess different models accurately and consistently, and the ease of interpretation supported by a well-defined predetermined range. Based on Marsh et al.'s (1988) criteria, Garver and Mentzer (1999) suggested the use of the non-normed fit index (also called the Tucker-Lewis Index [TLI]), the comparative fit index (CFI), and the root mean squared approximation of error (RMSEA), which are most commonly employed in research. Thus, I used CFI (Bentler, 1990); TLI (Tucker & Lewis, 1973); RMSEA (Steiger & Lind, 1980); along with standardized root mean square residual (SRMR; Maydeu-Olivares, 2017; Pavlov et al., 2021) as the goodness-of-fit statistics, discussed further in the findings section. I also considered and followed the checklist for SEM model setting and evaluation developed by Kang and Ahn (2021) for robustness in the stages of the data analysis method. In Chapter 4 and Chapter 5, I finally illustrated and discussed the results.

Chapter 4

Findings

The present study aimed to provide an opportunity to assess how intrapersonal aspects (hope, purpose, curiosity and exploration), interpersonal aspects (school environment, family environment) and their interaction influence the identity development of IWGT with the help of the hypothesized structural model presented in Figure 2. The current chapter presents the findings obtained from conducting data analyses aimed at addressing the following research questions and hypothesis guiding this study:

1. What is the relationship between intrapersonal aspects (indicated by hope, purpose, curiosity, and exploration) and identity development among IWGT?

2. What is the relationship between interpersonal aspects (indicated by school environment and family environment) and identity development among IWGT?

3. How is the interaction between the intrapersonal aspects and the interpersonal aspects associated with identity development among IWGT?

Hypothesis 1a. There will be a significant positive relationship between hope and identity development among IWGT.

Hypothesis 1b. There will be a significant positive relationship between purpose and identity development among IWGT.

Hypothesis 1c. There will be a significant positive relationship between curiosity and exploration and identity development among IWGT.

Hypothesis 2a. There will be a significant positive relationship between school

environment and identity development among IWGT.

Hypothesis 2b. There will be a significant positive relationship between family

environment and identity development among IWGT.

Hypothesis 3: There will be a significant positive influence of the interaction between

intrapersonal aspects and interpersonal factors on identity development among IWGT.

Descriptive Statistics of the Measurements

The following section presents descriptive statistics of the measurements used in the

study, organized based on the demographic characteristics of the participants. Although I did not

conduct a comparative analysis to see whether the differences among the groups were

significant, Table 3 provides the descriptive statistics for all demographic characteristics for

identity development, Table 4 for intrapersonal aspects, and Table 5 for interpersonal aspects.

Table 3

Descriptive Statistics Based on Demographic Characteristics for Identity Development (N = 238)

Demographic Characteristic	n	Commitment Making		Exploration in Breadth		Ruminative Exploration		Identification With commitment		Exploration in Depth	
		M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Class											
Freshman	149	3.71	0.85	3.83	0.67	3.44	0.89	3.62	0.78	3.91	0.62
Sophomore	49	4.07	0.84	3.70	0.73	3.16	1.01	3.84	0.73	3.90	0.68
Junior	19	4.11	0.69	3.83	0.42	2.86	0.80	3.78	0.84	3.75	0.54
Senior	21	3.97	0.94	3.77	0.51	3.19	1.05	3.69	1.03	3.67	0.47
Age											
18 years	97	3.73	0.88	3.79	0.74	3.40	0.86	3.61	0.78	3.87	0.58
19 years	77	3.83	0.83	3.80	0.65	3.36	0.89	3.74	0.76	3.96	0.63
20 years	35	4.06	0.76	3.83	0.49	3.01	1.13	3.78	0.82	3.87	0.74
21 years	19	3.85	1.07	3.73	0.45	3.60	1.01	3.59	1.07	3.63	0.53
Other (22-25 years)	10	4.18	0.52	3.98	0.70	3.11	1.01	3.78	0.64	3.66	0.45
Gender											
Male	64	3.84	0.82	3.76	0.62	3.20	0.92	3.81	0.74	3.72	0.65
Female	167	3.87	0.85	3.81	0.66	3.34	0.95	3.67	0.80	3.93	0.60
Non-binary	5	3.48	0.87	3.70	0.82	3.55	0.60	3.04	0.50	3.92	0.30
Transgender	1	3.40	-	4.50	-	3.25	-	2.20	-	4.20	-
Prefer not to answer	1	1.40	-	5.00	-	4.50	-	2.00	-	3.00	-
Ethnicity											
Not Hispanic or Latino	215	3.84	0.84	3.79	0.66	3.32	0.91	3.67	0.78	3.87	0.60
Hispanic or Latino	19	3.77	0.82	3.85	0.60	3.18	1.24	3.79	0.91	3.91	0.80
Prefer not to answer	4	4.05	1.77	4.04	0.67	3.38	0.78	3.65	1.11	4.00	0.83

Demographic Characteristic	n	Commitment Making		Exploration in Breadth		Ruminative Exploration		Identification With commitment		Exploration in Depth	
		M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Race											
American Indian or Alaska Native	1	3.40	-	3.83	-	2.75	-	3.60	-	3.80	-
White	160	3.75	0.86	3.81	0.67	3.32	0.93	3.63	0.76	3.86	0.64
Asian	35	4.02	0.75	3.71	0.65	3.34	1.01	3.75	0.84	3.96	0.49
Black or African American	18	4.21	0.65	3.72	0.58	3.14	0.82	4.10	0.68	3.84	0.53
Multiracial	14	3.81	0.91	3.98	0.52	3.63	1.04	3.43	1.03	3.87	0.70
Other	5	4.44	0.62	3.67	0.88	2.75	0.71	4.20	0.76	3.76	0.68
Prefer not to answer	5	3.76	1.66	4.17	0.55	3.50	0.95	3.56	0.98	3.92	0.95
Pell Grant Recipient											
Yes	26	3.99	0.86	3.82	0.42	3.24	0.99	3.82	0.94	3.79	0.56
No	212	3.82	0.85	3.80	0.68	3.32	0.93	3.67	0.78	3.88	0.62
Total Group	238	3.84	0.85	3.80	0.65	3.31	0.94	3.68	0.80	3.87	0.62

Table 4

Descriptive Statistics Based on Demographic Characteristics for Intrapersonal Aspects (N = 238)

Demographic Characteristic	*n*	Hope				Purpose						Curiosity and Exploration			
		Pathway		Agency		Meaningfulness		Goal-Orientation		Beyond-the-self Dimension		Stretching		Embracing	
		M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Class															
Freshman	149	6.17	0.93	6.24	1.07	3.28	0.91	3.57	0.70	3.86	0.81	3.40	0.75	2.77	0.81
Sophomore	49	6.21	1.07	6.22	1.28	3.37	0.90	3.81	0.64	3.66	0.90	3.42	0.74	2.86	0.89
Junior	19	6.14	0.99	6.21	1.00	3.38	0.75	3.70	0.60	3.78	0.90	3.23	0.75	2.83	0.92
Senior	21	6.08	0.98	5.98	1.34	3.20	0.90	3.31	1.00	3.49	1.12	3.33	0.94	2.76	1.01
Age															
18 years	97	6.12	0.90	6.30	0.98	3.22	0.85	3.56	0.68	3.85	0.84	3.35	0.69	2.78	0.81
19 years	77	6.24	0.89	6.23	1.16	3.43	0.98	3.71	0.70	3.80	0.77	3.49	0.82	2.85	0.85
20 years	35	6.36	0.92	6.32	1.00	3.37	0.84	3.71	0.59	3.84	0.93	3.35	0.67	2.80	0.83
21 years	19	6.29	0.94	5.93	1.43	3.16	0.95	3.39	1.04	3.38	0.96	3.37	0.99	2.85	1.10
Other (22-25 years)	10	5.25	1.72	5.33	1.80	3.10	0.71	3.35	0.88	3.42	1.16	3.06	0.82	2.44	0.71
Gender															
Male	64	6.32	0.84	6.20	1.21	3.36	0.91	3.68	0.73	3.46	0.94	3.47	0.76	2.99	0.87
Female	167	6.13	1.01	6.24	1.12	3.31	0.88	3.63	0.68	3.91	0.79	3.36	0.77	2.75	0.82
Non-binary	5	6.10	0.58	5.90	0.86	2.60	0.78	2.70	0.69	3.10	1.29	2.92	0.61	2.16	1.01
Transgender	1	5.50	-	5.00	-	1.50	-	2.00	-	3.75	-	3.60	-	1.80	-
Prefer not to answer	1	5.00	-	5.75	-	3.00	-	1.75	-	5.00	-	3.20	-	2.20	-
Ethnicity															
Not Hispanic or Latino	215	6.16	0.97	6.20	1.16	3.31	0.88	3.59	0.71	3.75	0.87	3.38	0.75	2.78	0.86
Hispanic or Latino	19	6.33	0.87	6.28	0.87	3.07	0.99	3.75	0.67	3.89	0.79	3.41	0.95	2.93	0.78

Demographic Characteristic	n	Hope				Purpose						Curiosity and Exploration			
		Pathway		Agency		Meaningfulness		Goal-Orientation		Beyond-the-self Dimension		Stretching		Embracing	
		M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Prefer not to answer	4	6.19	1.03	6.69	0.72	4.00	0.82	3.69	1.31	4.38	0.92	3.60	0.49	3.00	0.57
Race															
American Indian or Alaska Native	1	5.00	-	6.00	-	2.50	-	3.50	-	3.75	-	2.80	-	2.40	-
White	160	6.20	0.98	6.31	1.08	3.27	0.89	3.57	0.71	3.83	0.84	3.41	0.76	2.83	0.85
Asian	35	6.24	0.82	5.96	1.29	3.41	0.78	3.68	0.75	3.59	0.91	3.41	0.78	2.93	0.87
Black or African American	18	5.88	0.85	6.1	1.02	3.56	0.84	3.88	0.60	3.76	0.96	3.22	0.74	2.66	0.78
Multiracial	14	6.41	1.06	6.07	1.37	3.25	1.03	3.41	0.79	3.66	1.04	3.43	0.83	2.47	0.80
Other	5	5.30	1.20	5.25	1.55	2.85	1.18	3.90	0.49	3.35	0.88	2.60	0.84	2.00	0.93
Prefer not to answer	5	6.45	0.94	6.45	0.45	3.45	1.30	3.65	1.08	4.35	0.86	3.56	0.43	3.04	0.54
Pell Grant Recipient															
Yes	26	6.14	0.88	5.82	1.19	3.23	0.91	3.60	0.89	3.67	0.92	3.29	0.74	2.88	0.80
No	212	6.18	0.98	6.26	1.12	3.31	0.89	3.61	0.70	3.79	0.86	3.39	0.77	2.79	0.85
Total Group	238	6.17	0.96	6.21	1.13	3.30	0.89	3.61	0.72	3.78	0.87	3.38	0.77	2.80	0.85

Table 5

Descriptive Statistics Based on Demographic Characteristics for Interpersonal Aspects (N = 238)

Demographic Characteristic	n	School Environment													Family Environment					
		Student-student Relations		Student-Staff Relations		Academic Emphasis		Shared-Values Approach		School Identification		Cohesion		Expressiveness		Conflict	
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Class																	
Freshman	149	3.32	0.98	3.58	0.99	3.81	0.90	3.53	0.92	3.38	1.16	2.64	0.40	2.45	0.53	2.46	0.44
Sophomore	49	3.32	1.00	3.65	0.95	3.99	0.65	3.44	0.93	3.22	1.12	2.67	0.37	2.39	0.56	2.41	0.49
Junior	19	3.11	0.92	3.32	1.18	3.60	1.10	3.14	1.01	3.16	1.18	2.35	0.57	2.11	0.50	2.32	0.50
Senior	21	3.57	0.64	3.90	0.88	3.94	0.76	3.50	0.96	3.68	1.19	2.72	0.28	2.44	0.50	2.40	0.43
Age																	
18 years	97	3.36	0.97	3.51	0.99	3.68	0.89	3.41	0.93	3.19	1.17	2.58	0.44	2.43	0.55	2.40	0.46
19 years	77	3.30	1.01	3.69	0.96	4.02	0.79	3.65	0.86	3.61	1.08	2.69	0.31	2.40	0.53	2.51	0.41
20 years	35	3.19	1.01	3.60	1.10	3.98	0.87	3.37	0.99	3.21	1.11	2.71	0.35	2.43	0.53	2.45	0.46
21 years	19	3.58	0.76	3.74	0.79	3.77	0.78	3.40	0.92	3.70	1.36	2.56	0.45	2.23	0.56	2.23	0.55
Other (22-25 years)	10	3.17	0.55	3.53	1.32	3.70	1.01	3.28	1.21	3.30	1.23	2.46	0.69	2.53	0.45	2.48	0.44
Gender																	
Male	64	3.46	0.85	3.82	0.85	4.03	0.66	3.65	0.88	3.62	1.17	2.68	0.30	2.37	0.53	2.46	0.40
Female	167	3.27	1.00	3.54	1.03	3.79	0.90	3.43	0.95	3.29	1.12	2.62	0.44	2.43	0.54	2.43	0.47
Non-binary	5	3.33	0.67	3.20	0.38	3.93	0.43	3.27	0.43	2.67	1.72	2.46	0.44	2.20	0.30	2.27	0.38
Transgender	1	4.00	-	3.00	-	3.00	-	2.33	-	2.00	-	2.14	-	2.33	-	2.00	-
Prefer not to answer	1	3.00	-	1.00	-	1.00	-	2.00	-	2.67	-	2.14	-	2.67	-	2.50	-
Ethnicity																	
Not Hispanic or Latino	215	3.36	0.95	3.63	0.97	3.89	0.84	3.50	0.92	3.39	1.16	2.63	0.41	2.40	0.53	2.44	0.46

Demographic Characteristic	n	School Environment										Family Environment					
		Student-student Relations		Student-Staff Relations		Academic Emphasis		Shared-Values Approach		School Identification		Cohesion		Expressiveness		Conflict	
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Hispanic or Latino	19	3.04	1.06	3.37	1.13	3.42	0.81	3.35	0.99	2.96	1.14	2.66	0.36	2.46	0.63	2.46	0.45
Prefer not to answer	4	3.17	0.88	3.17	1.64	3.42	1.64	3.00	1.05	3.50	1.00	2.43	0.31	2.25	0.50	2.21	0.34
Race																	
American Indian or Alaska Native	1	4.00	-	1.33	-	2.33	-	2.00	-	1.00	-	2.00	-	2.00	-	1.50	-
White	160	3.33	0.97	3.64	0.97	3.86	0.80	3.48	0.96	3.36	1.17	2.64	0.40	2.43	0.52	2.44	0.43
Asian	35	3.45	0.90	3.69	0.82	3.93	0.74	3.71	0.76	3.51	1.08	2.58	0.44	2.28	0.6	2.33	0.55
Black or African American	18	3.39	1.03	3.57	1.16	3.81	1.09	3.47	0.94	3.29	1.25	2.71	0.33	2.50	0.43	2.57	0.31
Multiracial	14	3.26	0.95	3.31	0.86	3.79	0.97	3.10	0.84	3.19	0.99	2.69	0.30	2.50	0.57	2.52	0.35
Other	5	2.60	0.98	3.20	1.76	3.47	1.50	3.33	1.20	3.33	1.55	2.43	0.75	2.40	0.68	2.33	0.86
Prefer not to answer	5	3.13	0.77	3.33	1.45	3.73	1.59	3.33	0.91	3.40	0.89	2.46	0.31	2.20	0.84	2.47	0.38
Pell Grant Recipient																	
Yes	26	3.17	0.88	3.35	1.13	3.63	0.94	3.30	0.99	3.02	1.18	2.47	0.45	2.26	0.55	2.40	0.51
No	212	3.35	0.97	3.63	0.97	3.87	0.85	3.50	0.92	3.40	1.15	2.65	0.40	2.42	0.53	2.44	0.45
Total Group	238	3.33	0.96	3.60	0.99	3.84	0.86	3.48	0.93	3.36	1.15	2.63	0.41	2.41	0.54	2.43	0.45

Setting the Criteria

To examine the fit of the model for each of the first- and second-order CFA and the structural model the goodness-of-fit statistics Root Mean Square Error of Approximation (RMSEA; Steiger & Lind, 1980), Comparative Fit Index (CFI; Bentler, 1990), the Tucker-Lewis Index (TLI; Tucker & Lewis, 1973), and Standardized Root Mean Square Residual (SRMR; Maydeu-Olivares, 2017; Pavlov et al., 2021) were observed. Akaike Information Criterion (Akaike, 1974) and Bayesian Information Criterion (Schwarz, 1978) were also sometimes considered to compare the structures (Lin et al., 2017). Lower Akaike Information Criterion and Bayesian Information Criterion indices indicate better model fit, suggesting that the model provides a better balance between explaining the data and model complexity. However, a small difference in these indices indicates less evidence for preferring one model over another. Moreover, a model that better reflects theoretical expectations may be preferred, even if its Akaike Information Criterion or Bayesian Information Criterion score is slightly higher. The Chi-square test (χ^2; Cochran, 1952) was not taken into consideration because it is known to be highly sensitive to sample size (i.e., solutions involving large samples would be consistently rejected based on χ^2 even when differences between the sample and model-implied matrices are negligible; Cheung & Rensvold, 2002). The standardized path estimates to understand the loading were observed for each of the CFAs before and after modifications. The R-squares values, correlations among the latent variables and the modification indices were also examined to understand the regions of tension within the model.

An original recommendation by Bentler (1992) suggested that a CFI value exceeding .90 signifies a well-fitting model. More recent guidance (Hu & Bentler, 1999) suggests a cutoff value closer to .95. Similarly, in line with the CFI, TLI values approaching .95 are indicative of a

good fit (Hu & Bentler, 1999). However, for the present study, a value of CFI and/or TLI close

to .9 (i.e., above .85) for a model was considered acceptable, and a value equal to or above .95

was considered excellent. Consequently, RMSEA values less than .05 are seen as indicative of a

good fit, while values in the range of .08 are considered reasonably fitting. When RMSEA values

fall between .08 and .10, this is typically seen as an indicator of mediocre fit (Browne & Cudeck,

1993; MacCallum et al., 1996). For the present study, a value of RMSEA close to .10 (i.e., below

.15) was also considered a mediocre fit, and SRMR values less than or equal to .08 (Shi et al.,

2018) were considered an acceptable model fit.

CFA of Variables

The first-order CFA was first examined to confirm the factorial structures of the DIDS,

Trait Hope Scale, Claremont Purpose Scale, Curiosity and Exploration Inventory-II, School

Climate and School Identification Measure-Student, and Brief Family Relationship Scale,

individually for the present sample since it provides a parsimonious understanding of the

covariation among a set of indicators (Brown & Moore, 2012). This was followed by the second-

order factor analysis of the Intrapersonal and Interpersonal dimensions.

Identity Development

The identity development measured by the DIDS is composed of five subscales:

Commitment making (IDCM), Exploration in Breadth (IDEB), Ruminative exploration (IDRE),

Identification with commitment (IDIC), and Exploration in depth (IDED). As a first step, to

understand whether the structures of the latent variables from the original scale were holding

true, a CFA was conducted for the original DIDS scale with IDCM, IDEB, IDRE, IDIC and

IDED as subfactors. The fit indices observed indicated that it was not a good fit (see Table 6). It

was also observed with the help of standardized estimates ($p = .373$) and R-square values ($p =$

.656) that the loading of IDED was not significant, indicating that IDED latent variable was not

effectively loading into the common latent variable DIDS. IDED was not correlating with other

first-level latent factors IDCM, IDEB, IDRE, IDIC, which explains why it does not belong in the

higher-order factor. A summary of the steps is presented in Table 6, and Appendix H provides

further details on the syntax and the outputs, including the standardized estimates, R-square

values, and correlation table for each step.

Table 6

Summary of Steps for Confirming Factor Structure of DIDS

Step No.	Type of Analysis and Factor Structure	RMSEA	CFI	TLI	SRMR
1	CFA of DIDS with subfactors: IDCM, IDEB, IDRE, IDIC and IDED	.094	.817	.797	.148
2	CFA of DIDS with subfactors: IDCM, IDEB, IDRE, and IDIC	.106	.846	.824	.135
3	CFA of DIDS with subfactors: IDCM, IDEB, IDRE, and IDIC; IDEB11 removed	.089	.898	.882	.082
4	EFA: 5-factor solution	.062	.946	.913	.030
5	CFA with 5-factor solution from EFA	.081	.870	.855	.119
6	CFA with 4-factor solution	.087	.903	.888	.079

Note. CFA = confirmatory factor analysis; EFA = exploratory factor analysis; RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index; SRMR = standardized root mean square residual; DIDS = dimensions of identity development scale; IDCM = commitment making; IDEB = exploration in breadth; IDRE = ruminative exploration; IDIC = identification with commitment; IDED = exploration in depth.

Therefore, in Step 2, the CFA was conducted only with IDCM, IDEB, IDRE, and IDIC,

and IDED was dropped out of the model. The fit indices observed indicated that it was still not a

good fit even though it was better than before (Table 6). The modification indices suggested that

there could be potential improvements in the model if IDEB11 was allowed to be a measured

item under IDCM, IDIC, and IDRE, which is practically not possible. Hence, the decision was taken to remove IDEB11 as an item. When the CFA was conducted again without IDEB11 as a third step, the fit indices indicated an acceptable fit (Table 6). However, now the R-square value for IDEB became insignificant ($p = .085$) indicating that it is not loading effectively into DIDS.

Since the CFA did not indicate an adequate model and we did not want to lose all the subscales from the model, exploratory factor analysis (EFA) was used to further examine the factor structure of the DIDS scores as a fourth step. The default geomin rotation was used which is an oblique type of rotation allowing correlations between the extracted factors. The eigenvalues of the first five factors were greater than 1, suggesting a five-factor solution as the original scale. The fit indices suggest that the solution is well-fitting (Table 6). Considering the factor loading cut-off of .40 (Stevens, 2012), the solution derived from EFA was the same as the original scale except IDEB11 was loading significantly with other factors in IDIC, and IDRE12 was cross-loading with 3 factors. This resulted in the removal of item IDRE12 for future analysis and consideration of item IDEB11 under IDIC. Thus, the new factor structure was IDCM with IDCM01 to IDCM05, IDEB with IDEB06 to IDEB10, IDRE with IDRE13 to IDRE15, IDED with IDED21 to IDED25, and IDIC with IDEB11 and IDIC16 to IDIC20.

Consequently, as a fifth step, CFA was again conducted with these newly created factor structures to confirm the model. The fit indices indicated that the model is not a good fit (see Table 6). Similar to Step 1, with the help of standardized estimates (p = .450) and R-square values (p = .706), it was noted that the loading of IDED was not significant to DIDS. Therefore, as the sixth step, a CFA was conducted by removing IDED, and the fit indices improved and became acceptable. However, though the model was a good fit and the standardized estimate for IDEB loading to DIDS was significant, it should be noted that the R-square for IDEB was non-

significant ($p = .080$), indicating that IDEB does not adequately relate to DIDS. The model

modification process for DIDS was stopped at this point since even if it was not ideal, the results

of Step 6 were deemed acceptable.

Hope

Hope, which was measured with the Trait Hope Scale comprised of two factors—

Pathway and Agency. When the CFA for the two-factor model of Hope was conducted, MPlus

could not provide the fit indices and produced an error message indicating that the factor scores

were not computed due to nonconvergence or nonidentified model (see Appendix I). Essentially,

it was seen that the standardized estimate of Pathway loading into Hope was greater than 1,

indicating that there may only be one common factor and not two subfactors that lead to the

common factor Hope. Thus, to check whether all the items fit under one common factor, a CFA

was again conducted with all items under Hope. The fit indices with RMSEA = 0.12, CFI = 0.91,

TLI = 0.88, and SRMR = 0.05 were found to be acceptable, thus confirming this one-factor

solution. Appendix I provides further details on the syntax and the outputs with the standardized

estimates, R-square values, and correlation table.

Purpose

Purpose, which was measured with the Claremont Purpose Scale comprised of three

factors—meaningfulness, goal-orientation and beyond-the-self dimension. To confirm the factor

structure of the scale as a first step, CFA was conducted with its three subscales. The fit indices

with RMSEA = 0.08, CFI = 0.95, TLI = 0.94, SRMR = 0.06, indicating a good fit of the model.

However, it was seen that beyond-the-self dimension had a low R-square ($p = .04$) indicating that

it does not adequately correlate with DIDS, and it was not working well in the model. Moreover,

meaningfulness was very strongly correlating ($r = .87$) with the common latent factor Purpose,

indicating that it was being highly influenced by meaningfulness, leaving behind the other factors. Subsequently, as a next step a CFA was performed with all the three factors as separate and not converging into a common factor. The fit indices were the same as the previous model as the factors were not changed and only the top latent factor was removed, indicating a well-fitting model and no issues with standardized estimates and R-square values. Thus, this model with three separate factors- meaningfulness, goal-orientation, and beyond-the-self dimension, was retained for future use in the final model. Appendix J provides further details on the syntax and the outputs with the standardized estimates, R-square values, and correlation table for each step.

Curiosity and Exploration

Curiosity and exploration, which was measured with the Curiosity and Exploration Inventory-II, comprised of two factors—Stretching and Embracing. When the CFA for the two-factor model (with stretching and embracing as subfactors) of curiosity and exploration was conducted, though the fit indices indicate a good model, an error message appeared, and the standardized model estimates were not significant. When trying to understand the loading of Curiosity and Exploration by Stretching ($p =. 88$) or Embracing ($p = .88$), the subfactor Embracing was correlating perfectly, indicating that there may only be one common factor and not two subfactors that lead to the common factor Curiosity and Exploration, similar to Hope. Thus, similarly, to check whether all the items fit under one common factor, a CFA was again conducted with all items under Curiosity and exploration. The fit indices were found to be acceptable, thus confirming this one-factor solution. The standardized model estimates for this model were all significant, indicating appropriate loading of all items. A summary of the steps is presented in Table 7, and Appendix K provides further details on the syntax and the outputs, including the standardized estimates, R-square values, and correlation table for each step.

Table 7

Summary of Steps for Confirming Factor Structure of Curiosity and Exploration

Step No.	Type of Analysis and Factor Structure	RMSEA	CFI	TLI	SRMR
1	CFA of Curiosity and exploration with subfactors: Stretching and Embracing	.074	.957	.941	.042
2	CFA of Curiosity and exploration (all items, without subfactors)	.095	.925	.903	.051

Note. CFA = confirmatory factor analysis; RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index; SRMR = standardized root mean square residual.

Structure of Intrapersonal Aspect

Given that all the first-order CFAs considered under the Intrapersonal factor structure were checked and validated, the second-order factor structure was now examined. Within this, Hope was considered as a single latent variable with all 8 items; meaningfulness, goal orientation, and beyond-the-self dimension of purpose were considered separate latent variables consisting of 4 items each; and Curiosity and exploration was considered as a single latent variable with all 10 items. The model was found to have an acceptable fit with RMSEA = 0.07, CFI = 0.89, TLI = 0.88, and SRMR = 0.08. The standardized estimates and the R-square values for the model were all significant ($p < .01$). Appendix L provides further details on the syntax and the outputs with the standardized estimates, R-square values, and correlation table.

School Environment

School environment was measured with the help of School Climate and School Identification Measure-Student. It included the subscales Student-student relations, Student-staff relations, Academic emphasis, Shared-values approach, and School identification. In the original model by Gálvez-Nieto et al. (2021), the student-student relations, student-staff relations,

academic emphasis, and shared-values approach comprised the factor school climate and school identification was kept separate but correlating with school climate.

The fit indices of the original scale model were RMSEA = 0.09, CFI = 0.93, TLI = 0.91, and SRMR = 0.06, which was a good fit. The standardized estimates and R-square were all significant as well. Due to a similar factor structure, the fit indices were the same for the factor structure proposed in the hypothesized model of the current study (i.e., all five subscales under school environment). However, I decided to revert to Gálvez-Nieto et al.'s (2021) original scale model, keeping school identification as a separate latent variable from the school climate because of theoretical validation. Appendix M provides further details on the syntax and the outputs with the standardized estimates, R-square values, and correlation table.

Family Environment

Family environment was measured with the help of Brief Family Relationship Scale where family environment comprised of Cohesion, Expressiveness, and Conflict. As a first step, while validating the structure of the original model with Cohesion, Expressiveness, and Conflict as latent factors under family environment, a CFA revealed good fit indices (see Table 8). However, Cohesion had a negative residual variance, which suggested an issue. On further examination, it was seen that Cohesion was perfectly correlated with the top-level factor family environment, indicating that there may only be one common factor and not three subfactors that lead to the common factor. Thus, as with Hope and Curiosity and exploration, in the second step, a one-factor CFA was tried with all items under one latent factor. It was found that this model was not an acceptable fit. Therefore, as a third step, a three-factor approach was taken. On conducting a CFA for Cohesion, Expressiveness, and Conflict separately without the top-level latent factor, the model was found to have a good fit, which was the same as the first step, due to

the factor structures. The standardized estimates and the R-square values were all found to be significant ($p < .01$). A summary of the steps is presented in Table 8 and Appendix N provides further details on the syntax and the outputs with the standardized estimates, R-square values, and correlation table for each step.

Table 8

Summary of Steps for Confirming Factor Structure of Family Environment

Step No.	Type of Analysis and Factor Structure	RMSEA	CFI	TLI	SRMR
1	CFA of Family Environment with subfactors: COH, EX, and CON	.064	.942	.932	.060
2	CFA of Family Environment (all items, without subfactors)	.123	.779	.745	.093
3	CFA of COH, EX, and CON	.064	.942	.932	.060

Note. CFA = confirmatory factor analysis; RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index; SRMR = standardized root mean square residual; COH = Cohesion; EX = Expressiveness; CON = Conflict.

Structure of Interpersonal Aspect

Accordingly, given that all the first-order CFAs considered under the Interpersonal factor structure were checked and validated, the second-order factor structure was now examined as a first step here. Within this structure were School climate (which was composed of Student-student relations, Student-staff relations, Academic emphasis, Shared-values approach), School identification, Cohesion, Expressiveness, and Conflict. The MPlus output provided a warning that there was a problem with Cohesion. The model was found to have an acceptable fit. However, the negative residual variance and an undefined R-square value for Cohesion indicated an issue and Cohesion was also perfectly correlating with the Interpersonal latent factor. Thus, as a second step, Cohesion was removed from the second level, and the CFA was rerun. While the

fit indices were again acceptable in this case the R-square for Conflict was non-significant ($p =$ .152), indicating that it was not sufficiently explaining the Interpersonal factor. A summary of the steps is presented in Table 9 and Appendix O provides further details on the syntax and the outputs with the standardized estimates, R-square values, and correlation table for each step.

Table 9

Summary of Steps for Confirming Factor Structure of Interpersonal Aspect

Step No.	Type of Analysis and Factor Structure	RMSEA	CFI	TLI	SRMR
1	CFA of Interpersonal with subfactors: SC, SI, COH, EX and CON	.064	.899	.890	.110
2	CFA of Interpersonal with subfactors: SC, SI, EX and CON	.065	.922	.912	.067
3a	EFA: 6-factor solution	.055	.950	.920	.028
3b	EFA: 5-factor solution	.062	.928	.896	.035
4	CFA with 5-factor solution from EFA	.070	.896	.885	.110

Note. CFA = confirmatory factor analysis; EFA = exploratory factor analysis; RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index; SRMR = standardized root mean square residual, SC = School Climate, SI = School Identification; COH = Cohesion; EX = Expressiveness; CON = Conflict.

Accordingly, since the second-order CFA was not indicating an adequate model and we did not want to lose important variables from the model, as a third step, an EFA was used to further examine the structure of the Interpersonal factor, as a third step. The default geomin rotation was used which is an oblique type of rotation allowing correlations between the factors in output. The eigenvalues for the EFA suggested a six-factor solution. The fit indices of the six-factor solution indicated an excellent fit. However, considering the factor loading cut-off of .40 (Stevens, 2012), items CONR02 and CONR04 were found to be cross-loading since their factor loading values were close to .40. AE03, SVA01, SVA02, COH02, and CONR05 were also not loading effectively to any of the factors. Though it was loading significantly, SVA03 was also

dropped out because it was the only item remaining from its subscale. Thus, the factor structure of this six-factor solution was as follows (see Appendices E and F for details of items):

Factor 1: SSTUR01, SSTUR02, SSTUR03

Factor 2: SSTAFR01, SSTARF02, SSTAF03, AE01, AE02

Factor 3: SI01, SI02, SI03

Factor 4: COH01, COH03, COH04, COH05, COH06, COH07, (CONR02 and CONR04-cross loading)

Factor 5: CONR01, CONR03, CONR06, (CONR02 and CONR04- cross loading)

Factor 6: EX01, EX02, EX03

This factor structure was not looking clean due to cross loadings and item removals. Therefore, I decided to look at the five-factor solution in detail. The fit indices of this solution showed a good fit as well. While this factor structure also indicated removal of AE03, SVA01, SVA02, SVA03 for the same reasons, the factor structure of this five-factor solution was as follows (see Appendices E and F for details of items):

Factor 1: SSTUR01, SSTUR02, SSTUR03

Factor 2: SSTAFR01, SSTARF02, SSTAF03, AE01, AE02

Factor 3: SI01, SI02, SI03

Factor 4: COH01, COH02, COH03, COH04, COH05, COH06, COH07, EX01, EX02, EX03

Factor 5: CONR01, CONR02, CONR03, CONR04, CONR05, CONR06

I decided to retain this five-factor structure because it had limited cross-loadings, and fewer items were removed.

Finally, with the help of this five-factor model, I conducted another second-order CFA for the interpersonal latent factor. The fit indices were found to be acceptable. The standardized estimates of all items and latent variables of the model were significant ($p < .01$). But the R-square for Cohesion was not significant ($p = .085$), indicating that it was not contributing significantly to the model. Nonetheless, the model was retained in its current form as there were no other issues found with Cohesion.

SEM

Due to the first-order and second-order CFA results, the hypothesized model (Figure 2) was revised to the model represented in Figure 3 with the variables under Intrapersonal aspects, Interpersonal aspects, and Identity development as latent factors. SEM was conducted for this revised model. The output indicated that the number of parameters to be estimated is greater than the sample size would allow. In statistical terms, this situation implies that there are not enough data points to estimate all the parameters accurately, leading to a shortage of degrees of freedom. Degrees of freedom represent the number of independent pieces of information available to estimate parameters. When the number of parameters exceeds the degrees of freedom, it can result in overfitting or unreliable estimates, indicating potential issues with the model's validity or generalizability.

Figure 3

Revised Model 1 With Latent Variables Under Intrapersonal Aspects, Interpersonal Aspects, and Identity Development
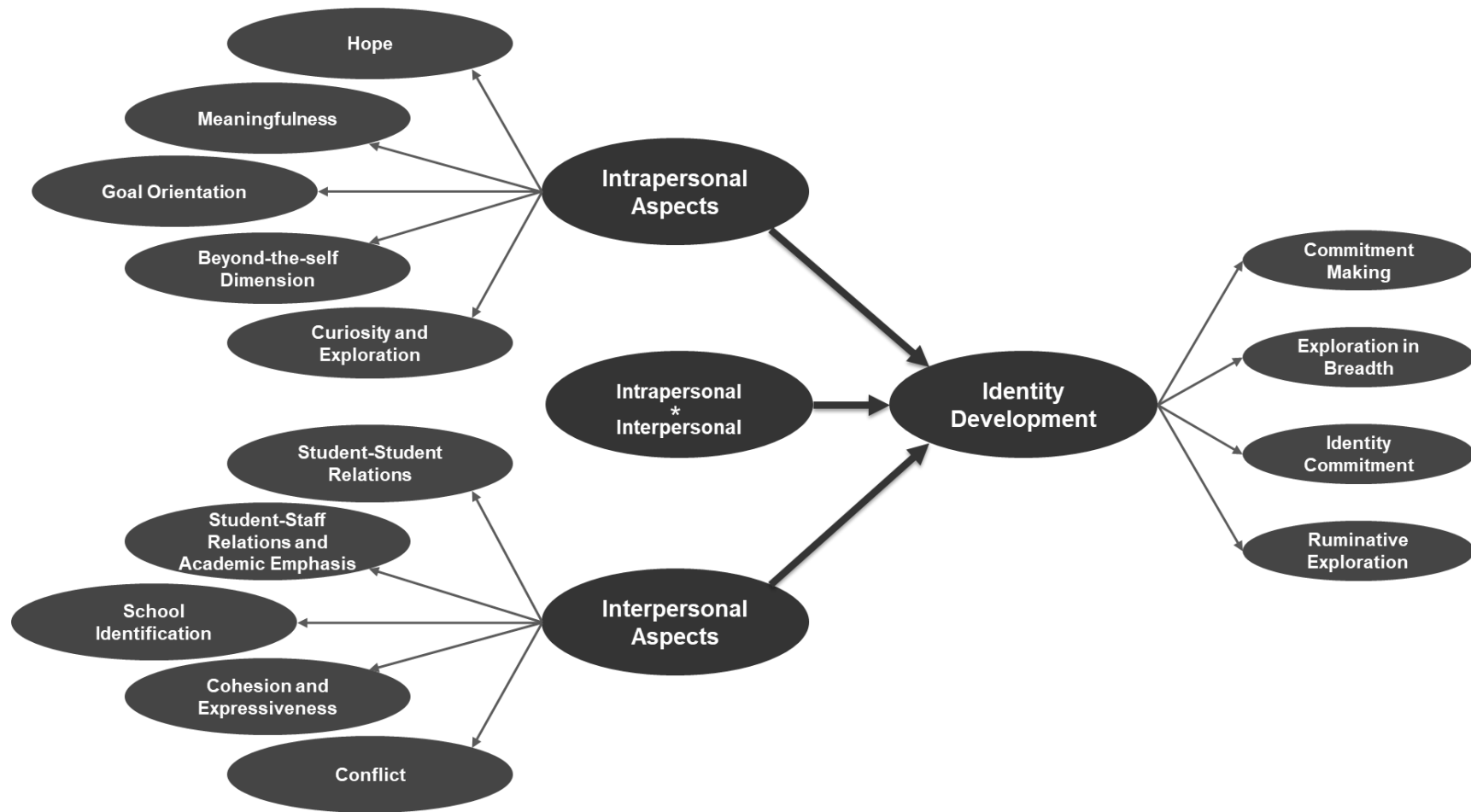
MacCallum et al. (1996) linked the sample size to both the anticipated effect size and the degrees of freedom. Higher degrees of freedom and larger effect sizes result in requiring fewer observations to attain satisfactory levels of statistical power. Conversely, with fewer degrees of freedom, indicating a greater number of parameters being estimated, larger sample sizes and effect sizes are necessary to achieve sufficient power (Jackson, 2003). For the present dataset, it was not possible to increase the sample size. Hence, factor scores were created for the variables under Intrapersonal aspects, Interpersonal aspects, and Identity development (DIDS). Thus, revising the model to Figure 4.

First, to answer Research Questions 1 ("What is the relationship between intrapersonal aspect [indicated by hope, purpose, curiosity and exploration] and identity development among IWGT?") and 2 ("What is the relationship between interpersonal aspect [indicated by school environment and family environment] and identity development among IWGT?"), I checked the model without the interaction between Intrapersonal and Interpersonal. The fit indices RMSEA = 0.17, CFI = 0.68, TLI = 0.61, and SRMR = 0.12 indicated a poor-fitting model. Because this was for the hypothesized model, the output was examined further to understand the underlying issues. The standardized estimate of the loading of Interpersonal on DIDS was -0.130 (p = .021), and Intrapersonal on DIDS was .905 (p < .01). Figure 5 displays these path coefficients. Furthermore, it was also seen that Intrapersonal was highly correlated with DIDS (r = .86, p < .01), and Interpersonal had a low correlation with DIDS (r = 0.18, p = .039). Moreover, the residual variance of IDIC was negative, the path coefficient more than one, and the R-square value was undefined, suggesting potential issues with the model. This indicates that while intrapersonal aspects strongly influence identity development, interpersonal aspects do not significantly contribute to identity development, at least within the framework of the current model. Appendix

P provides further details on the syntax and the outputs with the standardized estimates, R-square values, and correlation tables. Thus, reflecting on Hypotheses 1 and 2, which respectively proposed relationships between intrapersonal and interpersonal indicators with identity development, it becomes apparent that, although we cannot discern the individual relationships between each indicator of intrapersonal and interpersonal aspects, the relationship of intrapersonal indicators with identity development proves to be significant and positive within the model. Conversely, the relationship of interpersonal indicators with identity development is not significant within the model.

Finally, to answer Research Question 3 ("How is the interaction between the intrapersonal aspect and the interpersonal factors associated with identity development among IWGT?") when the interaction between Intrapersonal and Interpersonal was added there were minimal changes in the Akaike Information Criterion (Akaike, 1974) and the Bayesian Information Criterion (Schwarz, 1978) from the previous model without the interaction. This indicates that the addition of the interaction between Intrapersonal and Interpersonal did not significantly improve the fit of the model. It should be noted that after adding the interaction, I had to rely on the Akaike Information Criterion and Bayesian Information Criterion values to understand the model fit, because in MPlus, once the TYPE is set to Random, the interaction is included and the command ALGORITHM=INTEGRATION is used, it does not provide the regular fit indices. I further examined the path coefficients for this model and found that student-student relations were not significantly loading to Interpersonal ($p = .075$) and IDEB not significantly loading to DIDS ($p = .052$). Moreover, the standardized estimates of Interpersonal ($p = .493$) and the interaction between Intrapersonal and Interpersonal ($p = .793$) were not significant. Figure 6 illustrates these path coefficients. The residual variance for IDIC was again

negative and the R-square undefined, continuing to show the issue. Moreover, the standardized estimate of the path coefficient for IDIC was again greater than 1, suggesting that the relationship between IDIC and DIDS is stronger than what would be expected. The concerns with IDIC and IDEB within DIDS indicate that within the structural model, the subfactors of DIDS are not sustaining together. Reflecting on Hypothesis 3, which posited a relationship among the interaction of intrapersonal and interpersonal factors and identity development, it is evident that the interaction does not exert a significant influence on identity development.

Overall, these findings suggest that the model is not a good fit even though the individual parts of the model were confirmed and found to be acceptable with the help of first- and second-order CFAs. It indicates that while intrapersonal aspects contribute to identity development for the present model, the interpersonal aspects and the interaction between the intrapersonal and interpersonal aspects do not significantly predict identity development.

Figure 4

Revised Model 2 With Measured Variables Under Intrapersonal Aspects, Interpersonal Aspects, and Identity Development
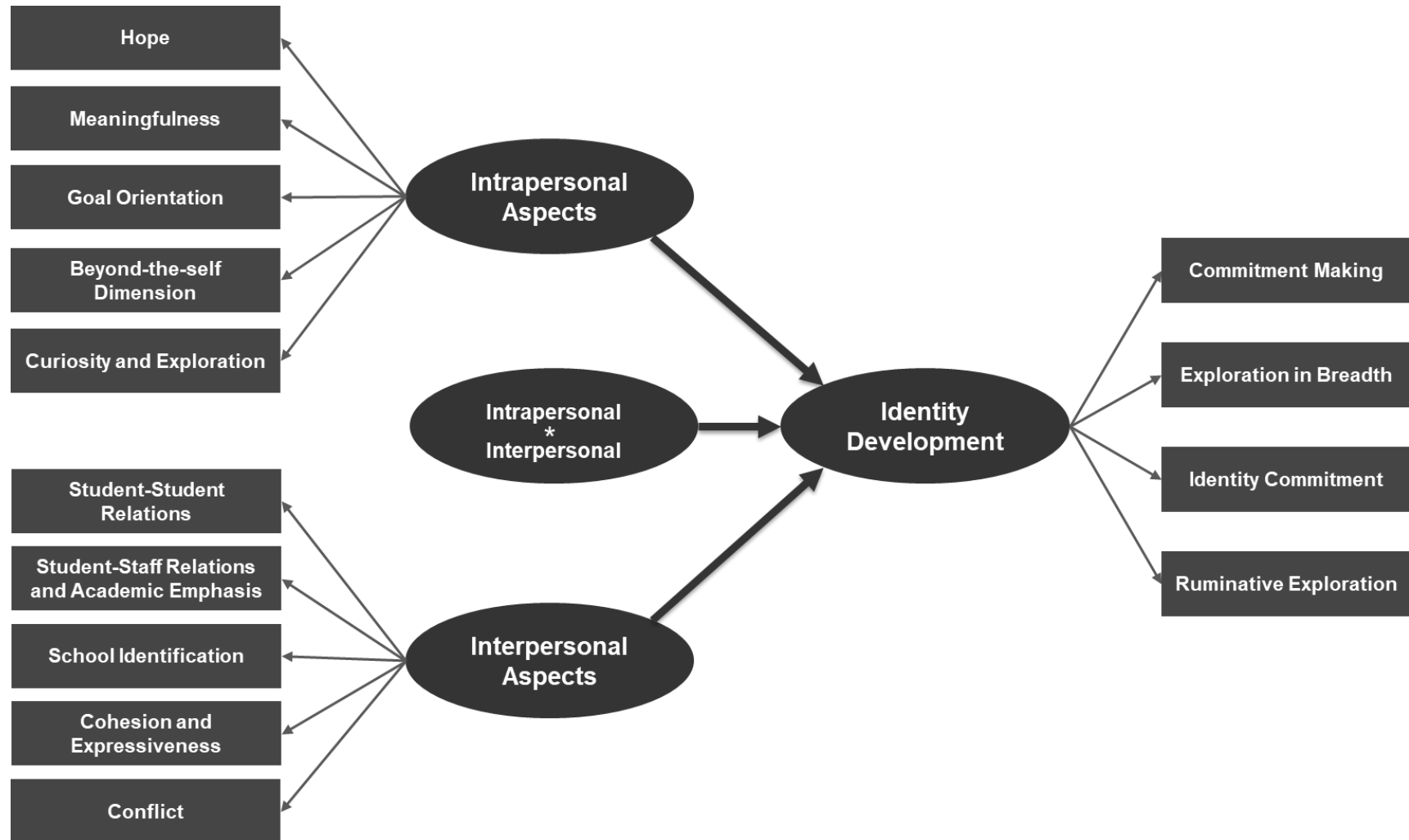
Figure 5

Standardized Path Coefficients of Revised Model 2 Without the Interaction
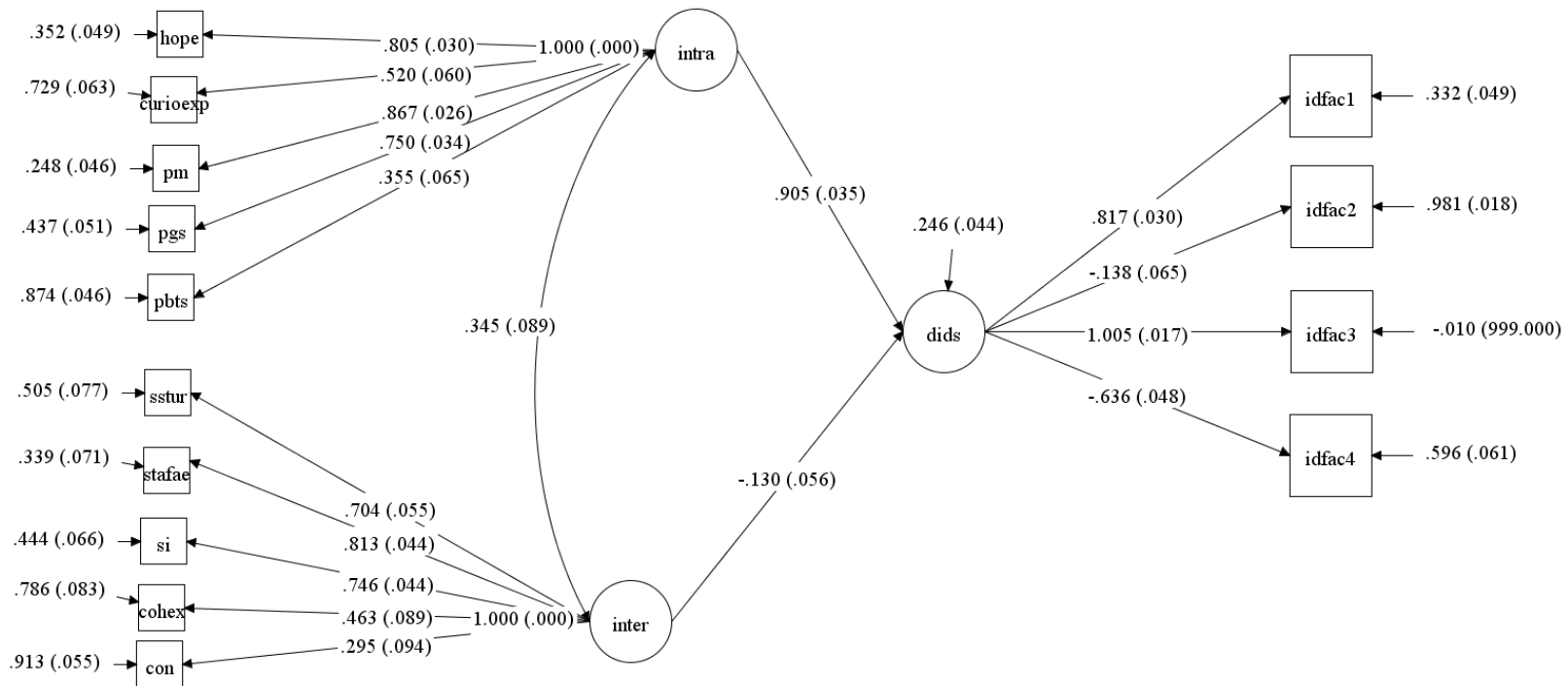
Note. hope = hope; curioexp = curiosity and exploration; pm = meaningfulness; pgs = goal-orientation, pbts = beyond-the-self dimension; sstur = student-student relations; stafae = student-staff relations and academic emphasis; si = school identification; cohex = cohesion and expressiveness; con = conflict; intra = intrapersonal aspects; inter = interpersonal factors; dids = identity development; idfac1 = commitment making; idfac2 = exploration in breadth; idfac3 = identification with commitment; idfac4 = ruminative exploration.

Figure 6

Standardized Path Coefficients of Revised Model 2 With the Interaction
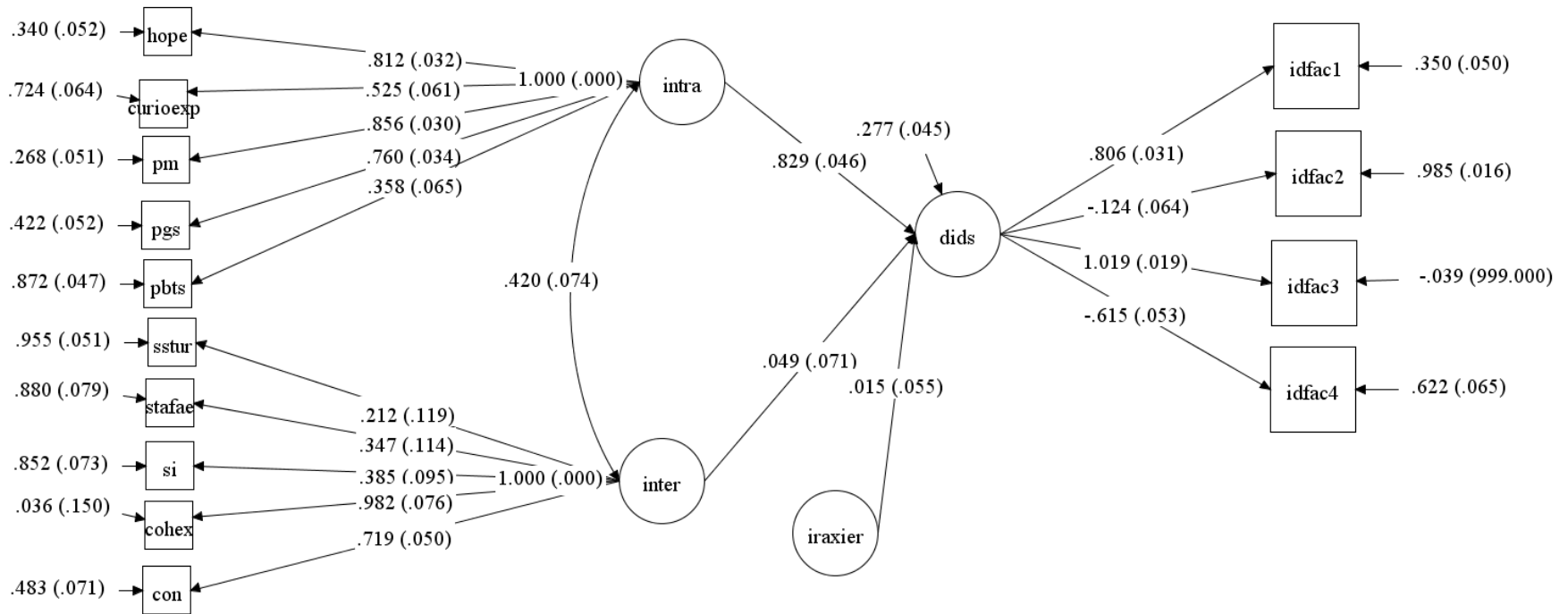
Note. hope = hope; curioexp = curiosity and exploration; pm = meaningfulness; pgs = goal-orientation, pbts = beyond-the-self dimension; sstur = student-student relations; stafae = student-staff relations and academic emphasis; si = school identification; cohex = cohesion and expressiveness; con = conflict; intra=intrapersonal aspects; inter = interpersonal factors; dids = identity development; idfac1 = commitment making; idfac2 = exploration in breadth; idfac3 = identification with commitment; idfac4 = ruminative exploration; iraxie r= interaction between intrapersonal and interpersonal.

Chapter 5

Discussion

The present study aimed to assess how intrapersonal aspects (hope, purpose, curiosity, and exploration), interpersonal aspects (school environment, family environment) and their interaction influence the identity development of IWGT. Although many theoretical frameworks (e.g., Erikson, 1950; Luyckx, Goossens, Soenens, & Beyers, 2006; Schachter, 2015) suggest the concurrent relationship of the intrapersonal and interpersonal aspects for identity development process, there exists a considerable empirical research gap in understanding these relationships. The current chapter presents the discussion of the findings obtained from conducting data analysis aimed at addressing the following research questions guiding this study within the hypothesized model (Figure 2):

1. What is the relationship between intrapersonal aspects (indicated by hope, purpose, curiosity and exploration) and identity development among IWGT?

2. What is the relationship between interpersonal aspects (indicated by school environment and family environment) and identity development among IWGT?

3. How is the interaction between the intrapersonal aspects and the interpersonal aspects associated with identity development among IWGT?

Identity development has been found to guide student motivation (Master et al., 2016; Oyserman & Destin, 2010); engagement (Deakin Crick & Goldspink, 2014); social interactions (Freese & Burke, 1994); academic achievement (Good & Adams, 2008; Hejazi et al., 2009); psychological well-being (De Lise et al., 2023); quality of life (Frank & McBee, 2003) and

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overall life success. Students often are motivated through envisioning their potential selves, contemplating the type of person they aspire to be or the type of individual they aim to be (Oyserman & Destin, 2010). Specifically, Berzonsky and Cieciuch (2016) found a positive relationship between identity commitment and psychological well-being (Ryff, 1989) measured with the help of autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. As discussed earlier, literature suggests many factors that contribute to an individual's identity development. For example, Kroger (2006) posited personality characteristics (e.g., low neuroticism and use of self-defense mechanisms; high achievement motivation and self-esteem); cognitive processes (e.g., more purposeful higher levels of moral reasoning and ego development; functioning best under stress); and interpersonal skills (e.g., high intimacy, self-disclosure, and most secure attachments) as correlates of identity development during adolescence. Likewise, through their literature review, Bosma and Kunnen (2001) suggested factors that enhance openness to change (e.g., rigidity, awareness of conflict, balance between openness and maintenance of stability); environmental support (e.g., support for change, expectations, models, acceptance); and developmental history (e.g., previous identity crisis, needs of dependency with parental figure) as important determinants of identity development. Exploring the ways in which these factors interact, Kroger (1993) posited that during adulthood, internal factors play a predominant role within a context largely shaped by external influences. This suggests that while external factors set the stage, internal dynamics have significant influence, particularly in the identity development process of adults. Additionally, Schachter (2015) presented a preliminary theoretical framework integrating *internal- ego-identity* and *interactional-discursive* perspectives of identity processes. The author stated that, "Identity process is conceptualized as involving discursive claims made about selves,

geared toward eliciting affirmation for pragmatic purposes and formulated to be accountable. Claiming processes can take place internally (reflexively in thought), interactionally (in talk), and externally (between others)" (p. 228).

To answer the research questions, this study was conducted among IWGT who were in the emerging adulthood phase (18-25 years; Arnett, 2000), with 73% in the age range 18-19 years. Though not empirically examined, divergent thinking, perceptivity, entelechy (Lovecky, 1986), feelings of being fundamentally different from others, need for solitude, need for meaning, feelings of being misunderstood, strong moral convictions (Roeper, 1991), moral sensitivity and concern for justice (Tolan, 1994) have been outlined as common traits of adult IWGT. To comprehend the factors influencing identity development among IWGT, support systems, self-knowledge, self-acceptance, self-advocacy, self-determination (Dole, 2001), perseverance, purposiveness, a desire to excel, self-confidence (Zuo & Tao, 2001) and moral sensitivity (Lovecky, 1997) have been investigated as significant determinants. Specifically, career exploration, commitment, life-role salience, and chronological age have been found to influence identity development among female IWGT (Shoffner & Newsome, 2001), who constituted 70% of the participant group in my study. Cramer (2000) stated that "identity development of males and females, when looked at from the point of view either of structure or of process, is highly similar" (p. 43); however, "for females, more so than for males, the question of interpersonal relatedness or connectedness is an integral part of identity development: for males, issues of self-definition, separateness, and autonomy are seen as more important" (p. 44). This was not true in my study, which had a high percentage of females. The following section offers a comprehensive analysis and interpretation of the results of my study with the help of the limited available literature.

Evaluation of Overall Model Fit Result

The findings shed light on the complexities of identity development among emerging adult IWGT, revealing both insights and challenges in understanding this developmental process. The hypothesized model, which was revised to Figure 4 to include acceptable fits of its individual components, failed to adequately align with the observed data. This discrepancy pointed to an overall misfit of the model, indicating a need for further refinement or reconsideration of its structure. It can also be speculated that the hypothesized relationships between the constructs may require additional refinement or modification to better capture the nuances of the examined constructs (hope, purpose, curiosity and exploration, school, and family environment) and identity development among IWGT. Despite the overall misfit of the revised hypothesized model, intrapersonal factors indicated by hope, purpose, and curiosity and exploration exhibited strong, positive, and significant associations with identity development. This highlights their substantial influence in shaping the identity of emerging adult IWGT, demonstrating the importance of considering individual internal dynamics (McLean & Syed, 2015) in understanding the complexities of identity development.

Further examination of the model revealed that identity development among IWGT was not significantly predicted by interpersonal aspects, indicated by school and family environment. This suggests that—contrary to expectations and previous research findings (e.g., Ļubenko & Sebre, 2007; Prioste et al., 2020; Rich & Schachter, 2012; M. L. Smith et al., 2020)—the external social contexts of school and family as measured by the present instruments did not play a significant role in shaping identity development for this group of participants, probably leading to the model misfit. Additionally, the interaction between intrapersonal and interpersonal aspects was not found to predict identity development among IWGT. Although the findings have been

discussed further in the subsequent sections, the results suggest that IWGT might rely more

heavily on intrapersonal resources to navigate their identity development.

Several scholars have highlighted identity formation as an equally crucial aspect for

IWGT adolescents as it is for adolescents in general (Coleman & Cross, 2001; Hébert, 2000; Zuo

& Cramond, 2001; Zuo & Tao, 2001), yet the construct has remained understudied for this

group. While the above findings have been further discussed in the sections on the relationship

between these factors and identity development later in this section, the discrepancy between the

model in Figure 4 and the observed data underlines the multifaceted nature of identity

development among IWGT, as highlighted in the introduction and literature review section.

Although the theoretical framework proposed a structured model to elucidate the relationships

between various constructs among IWGT, the findings suggest that the complexities of identity

development for this group of participants may not be fully captured by the model (Figure 4).

One potential reason for this discrepancy could be inadequacies in measuring the constructs

included in the model for the present group. It is to be noted that the scales used in the present

study have neither been extensively used nor validated on IWGT. Even though, with the help of

CFA, the scales were confirmed or reframed for the present group of participants, if the

measurement instruments used in the study were not precise or comprehensive enough to capture

the nuanced aspects among IWGT, it could have led to biased estimates and inaccurate model fit.

Specifically, while the CFA indicated an acceptable fit for the identity development scale

(DIDS), the individual dimensions of DIDS are not cohering within the structural model. The

paucity of prior investigations employing this scale among IWGT renders it challenging to

definitively attribute the potential deviation from the anticipated structure of DIDS to their

unique characteristics.

This scarcity of previous literature specifically focusing on IWGT's identity development also presents a notable challenge in pinpointing the specific reasons behind the present finding, but the possibility of using other measures to study the constructs or missing other important interpersonal aspects that perhaps influence identity development among IWGT could contribute to the model's lack of predictive power. For instance, within the environment of the IWGT, Bronfenbrenner's (1977) ecological systems model suggests the presence of various other entities. This model conceptualizes child development as a complex system of interrelated factors influenced by multiple levels of the surrounding environment, ranging from immediate family and school settings to broader cultural values, laws, and customs. The family and school environment examined in the current study are components of the microsystem conceptualized in the ecological systems theory (Bronfenbrenner, 1977). This microsystem encompasses numerous other factors, such as mentors, tight-knit communities, and the influence of social media presence, which were not accounted for in the present study, possibly resulting in the nonsignificant influence of interpersonal aspects and, hence, the overall model misfit.

The Structure of Identity Development

Within the framework of the model, it was observed that while identity development exhibited acceptable fit as an individual component, it did not demonstrate proper fit at the structural model level. Specifically, the dimension of exploration in depth had to be completely removed due to its lack of alignment in the analysis. Results indicated that the factor correlation of exploration in depth was not significant with the other factors of the scale and had low reliability for the present participants. This indicates a possibility that exploration in depth may not play a substantial role in shaping identity development among the studied group or it has limited variability. Additionally, the correlation between identification with commitment and

exploration in breadth was also not significant, suggesting that these two aspects may operate somewhat independently in influencing identity development for the present group. However, consistent with prior research findings, the present study also indicates negative associations between commitment making and exploration in breadth, as well as negative associations between reconsideration and identification with commitments (Waterman, 2015), indicating that individuals who are more committed to certain life paths may engage in less exploration of alternative options and doubtfulness, and vice versa.

Relevant to the present group of participants, research on heterogeneity in the development of educational identity (Christiaens et al., 2021) across the transition from secondary to tertiary education revealed that, while many adolescents exhibit stable patterns of commitment and reconsideration during this transition, a significant minority experiences either more or less adaptive patterns afterward, which are meaningfully linked to sociodemographic, academic, individual, and relational characteristics. Consequently, they suggested that the transition into adult roles may foster self-development but can also present identity challenges for certain adolescents, which may be a possibility for the participants in the present study. Likewise, Kroger et al. (2010), in their meta-analysis, demonstrated that the average proportion of moratoriums steadily increased until age 19 before declining, while the proportion of achieved identity rose throughout late adolescence and young adulthood. This transition from moratorium to achieved identity status reflects the resolution of the identity crisis and the consolidation of identity commitments. Furthermore, foreclosure and diffusion statuses decreased during high school years but exhibited fluctuations throughout late adolescence and young adulthood, with a considerable proportion of samples failing to achieve identity by young adulthood (Kroger et al., 2010). This indicates that achieving a stable identity is not a linear process for everyone, and

developmental processes such as commitment making, ruminative exploration, exploration in depth, and exploration in breadth continue influencing the progression toward a stable identity. Moreover, Luyckx, Schwartz, et al. (2008) found females scoring higher in exploration in depth and rumination exploration than males, university students scoring higher in commitment making, and high school students scoring higher in exploration in breadth. Even though a comparative analysis was not conducted, looking closely at the group means of the present group of participants who were university students, it was seen that overall, they had higher scores in commitment making. Also, as found by Luyckx, Schwartz, et al. (2008), the female respondents in my study had higher mean scores for exploration in depth and ruminative exploration than the males. Reflecting on the findings of the present study alongside existing literature, it becomes evident that there remains a critical need for further research into identity development among IWGT to gain a more nuanced understanding of this process.

The Relationship Between Intrapersonal Aspects and Identity Development

This study found that the intrapersonal aspects indicated by hope, purpose, and curiosity and exploration demonstrate strong positive significant associations with identity development within the structural model. This emphasizes the significant impact of these factors on identity formation among emerging adult IWGT, directing our attention to the importance of acknowledging individual internal dynamics (McLean & Syed, 2015) in understanding identity development. Although specific studies focusing on either hope or all three factors comprising intrapersonal aspects are not available, research on purpose among IWGT youth (Bronk et al., 2010) has found that they tend to adopt self-oriented life goals at an earlier stage compared to their more typical counterparts, potentially influencing their overall identity formation. Research consistently suggests that having a sense of purpose serves as a catalyst for identity exploration.

Individuals with a clear purpose are more likely to engage in self-discovery, exploring their values, interests, and aspirations. Moreover, Côte and Levine (1983) suggest that individuals who have a clear sense of purpose are more likely to commit to their chosen identities. The commitment process involves aligning one's actions, beliefs, and values with a chosen identity, and purpose plays a pivotal role in driving and sustaining this commitment. Confirming the present findings, Bronk (2011) found that the two constructs reinforce each other, with purpose supporting identity development and vice versa. Burrow and Hill (2011) also demonstrated that purpose mediates the relationship between identity and well-being, suggesting that a stable identity contributes to well-being through the cultivation of purpose. Because there has not been a single study utilizing all scales for comparison, it could be noted that the mean scores of the participants of this study were similar to the scores obtained for the subscales in the individual studies. Specifically, the scores were similar to those for meaningfulness, goal-orientation, and beyond-the-self dimension in the original scale by Bronk et al. (2018), stretching and embracing in the original scale by Kashdan et al. (2009), and agency and pathway from a recent study by Cheavens et al. (2019) using the original scale.

According to Damon et al. (2003), purpose acts as a guiding force, propelling individuals to ask profound questions about who they are and what they hope to achieve in life, aligning with the construct curiosity and exploration in the present study. Luyckx, Schwartz, et al. (2008) emphasized the connection between identity exploration and the willingness to embrace new and diverse experiences. Individuals with a curious disposition are more likely to actively explore different facets of their identity, whether through academic pursuits, relationships, or involvement in diverse social and cultural contexts. In the absence of literature directly examining the relationship, certain prior research (e.g., Gross, 1998; Lehwald, 1991) offers

insights into the relationship between curiosity, exploration, and identity formation among

IWGT. Lehwald (1991) enriches this discussion by highlighting the significance of exploratory

behavior in fostering cognitive skills thus playing an important role in the holistic development

of IWGT. Additionally, Gross (1998) delves into the complexities experienced by IWGT during

the process of identity development, acknowledging the need of reconciling inherent differences

with societal acceptance. These findings supported by previous literature strengthen the

importance of the role played by hope, purpose, and curiosity and exploration in the development

of identity.

The Relationship Between Interpersonal Aspects and Identity Development

The finding that identity development among IWGT was not significantly predicted by

interpersonal aspects indicated by school and family environment, raises intriguing questions,

and prompts a deeper examination of the factors at play. Despite the extensive literature

suggesting that family and school environments individually play important roles in shaping

identity development (e.g., Lannegrand-Willems & Bosma, 2006; Ļubenko & Sebre, 2007;

Prioste et al., 2020; Rich & Schachter, 2012; M. L. Smith et al., 2020), the present study's results

diverge from these expectations. This could be attributed to the use of an alternative

measurement instrument (varying in what was used in these studies versus the present study) to

assess the construct, which may capture additional nuances within the school and family

environment beyond those examined in the current study. Additionally, other methodological

differences across studies, such as sample characteristics, and cultural contexts, could also

contribute to variations in findings regarding the relationship between interpersonal aspects and

identity development. Alternatively, it could also be because the available studies did not

account for intrapersonal factors when investigating this relationship between the school or

family environment with identity development or did not consider the school environment and family environment collectively. For the present group of participants, the intrapersonal factors had a more substantial influence (β = .829, p < .01) on identity development compared to interpersonal factors (β = .049, p = .493). Moreover, correlation between the interpersonal aspects and intrapersonal aspects (r = .420) and identity development (r = .397), respectively, were not high.

Another possible explanation for the present finding might be the complexity of identity development, which may be influenced by various internal and external factors beyond familial and school dynamics as discussed earlier referring to ecological systems theory (Bronfenbrenner, 1977). For example, IWGT often receive additional sources of support outside of traditional family and school structures (e.g., mentors or instructors in enrichment classes or summer camps). These alternative sources of support may have a stronger influence on identity development for IWGT, overshadowing the effects of family and school environments. Another possible explanation could be the unique experiences and challenges faced by IWGT within these social contexts (J. R. Cross et al., 2016; J. R. Cross et al., 2019; Wilson et al., 2014). Indeed, the limited literature addressing the experiences and needs of IWGT in their identity development process within the context of family and school environments creates a gap. However, it is known that IWGT often encounter distinct interpersonal dynamics and societal and academic pressures compared to their peers (T. L. Cross et al., 1991; Gallagher, 2008), which might render the traditional influences of family and school less impactful or even irrelevant to their identity development. It is important to note that the mean scores for cohesion, conflict, and expressiveness for the present group of participants were higher than the original scale sample in Fok et al. (2014), which could reflect either the socio-emotional characteristics of

the IWGT or the change in the *relational landscape* during COVID-19 pandemic. At the same time, for the school climate scale (Galvaz-Nieto et al., 2021), the mean scores for all the subscales were similar for the present group of participants and the original scale.

In the context of adolescents in general, M. L. Smith et al. (2020) found that social climate factors like social environment, physical environment, academic support, parental involvement, academic satisfaction, and exclusion/privilege contributed to positive identity formation. While these factors were not measured in the present study, a measurement including these factors might have given a more robust perspective of the influence of interpersonal aspects on identity development among IWGT. The findings from Rich and Schachter (2012) also revealed several significant factors influencing identity development within school environments. For example, schools characterized by identity-promoting features were found to positively contribute to student identity development. Likewise, the presence of teachers serving as role models emerged as a more influential variable compared to teacher caring when predicting student identity development. In addition, the experience of engaging in meaningful studies was highlighted as a particularly significant contributor to student exploration and confidence in their identity. Branje et al. (2021) also suggest that the optimal development of adolescents' identity is closely associated with elevated levels of closeness and relatedness. However, it is essential to recognize that almost 91% of the participants in the present study were in high school during the COVID-19 pandemic. It is possible that taking online classes and being at home during this time had an influence on how they perceived their school environment.

Furthermore, with relevance to the participants in the present study, a fundamental contextual factor that challenges identity development is the transition from secondary to tertiary education (Kalakoski & Nurmi, 1998). With 63% of the participants being freshmen and 73% in

the age range 18-19 years, the participants of this study would have been in this transitional stage. As this transition signifies a discrete shift from one state to another, defined as a *normative ecological transition* (Seidman & French, 2004), it holds importance for identity development. This might be because, throughout the transition, adolescents are prompted to reflect on their interests, capabilities, and sense of self before choosing a specialized educational path. Engaging in proactive processing and self-reflection during this period could facilitate identity development (Berzonsky, 1989, 1990; Marcia, 1966; Waterman, 1982). Moreover, after the school transition, a good fit between adolescents and their new educational environment could reinforce existing commitments, while a mismatch may lead to increased reconsideration and weakened commitments (Eccles & Midgley, 1989; Erikson, 1968).

Besides, with respect to the relationship between identity development and family environment, Ļubenko and Sebre (2007) found that ratings of achieved identity status were linked to different facets of family environment and parent-child relationships. Their findings revealed that attained identity status among adolescent females was associated with factors such as family cohesion, reduced family conflict, and an emphasis on family achievement (for the present study, 70% of the participants were females). In contrast, achieved identity status among adolescent males was predicted by factors including family achievement orientation, intellectual-cultural emphasis within the family, and familial control. Given the higher representation of females (70%) in the present study, the findings may be more reflective of the factors influencing identity development among females rather than males. Similarly, diverging from the findings of the present study, Prioste et al. (2020) also found that high levels of family conflict and cohesion are associated with higher levels of exploration in depth. Moreover, Sugimura et al. (2018) found a negative correlation between emotional separation and identity consolidation across different

cultural contexts (Lithunia, Italy, Japan), suggesting that stronger emotional bonds with family members contribute to a more robust sense of identity. They also found positive associations between parental trust and identity consolidation, emphasizing the importance of trust and security within family relationships for fostering identity development. Conversely, Crocetti et al. (2017) conducted a longitudinal study spanning from adolescence to early adulthood, highlighting the reciprocal relationship between identity processes and the quality of relationships with parents and siblings. Commitment and in-depth exploration were found to positively affect relationship quality with family members, indicating that a strong sense of identity can enhance familial bonds. Consequently, with the help of their review, Branje et al. (2021) indicated that along with within-person processes, interpersonal dynamics within relationships, such as support, validation, and conflict resolution, significantly influence individuals' sense of self and identity exploration. By navigating these relational contexts, individuals negotiate their identity and establish a sense of belonging and connection with others. While the findings of these studies did not align with the findings of the present study, further research on IWGT's identity development in different contexts is necessary to see such relationships. It should also be noted that, as stated earlier, these studies did not account for the intrapersonal dimensions of their participants simultaneously with the interpersonal dimensions.

Influence of Interaction Among Intrapersonal and Interpersonal Aspects on Identity Development

While the findings of the present study suggest a lack of significant interaction effect between intrapersonal and interpersonal aspects on identity development, indicating that they may not synergistically contribute to the process, various theoretical frameworks, and meta-analyses (e.g., Branje et al., 2021; Erikson, 1950; Kroger, 1993; Luyckx, Goossens, Soenens, &

Beyers, 2006; Schachter, 2015) proposed a positive influence. Numerous researchers have argued that acknowledging the interplay among these factors (Schwartz et al., 2015) exerts a notable influence on the progression of identity development. While the present study's findings may not align with these theoretical propositions, they accentuate the complexity and variability inherent in identity development processes, where individuals navigate various domains of identity in parallel, each unfolding at its own pace and influenced by unique factors and experiences.

The results of an empirical study (Rivnyák et al., 2022) revealed the contrasting developmental trajectories of the ideological and interpersonal identity domains, which were expected, as it is developmentally appropriate for adolescents and emerging adults to be at varying stages in different domains of development simultaneously. This suggests that adolescents may prioritize different aspects of their identity formation process, such as personal beliefs and values versus interpersonal relationships, at different points in their developmental journey, which might have been the case for the participants of the present study, who were all emerging adults.

In addition to comprehending the distinct interpersonal dynamics experienced by gifted individuals, it is essential to recognize that the COVID-19 pandemic has led to significant changes in the *relational landscape* of adolescents. Of the participants in my study, 91% (freshmen, sophomores, and juniors) attended their high school during the pandemic. The constraints imposed by social distancing measures during the pandemic likely altered the usual avenues through which the participants might have fostered autonomy and navigate their interpersonal relationships (Rogers et al., 2021). With limited opportunities for in-person socialization outside the family unit, they might have experienced reduced exposure to external

social contexts, such as school environments and peer interactions, which typically contribute to identity development through social comparison, role exploration, and peer influence. Simultaneously, the increased time spent at home with family members during the pandemic may have shifted the focus of their interpersonal interactions towards their familial relationships. The mean scores for cohesion, expressiveness, and conflict were all high (see Table 5) for the present sample. This indicates that while the COVID-19 pandemic may have presented opportunities for deeper connections and support, it could have also introduced challenges related to increased proximity and potential conflicts within the family dynamics (also supported by Rogers et al., 2021). These changes in the *relational landscape* may have influenced the salience and impact of interpersonal aspects on identity development, thereby affecting the observed interaction effect for the participants in this study. Moreover, the altered social dynamics and disruptions in adolescents' usual socialization patterns (e.g., increased use of social media) during the pandemic may have introduced confounding variables or attenuated the associations between interpersonal aspects and identity development, leading to the lack of significant findings in this study. It is also possible that there is a mediation or moderation effect of the interpersonal aspects on identity development instead of the interaction effect.

Implications and Directions for Future Research

Identity development intervention has been seen to be fundamental for enhancing abilities, boosting academic achievement, and most importantly, expanding the range of interests, ensuring their coherence, and refining the decision-making process (Pellerone et al., 2015). Though the findings of the present study deviate from some of the prevailing theoretical perspectives that emphasize the significant role of interpersonal aspects in identity development, it is important to remember that identity development is a complex process, and it needs a more

nuanced and comprehensive approach of research. More studies similar to this are needed to understand and validate the results for different groups of individuals and in different contexts. Moreover, scales and constructs to measure the interpersonal factors can be revisited.

Though a significant relationship between interpersonal aspects indicated by school and family environments was not found, necessitating further investigation, the finding regarding the strong positive relationship between intrapersonal aspects and identity development has several implications. The findings emphasize the importance of focusing on an individual's internal dynamics, such as hope, purpose, and curiosity, in understanding identity development among IWGT. This suggests that interventions aimed at fostering these intrapersonal aspects may have a positive impact on identity development among IWGT. The findings can also suggest the way educational institutions and counseling professionals can approach identity development among emerging adult IWGT at an earlier stage, during adolescence. Especially, activities or interventions can be designed with the help of the School-based Psychosocial Curriculum Model (T. L. Cross et al., 2017; T. L. Cross & Cross, 2017a), which aims to promote the optimal psychosocial development of IWGT. With the help of the School-Based Psychosocial Curriculum Model, professionals or institutions can fortify ego strengths by fostering self-awareness, encouraging positive beliefs and attitudes, and providing opportunities for students to explore their interests and goals, leading to positive identity development. This can, in turn, improve their motivation (Master et al., 2016; Oyserman & Destin, 2010); engagement (Deakin Crick & Goldspink, 2014); social interactions (Freese & Burke, 1994); academic achievement (Good & Adams, 2008; Hejazi et al., 2009); psychological well-being (De Lise et al., 2023); quality of life (Frank & McBee, 2003); and overall life success. Curricula, activities, and counseling strategies may be tailored to promote purpose, hope, curiosity and exploration.

Through targeted strategies that promote self-reflection, goal-setting, and exploration of personal interests and passions, individuals may be empowered to navigate the challenges of identity formation with greater clarity and confidence.

Finally, the findings also indicate that there is a need to expand or modify the model examined in the present study to incorporate a more nuanced understanding of the relative contributions and potential mediating or moderating factors involved in the process. While the School-Based Psychosocial Curriculum Model can further guide understanding what factors can be considered for optimal development of IWGT, more context-specific and comprehensive studies might help elucidate the role of intrapersonal and interpersonal factors in identity development and developing interventions.

Limitations and Delimitations

The present study offers insights into the nature and predictors of identity development among emerging adult IWGT. The findings uncovered both valuable insights and challenges in comprehending this developmental process. Reflecting on the limitations and delimitations of the present study, several factors need to be considered. The study focused on IWGT aged 18 to 20 years, from a single university, and at a certain point in time. Specifically, the use of purposive sampling from a single institution may have introduced sample bias and limited the external validity of the findings to a more diverse population of IWGT. Additionally, the retrospective nature of participants' information about their school environment, which they might have attended during the time of COVID-19, and the focus on high achievement (i.e., highly selective university admission criteria standing in for identification of IWGT) may have influenced the results. Retrospective reporting can be subject to memory biases and inaccuracies, particularly when recalling events or experiences from earlier stages of life. Moreover, validity issues are

often found when a study relies on self-report measures to assess the examined constructs (Teye & Peaslee, 2015), such as the present study. Self-report measures are subject to biases such as social desirability and response biases, which may affect the accuracy of the data collected.

I also did not account for several potential variables influencing identity development among IWGT, and there might have been confounding factors that were either unmeasured or were not incorporated into the data analysis. For example, factors such as race, ethnicity, gender, and age groups were not included during the data analysis process. With respect to the data analysis, the possible limitations could be the non-normality of the data, which often occurs when considering Likert-type scales (Finney & DiStefano, 2006; B. Muthén & Kaplan, 1985). Moreover, factors of the DIDS were not cohering with each other within the model for the present group of participants. This could be a limitation for my study, which was difficult to solve because catering to an issue with one factor was giving rise to another.

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Identity Development

Dimensions of Identity Development Scale (DIDS) (Luyckx, Schwartz, et al., 2008)

Directions: Read each item carefully and please select the option that best describes YOU.

1= Strongly Disagree; 2= Disagree; 3= Neither agree nor disagree; 4= Agree; 5= Strongly Agree

Commitment Making

1. (IDCM01) I have decided on the direction I am going to follow in my life.

2. (IDCM02) I have plans for what I am going to do in the future.

3. (IDCM03) I know which direction I am going to follow in my life.

4. (IDCM04) I have an image about what I am going to do in the future.

5. (IDCM05) I have made a choice on what I am going to do with my life.

Exploration in Breadth

6. (IDEB06) I think actively about different directions I might take in my life.

7. (IDEB07) I think about different things I might do in the future.

8. (IDEB08) I am considering a number of different lifestyles that might suit me.

9. (IDEB09) I think about different goals that I might pursue.

10. (IDEB10) I am thinking about different lifestyles that might be good for me.

11. (IDEB11) I am doubtful about what I really want to achieve in life.

Ruminative exploration

12. (IDRE12) I worry about what I want to do with my future.

13. (IDRE13) I keep looking for the direction I want to take in my life.

14. (IDRE14) I keep wondering which direction my life has to take.

15. (IDRE15) It is hard for me to stop thinking about the direction I want to follow in my life.

Identification with commitment

16. (IDIC16) My plans for the future match with my true interests and values.

17. (IDIC17) My future plans give me self-confidence.

18. (IDIC18) Because of my future plans, I feel certain about myself.

19. (IDIC19) I sense that the direction I want to take in my life will really suit me.

20. (IDIC20) I am sure that my plans for the future are the right ones for me.

Exploration in depth

21. (IDED21) I think about the future plans I already made.

22. (IDED22) I talk with other people about my plans for the future.

23. (IDED23) I think about whether the aims I already have for life really suit me.

24. (IDED24) I try to find out what other people think about the specific direction I decided to take in my life.

25. (IDED25) I think about whether my future plans match with what I really want.

Appendix B

Hope

The Trait Hope Scale (Snyder et al., 1991)

Directions: Directions: Read each item carefully and please select the option that best describes YOU.

     1. = Definitely False

     2. = Mostly False

     3. = Somewhat False

     4. = Slightly False

     5. = Slightly True

     6. = Somewhat True

     7. = Mostly True

     8. = Definitely True

     1. (HP01) I can think of many ways to get out of a jam or blockage.

     2. (HA01) I energetically pursue my goals.

     3. (HP02) There are lots of ways around any problem.

     4. (HP03) I can think of many ways to get the things in life that are important to me.

     5. (HP04) Even when others get discouraged, I know I can find a way to solve the

problem.

     6. (HA02) My past experiences have prepared me well for my future.

     7. (HA03) I've been pretty successful in life.

     8. (HA04) I meet the goals that I set for myself.

Note. When administering the scale, it is called The Future Scale. The **agency** subscale score is derived by summing items 2, 6, 7 and 8; the **pathway** subscale score is derived by adding items 1, 3, 4, and 5.

Appendix C

Purpose

The Claremont Purpose Scale (Bronk et al., 2018)

Directions: Read each item carefully and please select the option that best describes YOU.

Meaningfulness

1. (PM01) How clear is your sense of purpose in your life?

Not at all clear, A little bit clear, Somewhat clear, Quite clear, Extremely clear

2. (PM02) How well do you understand what gives your life meaning?

Do not understand at all, Understand a little bit, Understand somewhat, Understand quite well, Understand extremely well

3. (PM03) How confident are you that you have discovered a satisfying purpose for your life?

Not at all confident, Slightly confident, Somewhat confident, Quite confident, Extremely confident

4. (PM04) How clearly do you understand what it is that makes your life feel worthwhile?

Not at all clearly, A little bit clearly, Somewhat clearly, Quite clearly, Extremely clearly

Goal orientation

5. (PGS01) How hard are you working to make your long-term aims a reality?

Not at all hard, Slightly hard, Somewhat hard, Quite hard, Extremely hard

6. (PGS02) How much effort are you putting into making your goals a reality?

Almost no effort, A little bit of effort, Some effort, Quite a bit of effort, A tremendous amount of effort

7. (PGS03) How engaged are you in carrying out the plans that you set for yourself?

Not at all engaged, Slightly engaged, Somewhat engaged, Quite engaged, Extremely engaged

8. (PGS04) What portion of your daily activities move you closer to your long-term aims?

None of my daily activities, A few of my daily activities, Some of my daily activities, Most of my daily activities, All of my daily activities

Beyond-the-self dimension

9. (PBTS01) How often do you hope to leave the world better than you found it?

Almost never, Once in a while, Sometimes, Frequently, Almost all the time

10. (PBTS02) How often do you find yourself hoping that you will make a meaningful contribution to the broader world?

Almost never, Once in a while, Sometimes, Frequently, Almost all the time

11. (PBTS03) How important is it for you to make the world a better place in some way?

Not at all important, Slightly important, Somewhat important, Quite important, Extremely important

12. (PBTS04) How often do you hope that the work that you do positively influences others?

Almost never, Once in a while, Sometimes, Frequently, Almost all the time

Appendix D

Curiosity and Exploration

Curiosity and Exploration Inventory- II (Kashdan et al., 2009)

Directions: Read each item carefully and please select the option that best describes YOU.

Items 1, 3, 5, 7, and 9 are the **stretching** facet; items 2, 4, 6, 8, and 10 are the **embracing** facet.

Items are anchored on the following scale: 1= very slightly or not at all; 2 = a little; 3 = moderately; 4 = quite a bit; 5 = extremely.

1. (STRE01) I actively seek as much information as I can in new situations.

2. (EMB01) I am the type of person who really enjoys the uncertainty of everyday life.

3. (STRE02) I am at my best when doing something that is complex or challenging.

4. (EMB02) Everywhere I go, I am out looking for new things or experiences.

5. (STRE03) I view challenging situations as an opportunity to grow and learn.

6. (EMB03) I like to do things that are a little frightening.

7. (STRE04) I am always looking for experiences that challenge how I think about myself and the world.

8. (EMB04) I prefer jobs that are excitingly unpredictable.

9. (STRE05) I frequently seek out opportunities to challenge myself and grow as a person.

10. (EMB05) I am the kind of person who embraces unfamiliar people, events, and places.

Appendix E

School Environment

School Climate and School Identification Measure—Student (Abbreviated Version; Gálvez-Nieto et al., 2021)

Directions: Think about the last school (high school) you attended. Please read each statement below and indicate how much you agree with it in the context of your last high school.

1= Strongly Disagree; 2= Disagree; 3= Neither agree nor disagree; 4= Agree; 5= Strongly Agree

Student-Student Relations

1. (SSTUR01) Students treated each other with respect.

2. (SSTUR02) Students were fair to each other.

3. (SSTUR03) Students showed understanding to each other.

Student-Staff Relations

4. (SSTAFR01) Staff went out of their way to help students.

5. (SSTAFR02) Staff were fair in their dealing with students.

6. (SSTAFR03) Staff showed understanding to students.

Academic Emphasis

7. (AE01) Teachers challenged students to do better.

8. (AE02) Teachers wanted every student to do their best.

9. (AE03) Teachers believed that every student can be a success.

Shared Values Approach

10. (SVA01) There was a sense that we are all on the same team.

11. (SVA02) There was school spirit and pride.

12. (SVA03) The school values and goals were well understood.

School Identification

13. (SI01) I was happy to be a part of the school.

14. (SI02) I felt a strong connection with the school.

15. (SI03) I identified with the school.

Appendix F

Family Environment

Brief Family Relationship Scale (Fok et al., 2014)

Directions: Please read each statement below and indicate how much you agree with it about your family.

Cohesion

1. (COH01) In our family we really help and support each other.

3. (COH02) In our family we spend a lot of time doing things together at home.

6. (COH03) In our family we work hard at what we do in our home.

7. (COH04) In our family there is a feeling of togetherness.

11. (COH05) My family members really support each other.

13. (COH06) I am proud to be a part of our family.

14. (COH07) In our family we really get along well with each other.

Expressiveness

4. (EX01) In our family we can talk openly in our home.

8. (EX02) In our family we sometimes tell each other about our personal problems.

15. (EX03) In our family we begin discussions easily.

Conflict

2. (CONR01) In our family we argue a lot. (R)

5. (CONR02) In our family we are really mad at each other a lot. (R)

9. (CONR03) In our family we lose our tempers a lot. (R)

10. (CONR04) In our family we often put down each other. (R)

12. (CONR05) My family members sometimes are violent. (R)

16. (CONR06) In our family we raise our voice when we are mad. (R)

Note. Items with (R) are reverse-keyed.

Appendix G

Consent to Participate in Research

Description of the Study: The purpose of this study entitled, "Understanding the Interaction of Intrapersonal and Interpersonal Dynamics: A Study of Identity Development among Highly Able College Students," is to understand the factors influencing the identity development of young adults. The study involves completing a questionnaire that will take approximately 20 minutes of your time. You must be at least 18 years of age to participate

Privacy and Confidentiality: We want you to feel comfortable sharing your thoughts and opinions. Your identity cannot be linked to your responses and your participation will be completely anonymous.

Voluntary Participation and Right to Withdraw: Participation in this research is entirely voluntary, which means you have the freedom to decide whether or not to participate. If you choose to participate, you are free to stop responding at any time during the survey, and you can also choose to skip any questions you do not wish to answer without facing any consequences.

Safety and Risks: We want to emphasize that there are no anticipated risks or harmful consequences associated with taking part in this research. Your well-being and comfort are of the utmost importance to us.

Contact Information: If you have any questions or concerns about the study, please feel free to reach out to Ms. Anyesha Mishra at amishra04@wm.edu and/or Dr. Jennifer Cross at jrcross@wm.edu. Additionally, if you have any questions about your rights as a research participant, you can contact the William & Mary IRB representative, Dr. Tom Ward (tjward@wm.edu, 757-221-2358). I have read the information describing this study. By selecting "Yes" below, I agree that I meet the qualifications and participate voluntarily.

THIS PROJECT WAS FOUND TO COMPLY WITH APPROPRIATE ETHICAL

STANDARDS AND WAS EXEMPTED FROM THE NEED FOR FORMAL REVIEW BY

THE W&M PROTECTION OF HUMAN SUBJECTS COMMITTEE (Phone 757-221-3966)

ON 2024-01-20 AND EXPIRES ON 2025-01-20.

Appendix H

Identity Development- Data Analysis

MPlus Syntax, Descriptive Statistics and Confirmatory and Exploratory Factor Analysis

Statistics

Step 1 Syntax

```
TITLE: CFA for DIDS;
DATA: FILE IS DIDS.csv;
VARIABLE: NAMES ARE idcm01-idcm05 ideb06-ideb11
         idre12-idre15 idic16-idic20 ided21-ided25;
    MISSING ARE ALL (-99);
ANALYSIS: TYPE IS GENERAL;
    ESTIMATOR IS ML;
    STARTS = 50;
    ITERATIONS = 1000;
    CONVERGENCE = .0005;
MODEL:
    IDCM BY idcm01-idcm05;
    IDEB BY ideb06-ideb11;
    IDRE BY idre12-idre15;
    IDIC BY idic16-idic20;
    IDED BY ided21-ided25;
    DIDS BY IDCM IDEB IDRE IDIC IDED;
OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;
PLOT: TYPE=PLOT3;
```

Table H1

Descriptive Statistics for Identity Development

Item[1,2]	N	Mean	Variance	Skewness	Kurtosis
IDCM01	238	3.81	0.98	-1.22	1.19
IDCM02	238	3.97	0.81	-1.29	1.85
IDCM03	238	3.71	1.02	-0.95	0.30
IDCM04	238	4.04	0.73	-1.34	2.32
IDCM05	238	3.69	1.19	-0.85	0.02
IDEB06	238	4.12	0.71	-1.24	1.81
IDEB07	238	4.18	0.69	-1.22	1.58
IDEB08	238	3.63	1.12	-0.43	-0.82
IDEB09	238	4.14	0.72	-1.19	1.40
IDEB10	238	3.92	0.85	-0.85	0.30
IDEB11	238	2.81	1.59	0.24	-1.20
IDRE12	238	3.32	1.67	-0.26	-1.22
IDRE13	238	3.28	1.35	-0.26	-0.98
IDRE14	238	3.39	1.39	-0.36	-0.93
IDRE15	238	3.27	1.41	-0.14	-1.11
IDIC16	238	4.09	0.59	-1.00	1.60
IDIC17	238	3.70	1.14	-0.58	-0.54
IDIC18	238	3.35	1.35	-0.26	-1.04
IDIC19	238	3.84	0.75	-0.57	-0.03
IDIC20	238	3.43	1.04	-0.32	-0.36
IDED21	238	4.00	0.83	-1.20	1.55
IDED22	238	4.12	0.95	-1.29	1.33
IDED23	238	3.93	0.76	-0.82	0.58
IDED24	238	3.26	1.54	-0.28	-1.10
IDED25	238	4.05	0.76	-1.05	1.06

[1]The first four characters in the item name represent the subscale they belong to in the original scale. [2]Appendix A presents details of the content of items.

Table H2

Standardized Coefficients for Identity Development Items and Latent Variable: Step 1

	Estimate	S.E.	Est./S.E.	p-value
IDCM By				
IDCM01	0.89	0.02	54.43	0.000
IDCM02	0.81	0.03	32.16	0.000
IDCM03	0.92	0.01	65.06	0.000
IDCM04	0.79	0.03	29.79	0.000
IDCM05	0.82	0.02	34.33	0.000
IDEB By				
IDEB06	0.60	0.06	10.07	0.000
IDEB07	0.67	0.06	11.89	0.000
IDEB08	0.81	0.04	20.33	0.000
IDEB09	0.66	0.05	13.22	0.000
IDEB10	0.82	0.04	21.27	0.000
IDEB11	0.20	0.07	2.96	0.003
IDRE By				
IDRE12	0.62	0.05	13.55	0.000
IDRE13	0.83	0.03	29.60	0.000
IDRE14	0.87	0.03	32.67	0.000
IDRE15	0.46	0.06	8.19	0.000
IDIC By				
IDIC16	0.66	0.04	15.90	0.000
IDIC17	0.80	0.03	26.78	0.000
IDIC18	0.82	0.03	29.30	0.000
IDIC19	0.74	0.04	21.11	0.000
IDIC20	0.77	0.03	24.38	0.000
IDED By				
IDED21	0.24	0.08	2.89	0.004
IDED22	0.38	0.08	4.81	0.000
IDED23	0.66	0.07	10.09	0.000
IDED24	0.52	0.07	7.62	0.000
IDED25	0.63	0.07	9.08	0.000
DIDS By				
IDCM	0.88	0.04	25.37	0.000

	Estimate	S.E.	Est./S.E.	p-value
IDEB	-0.32	0.07	-4.37	0.000
IDRE	-0.72	0.05	-14.84	0.000
IDIC	0.85	0.04	23.38	0.000
IDED	-0.09	0.10	-0.89	0.373

Intercepts				
IDCM01	3.85	0.19	20.48	0.000
IDCM02	4.42	0.21	20.78	0.000
IDCM03	3.66	0.18	20.35	0.000
IDCM04	4.73	0.23	20.90	0.000
IDCM05	3.38	0.17	20.12	0.000
IDEB06	4.89	0.23	20.96	0.000
IDEB07	5.02	0.24	21.00	0.000
IDEB08	3.43	0.17	20.17	0.000
IDEB09	4.89	0.23	20.96	0.000
IDEB10	4.25	0.21	20.70	0.000
IDEB11	2.22	0.12	18.41	0.000
IDRE12	2.57	0.13	19.11	0.000
IDRE13	2.82	0.15	19.50	0.000
IDRE14	2.88	0.15	19.58	0.000
IDRE15	2.76	0.14	19.41	0.000
IDIC16	5.34	0.25	21.09	0.000
IDIC17	3.47	0.17	20.20	0.000
IDIC18	2.89	0.15	19.60	0.000
IDIC19	4.43	0.21	20.78	0.000
IDIC20	3.37	0.17	20.12	0.000
IDED21	4.39	0.21	20.76	0.000
IDED22	4.22	0.20	20.69	0.000
IDED23	4.52	0.22	20.82	0.000
IDED24	2.63	0.14	19.22	0.000
IDED25	4.64	0.22	20.87	0.000

Variances				
DIDS	1.00	0.00	999.00	999.000

Residual Variances				
IDCM01	0.21	0.03	7.10	0.000
IDCM02	0.35	0.04	8.53	0.000
IDCM03	0.16	0.03	6.35	0.000
IDCM04	0.37	0.04	8.78	0.000

	Estimate	S.E.	Est./S.E.	p-value
IDCM05	0.33	0.04	8.45	0.000
IDEB06	0.65	0.07	9.16	0.000
IDEB07	0.55	0.08	7.39	0.000
IDEB08	0.35	0.06	5.40	0.000
IDEB09	0.57	0.07	8.72	0.000
IDEB10	0.33	0.06	5.12	0.000
IDEB11	0.96	0.03	34.15	0.000
IDRE12	0.61	0.06	10.80	0.000
IDRE13	0.31	0.05	6.51	0.000
IDRE14	0.25	0.05	5.41	0.000
IDRE15	0.79	0.05	15.36	0.000
IDIC16	0.56	0.06	10.30	0.000
IDIC17	0.37	0.05	7.78	0.000
IDIC18	0.33	0.05	7.32	0.000
IDIC19	0.45	0.05	8.75	0.000
IDIC20	0.41	0.05	8.43	0.000
IDED21	0.94	0.04	23.02	0.000
IDED22	0.86	0.06	14.63	0.000
IDED23	0.56	0.09	6.39	0.000
IDED24	0.73	0.07	10.25	0.000
IDED25	0.60	0.09	6.87	0.000
IDCM	0.22	0.06	3.64	0.000
IDEB	0.90	0.05	18.70	0.000
IDRE	0.48	0.07	6.86	0.000
IDIC	0.28	0.06	4.54	0.000
IDED	0.99	0.02	55.89	0.000

Table H3

R-squares for Identity Development Latent Variable: Step 1

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
IDCM01	0.79	0.03	27.22	0.000
IDCM02	0.65	0.04	16.08	0.000
IDCM03	0.84	0.03	32.53	0.000
IDCM04	0.63	0.04	14.89	0.000
IDCM05	0.67	0.04	17.17	0.000
IDEB06	0.36	0.07	5.03	0.000
IDEB07	0.45	0.08	5.95	0.000
IDEB08	0.65	0.06	10.17	0.000
IDEB09	0.43	0.07	6.61	0.000
IDEB10	0.68	0.06	10.64	0.000
IDEB11	0.04	0.03	1.48	0.139
IDRE12	0.39	0.06	6.77	0.000
IDRE13	0.70	0.05	14.80	0.000
IDRE14	0.75	0.05	16.34	0.000
IDRE15	0.21	0.05	4.09	0.000
IDIC16	0.44	0.06	7.95	0.000
IDIC17	0.63	0.05	13.39	0.000
IDIC18	0.67	0.05	14.65	0.000
IDIC19	0.55	0.05	10.56	0.000
IDIC20	0.59	0.05	12.19	0.000
IDED21	0.06	0.04	1.44	0.149
IDED22	0.14	0.06	2.41	0.016
IDED23	0.44	0.09	5.05	0.000
IDED24	0.27	0.07	3.81	0.000
IDED25	0.40	0.09	4.54	0.000

Latent Variable	Estimate	S.E.	Est./S.E.	p-value
IDCM	0.78	0.06	12.69	0.000
IDEB	0.11	0.05	2.19	0.029
IDRE	0.52	0.07	7.42	0.000
IDIC	0.72	0.06	11.69	0.000
IDED	0.01	0.02	0.45	0.656

Table H4

Correlation for Identity Development Latent Variable: Step 1

	IDCM	IDEB	IDRE	IDIC	IDED	DIDS
IDCM	1.00					
IDEB	-0.29	1.00				
IDRE	-0.64	0.23	1.00			
IDIC	0.75	-0.27	-0.61	1.00		
IDED	-0.08	0.03	0.06	-0.08	1.00	
DIDS	0.88	-0.32	-0.72	0.85	-0.09	1.00

Step 2 Syntax

TITLE: CFA for DIDS without IDED;

DATA: FILE IS DIDS.csv;

VARIABLE: NAMES ARE idcm01-idcm05 ideb06-ideb11

idre12-idre15 idic16-idic20 ided21-ided25;

USEVARIABLES ARE idcm01-idcm05 ideb06-ideb11

idre12-idre15 idic16-idic20;

MISSING ARE ALL (-99);

ANALYSIS: TYPE IS GENERAL;

ESTIMATOR IS ML;

STARTS = 50;

ITERATIONS = 1000;

CONVERGENCE = .0005;

MODEL:

IDCM BY idcm01-idcm05;

IDEB BY ideb06-ideb11;

IDRE BY idre12-idre15;

IDIC BY idic16-idic20;

DIDS BY IDCM IDEB IDRE IDIC;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;

Table H5

Standardized Coefficients for Identity Development Items and Latent Variable: Step 2

	Estimate	S.E.	Est./S.E.	p-value
IDCM By				
IDCM01	0.89	0.02	54.33	0.000
IDCM02	0.81	0.03	32.22	0.000
IDCM03	0.92	0.01	64.99	0.000
IDCM04	0.79	0.03	29.86	0.000
IDCM05	0.82	0.02	34.34	0.000
IDEB By				
IDEB06	0.60	0.06	10.04	0.000
IDEB07	0.67	0.06	11.85	0.000
IDEB08	0.81	0.04	20.14	0.000
IDEB09	0.66	0.05	13.20	0.000
IDEB10	0.82	0.04	21.07	0.000
IDEB11	0.20	0.07	2.95	0.003
IDRE By				
IDRE12	0.62	0.05	13.52	0.000
IDRE13	0.83	0.03	29.56	0.000
IDRE14	0.87	0.03	32.64	0.000
IDRE15	0.46	0.06	8.18	0.000
IDIC By				
IDIC16	0.66	0.04	15.92	0.000
IDIC17	0.80	0.03	26.80	0.000
IDIC18	0.82	0.03	29.31	0.000
IDIC19	0.74	0.04	21.12	0.000
IDIC20	0.77	0.03	24.38	0.000
DIDS By				
IDCM	0.89	0.04	25.49	0.000
IDEB	-0.32	0.07	-4.30	0.000
IDRE	-0.71	0.05	-14.84	0.000
IDIC	0.85	0.04	23.21	0.000
Intercepts				
IDCM01	3.85	0.19	20.48	0.000
IDCM02	4.42	0.21	20.78	0.000
IDCM03	3.66	0.18	20.35	0.000
IDCM04	4.73	0.23	20.90	0.000
IDCM05	3.38	0.17	20.12	0.000
IDEB06	4.89	0.23	20.96	0.000

	Estimate	S.E.	Est./S.E.	p-value
IDEB07	5.02	0.24	21.00	0.000
IDEB08	3.43	0.17	20.17	0.000
IDEB09	4.89	0.23	20.96	0.000
IDEB10	4.25	0.21	20.70	0.000
IDEB11	2.22	0.12	18.41	0.000
IDRE12	2.57	0.13	19.11	0.000
IDRE13	2.82	0.15	19.50	0.000
IDRE14	2.88	0.15	19.58	0.000
IDRE15	2.76	0.14	19.41	0.000
IDIC16	5.34	0.25	21.09	0.000
IDIC17	3.47	0.17	20.20	0.000
IDIC18	2.89	0.15	19.60	0.000
IDIC19	4.43	0.21	20.78	0.000
IDIC20	3.37	0.17	20.12	0.000
Variances				
DIDS	1.00	0.00	999.00	999.000
Residual Variances				
IDCM01	0.21	0.03	7.11	0.000
IDCM02	0.35	0.04	8.53	0.000
IDCM03	0.16	0.03	6.36	0.000
IDCM04	0.37	0.04	8.77	0.000
IDCM05	0.33	0.04	8.45	0.000
IDEB06	0.64	0.07	9.10	0.000
IDEB07	0.55	0.08	7.33	0.000
IDEB08	0.35	0.07	5.38	0.000
IDEB09	0.57	0.07	8.68	0.000
IDEB10	0.33	0.06	5.09	0.000
IDEB11	0.96	0.03	34.29	0.000
IDRE12	0.62	0.06	10.82	0.000
IDRE13	0.31	0.05	6.49	0.000
IDRE14	0.25	0.05	5.39	0.000
IDRE15	0.79	0.05	15.37	0.000
IDIC16	0.56	0.06	10.30	0.000
IDIC17	0.37	0.05	7.78	0.000
IDIC18	0.33	0.05	7.32	0.000
IDIC19	0.45	0.05	8.76	0.000
IDIC20	0.41	0.05	8.44	0.000
IDCM	0.22	0.06	3.52	0.000
IDEB	0.90	0.05	19.23	0.000
IDRE	0.49	0.07	7.12	0.000
IDIC	0.28	0.06	4.46	0.000

Table H6

R-squares for Identity Development Latent Variable: Step 2

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
IDCM01	0.79	0.03	27.16	0.000
IDCM02	0.65	0.04	16.11	0.000
IDCM03	0.84	0.03	32.50	0.000
IDCM04	0.63	0.04	14.93	0.000
IDCM05	0.67	0.04	17.17	0.000
IDEB06	0.36	0.07	5.02	0.000
IDEB07	0.45	0.08	5.92	0.000
IDEB08	0.65	0.07	10.07	0.000
IDEB09	0.43	0.07	6.60	0.000
IDEB10	0.67	0.06	10.54	0.000
IDEB11	0.04	0.03	1.47	0.141
IDRE12	0.39	0.06	6.76	0.000
IDRE13	0.70	0.05	14.78	0.000
IDRE14	0.75	0.05	16.32	0.000
IDRE15	0.21	0.05	4.09	0.000
IDIC16	0.44	0.06	7.96	0.000
IDIC17	0.63	0.05	13.40	0.000
IDIC18	0.67	0.05	14.65	0.000
IDIC19	0.55	0.05	10.56	0.000
IDIC20	0.59	0.05	12.19	0.000

Latent Variable	Estimate	S.E.	Est./S.E.	p-value
IDCM	0.78	0.06	12.75	0.000
IDEB	0.10	0.05	2.15	0.031
IDRE	0.51	0.07	7.42	0.000
IDIC	0.72	0.06	11.61	0.000

Table H7

Correlation for Identity Development Latent Variable: Step 2

	IDCM	IDEB	IDRE	IDIC	DIDS
IDCM	1.00				
IDEB	-0.28	1.00			
IDRE	-0.63	0.23	1.00		
IDIC	0.75	-0.27	-0.61	1.00	
DIDS	0.89	-0.32	-0.71	0.85	1

Step 3 Syntax

TITLE: CFA for DIDS without IDED, IDEB11;

DATA: FILE IS DIDS.csv;

VARIABLE: NAMES ARE idcm01-idcm05 ideb06-ideb11

    idre12-idre15 idic16-idic20 ided21-ided25;

  USEVARIABLES ARE idcm01-idcm05 ideb06-ideb10

    idre12-idre15 idic16-idic20;

  MISSING ARE ALL (-99);

ANALYSIS: TYPE IS GENERAL;

  ESTIMATOR IS ML;

  STARTS = 50;

  ITERATIONS = 1000;

  CONVERGENCE = .0005;

MODEL:

  IDCM BY idcm01-idcm05;

  IDEB BY ideb06-ideb10;

  IDRE BY idre12-idre15;

  IDIC BY idic16-idic20;

  DIDS BY IDCM IDEB IDRE IDIC;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;

Table H8

Standardized Coefficients for Identity Development Items and Latent Variable: Step 3

	Estimate	S.E.	Est./S.E.	p-value
IDCM By				
IDCM01	0.89	0.02	54.20	0.000
IDCM02	0.81	0.03	32.27	0.000
IDCM03	0.91	0.01	64.89	0.000
IDCM04	0.79	0.03	29.89	0.000
IDCM05	0.82	0.02	34.37	0.000
IDEB By				
IDEB06	0.63	0.07	8.64	0.000
IDEB07	0.71	0.07	9.63	0.000
IDEB08	0.78	0.06	12.23	0.000
IDEB09	0.69	0.06	12.46	0.000
IDEB10	0.79	0.06	12.61	0.000
IDRE By				
IDRE12	0.62	0.05	13.50	0.000
IDRE13	0.83	0.03	29.51	0.000
IDRE14	0.87	0.03	32.61	0.000
IDRE15	0.46	0.06	8.18	0.000
IDIC By				
IDIC16	0.66	0.04	15.91	0.000
IDIC17	0.80	0.03	26.86	0.000
IDIC18	0.82	0.03	29.38	0.000
IDIC19	0.74	0.04	21.08	0.000
IDIC20	0.77	0.03	24.36	0.000
DIDS By				
IDCM	0.89	0.04	25.21	0.000
IDEB	-0.28	0.08	-3.45	0.001
IDRE	-0.71	0.05	-14.68	0.000
IDIC	0.85	0.04	22.91	0.000
Intercepts				
IDCM01	3.85	0.19	20.48	0.000
IDCM02	4.42	0.21	20.78	0.000
IDCM03	3.66	0.18	20.35	0.000
IDCM04	4.73	0.23	20.90	0.000
IDCM05	3.38	0.17	20.12	0.000

	Estimate	S.E.	Est./S.E.	p-value
IDEB06	4.89	0.23	20.96	0.000
IDEB07	5.02	0.24	21.00	0.000
IDEB08	3.43	0.17	20.17	0.000
IDEB09	4.89	0.23	20.96	0.000
IDEB10	4.25	0.21	20.70	0.000
IDRE12	2.57	0.13	19.11	0.000
IDRE13	2.82	0.15	19.50	0.000
IDRE14	2.88	0.15	19.58	0.000
IDRE15	2.76	0.14	19.41	0.000
IDIC16	5.34	0.25	21.09	0.000
IDIC17	3.47	0.17	20.20	0.000
IDIC18	2.89	0.15	19.60	0.000
IDIC19	4.43	0.21	20.78	0.000
IDIC20	3.37	0.17	20.12	0.000

Variances				
DIDS	1.00	0.00	999.00	999.000

Residual	Variances			
IDCM01	0.21	0.03	7.12	0.000
IDCM02	0.35	0.04	8.52	0.000
IDCM03	0.16	0.03	6.36	0.000
IDCM04	0.37	0.04	8.77	0.000
IDCM05	0.33	0.04	8.44	0.000
IDEB06	0.60	0.09	6.45	0.000
IDEB07	0.50	0.10	4.82	0.000
IDEB08	0.40	0.10	4.07	0.000
IDEB09	0.53	0.08	6.96	0.000
IDEB10	0.37	0.10	3.73	0.000
IDRE12	0.62	0.06	10.82	0.000
IDRE13	0.31	0.05	6.48	0.000
IDRE14	0.25	0.05	5.37	0.000
IDRE15	0.79	0.05	15.37	0.000
IDIC16	0.56	0.06	10.31	0.000
IDIC17	0.37	0.05	7.78	0.000
IDIC18	0.33	0.05	7.32	0.000
IDIC19	0.45	0.05	8.77	0.000
IDIC20	0.41	0.05	8.44	0.000
IDCM	0.21	0.06	3.39	0.001
IDEB	0.92	0.04	20.98	0.000
IDRE	0.50	0.07	7.20	0.000
IDIC	0.28	0.06	4.39	0.000

Table H9

R-squares for Identity Development Latent Variable: Step 3

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
IDCM01	0.79	0.03	27.10	0.000
IDCM02	0.65	0.04	16.14	0.000
IDCM03	0.84	0.03	32.45	0.000
IDCM04	0.63	0.04	14.94	0.000
IDCM05	0.67	0.04	17.19	0.000
IDEB06	0.40	0.09	4.32	0.000
IDEB07	0.50	0.10	4.81	0.000
IDEB08	0.60	0.10	6.11	0.000
IDEB09	0.47	0.08	6.23	0.000
IDEB10	0.63	0.10	6.30	0.000
IDRE12	0.38	0.06	6.75	0.000
IDRE13	0.70	0.05	14.76	0.000
IDRE14	0.75	0.05	16.30	0.000
IDRE15	0.21	0.05	4.09	0.000
IDIC16	0.44	0.06	7.95	0.000
IDIC17	0.63	0.05	13.43	0.000
IDIC18	0.67	0.05	14.69	0.000
IDIC19	0.55	0.05	10.54	0.000
IDIC20	0.59	0.05	12.18	0.000

Latent Variable	Estimate	S.E.	Est./S.E.	p-value
IDCM	0.79	0.06	12.61	0.000
IDEB	0.08	0.04	1.72	0.085
IDRE	0.51	0.07	7.34	0.000
IDIC	0.72	0.06	11.46	0.000

Table H10

Correlation for Identity Development Latent Variable: Step 3

	IDCM	IDEB	IDRE	IDIC	DIDS
IDCM	1.00				
IDEB	-0.25	1.00			
IDRE	-0.63	0.20	1.00		
IDIC	0.76	-0.23	-0.60	1.00	
DIDS	0.89	-0.28	-0.71	0.85	1

Step 4 Syntax

TITLE: EFA for DIDS;

DATA: FILE IS DIDS.csv;

VARIABLE: NAMES ARE idcm01-idcm05 ideb06-ideb11

    idre12-idre15 idic16-idic20 ided21-ided25;

  MISSING ARE ALL (-99);

ANALYSIS: TYPE = EFA 1 5;

OUTPUT: MODINDICES;

PLOT: TYPE=PLOT2 PLOT3;

Table H11

EFA Geomin Rotated Loadings: Step 4

	1	2	3	4	5
IDCM01	0.927*	-0.039	-0.010	0.042	-0.070
IDCM02	0.781*	0.145*	0.073	-0.020	0.021
IDCM03	0.850*	-0.035	0.080	0.000	-0.039
IDCM04	0.749*	0.060	0.009	-0.075	0.116*
IDCM05	0.797*	-0.008	-0.004	-0.040	0.020
IDEB06	0.067	0.705*	0.017	-0.057	0.030
IDEB07	0.084	0.766*	0.019	0.005	-0.004
IDEB08	-0.090	0.687*	-0.032	0.039	0.050
IDEB09	-0.049	0.710*	0.259*	0.084	-0.037
IDEB10	0.013	0.741*	-0.101	0.002	0.044
IDEB11	-0.003	-0.009	-0.543*	0.310*	-0.019
IDRE12	0.062	-0.054	-0.515*	0.379*	0.174*
IDRE13	-0.100	0.169*	-0.002	0.707*	-0.046
IDRE14	-0.054	0.087	-0.021	0.807*	0.022
IDRE15	0.006	0.018	-0.047	0.413*	0.249*
IDIC16	0.119	-0.062	0.518*	-0.005	0.122
IDIC17	0.024	0.059	0.792*	-0.038	0.010
IDIC18	0.100	0.048	0.765*	-0.008	-0.047
IDIC19	0.070	-0.126*	0.610*	-0.062	0.108
IDIC20	0.126	-0.137*	0.693*	0.104	0.016
IDED21	0.279*	-0.069	0.100	-0.109	0.389*
IDED22	-0.029	0.025	0.184	-0.102	0.459*
IDED23	0.094	0.085	-0.122	0.136	0.604*
IDED24	-0.107	-0.077	0.104	0.238*	0.456*
IDED25	-0.238	0.100	-0.015	0.007	0.588*

*$p < .05$

Step 5 Syntax

TITLE: CFA for DIDS;

DATA: FILE IS DIDS.csv;

VARIABLE: NAMES ARE idcm01-idcm05 ideb06-ideb11

idre12-idre15 idic16-idic20 ided21-ided25;

USEVARIABLES ARE idcm01-idcm05 ideb06-ideb11

idre13-idre15 idic16-idic20 ided21-ided25;

```
        MISSING ARE ALL (-99);
ANALYSIS: TYPE IS GENERAL;
        ESTIMATOR IS ML;
        STARTS = 50;
        ITERATIONS = 1000;
        CONVERGENCE = .0005;
MODEL:
    FAC1 BY idcm01 idcm02 idcm03 idcm04 idcm05;
    FAC2 BY ideb06 ideb07 ideb08 ideb09 ideb10;
    FAC3 BY idic16 idic17 idic18 idic19 idic20 ideb11;
    FAC4 BY idre13 idre14 idre15;
    FAC5 BY ided21 ided22 ided23 ided24 ided25;
    DIDS BY FAC1 FAC2 FAC3 FAC4 FAC5;
OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;
PLOT: TYPE=PLOT3;
SAVEDATA: File is DIDS_Latent;
        Format is Free;
        Save=fscores;
```

Table H12

Standardized Coefficients for Identity Development Items and Latent Variable: Step 5

	Estimate	S.E.	Est./S.E.	p-value
IDCM By				
IDCM01	0.89	0.02	54.48	0.000
IDCM02	0.81	0.03	32.18	0.000
IDCM03	0.92	0.01	65.36	0.000
IDCM04	0.79	0.03	29.77	0.000
IDCM05	0.82	0.02	34.22	0.000
IDEB By				
IDEB06	0.63	0.07	8.73	0.000
IDEB07	0.70	0.07	9.76	0.000
IDEB08	0.78	0.06	12.68	0.000
IDEB09	0.69	0.06	12.47	0.000
IDEB10	0.80	0.06	13.09	0.000
IDIC By				
IDIC16	0.65	0.04	15.69	0.000
IDIC17	0.80	0.03	28.02	0.000
IDIC18	0.81	0.03	29.57	0.000
IDIC19	0.74	0.03	22.03	0.000
IDIC20	0.76	0.03	23.88	0.000
IDEB11	-0.70	0.04	-18.69	0.000
IDRE By				
IDRE13	0.84	0.03	25.21	0.000
IDRE14	0.88	0.03	27.82	0.000
IDRE15	0.46	0.06	8.19	0.000
IDED By				
IDED21	0.25	0.08	2.95	0.003
IDED22	0.38	0.08	4.86	0.000
IDED23	0.67	0.07	10.12	0.000
IDED24	0.52	0.07	7.59	0.000
IDED25	0.63	0.07	9.06	0.000
DIDS By				
IDCM	0.89	0.04	25.26	0.000
IDEB	-0.28	0.08	-3.54	0.000
IDIC	0.86	0.04	23.61	0.000
IDRE	-0.69	0.05	-13.89	0.000

	Estimate	S.E.	Est./S.E.	p-value
IDED	-0.08	0.10	-0.76	0.450

Intercepts				
IDCM01	3.85	0.19	20.48	0.000
IDCM02	4.42	0.21	20.78	0.000
IDCM03	3.66	0.18	20.35	0.000
IDCM04	4.73	0.23	20.90	0.000
IDCM05	3.38	0.17	20.12	0.000
IDEB06	4.89	0.23	20.96	0.000
IDEB07	5.02	0.24	21.00	0.000
IDEB08	3.43	0.17	20.17	0.000
IDEB09	4.89	0.23	20.96	0.000
IDEB10	4.25	0.21	20.70	0.000
IDEB11	2.22	0.12	18.41	0.000
IDRE13	2.82	0.15	19.50	0.000
IDRE14	2.88	0.15	19.58	0.000
IDRE15	2.76	0.14	19.41	0.000
IDIC16	5.34	0.25	21.09	0.000
IDIC17	3.47	0.17	20.20	0.000
IDIC18	2.89	0.15	19.60	0.000
IDIC19	4.43	0.21	20.78	0.000
IDIC20	3.37	0.17	20.12	0.000
IDED21	4.39	0.21	20.76	0.000
IDED22	4.22	0.20	20.69	0.000
IDED23	4.52	0.22	20.82	0.000
IDED24	2.63	0.14	19.22	0.000
IDED25	4.64	0.22	20.87	0.000

Variances				
DIDS	1.00	0.00	999.00	999.000

Residual	Variances			
IDCM01	0.21	0.03	7.11	0.000
IDCM02	0.35	0.04	8.53	0.000
IDCM03	0.16	0.03	6.34	0.000
IDCM04	0.37	0.04	8.78	0.000
IDCM05	0.33	0.04	8.46	0.000
IDEB06	0.60	0.09	6.62	0.000
IDEB07	0.51	0.10	4.98	0.000
IDEB08	0.40	0.10	4.14	0.000
IDEB09	0.53	0.08	7.04	0.000
IDEB10	0.37	0.10	3.81	0.000
IDEB11	0.51	0.05	9.84	0.000

	Estimate	S.E.	Est./S.E.	p-value
IDRE13	0.30	0.06	5.38	0.000
IDRE14	0.23	0.06	4.03	0.000
IDRE15	0.79	0.05	15.28	0.000
IDIC16	0.58	0.05	10.65	0.000
IDIC17	0.36	0.05	7.93	0.000
IDIC18	0.34	0.04	7.71	0.000
IDIC19	0.45	0.05	8.88	0.000
IDIC20	0.42	0.05	8.78	0.000
IDED21	0.94	0.04	22.61	0.000
IDED22	0.86	0.06	14.49	0.000
IDED23	0.56	0.09	6.38	0.000
IDED24	0.73	0.07	10.24	0.000
IDED25	0.61	0.09	6.97	0.000
IDCM	0.22	0.06	3.50	0.000
IDEB	0.92	0.05	20.47	0.000
IDIC	0.27	0.06	4.25	0.000
IDRE	0.52	0.07	7.58	0.000
IDED	0.99	0.02	66.84	0.000

Table H13

R-squares for Identity Development Latent Variable: Step 5

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
IDCM01	0.79	0.03	27.24	0.000
IDCM02	0.65	0.04	16.09	0.000
IDCM03	0.84	0.03	32.68	0.000
IDCM04	0.63	0.04	14.88	0.000
IDCM05	0.67	0.04	17.11	0.000
IDEB06	0.40	0.09	4.36	0.000
IDEB07	0.50	0.10	4.88	0.000
IDEB08	0.61	0.10	6.34	0.000
IDEB09	0.47	0.08	6.24	0.000
IDEB10	0.63	0.10	6.55	0.000
IDEB11	0.49	0.05	9.34	0.000
IDRE13	0.70	0.06	12.61	0.000
IDRE14	0.78	0.06	13.91	0.000
IDRE15	0.21	0.05	4.10	0.000
IDIC16	0.42	0.05	7.84	0.000
IDIC17	0.64	0.05	14.01	0.000
IDIC18	0.66	0.04	14.79	0.000

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
IDIC19	0.55	0.05	11.02	0.000
IDIC20	0.58	0.05	11.94	0.000
IDED21	0.06	0.04	1.47	0.141
IDED22	0.14	0.06	2.43	0.015
IDED23	0.44	0.09	5.06	0.000
IDED24	0.27	0.07	3.79	0.000
IDED25	0.39	0.09	4.53	0.000

Latent Variable	Estimate	S.E.	Est./S.E.	p-value
IDCM	0.78	0.06	12.63	0.000
IDEB	0.08	0.05	1.77	0.076
IDIC	0.74	0.06	11.81	0.000
IDRE	0.48	0.07	6.95	0.000
IDED	0.01	0.02	0.38	0.706

Table H14

Correlation for Identity Development Latent Variable: Step 5

	IDCM	IDEB	IDIC	IDRE	IDED	DIDS
IDCM	1.00					
IDEB	-0.25	1.00				
IDIC	0.76	-0.24	1.00			
IDRE	-0.61	0.20	-0.59	1.00		
IDED	-0.07	0.02	-0.06	0.05	1.00	
DIDS	0.89	-0.28	0.86	-0.69	-0.08	1.00

Step 6 Syntax

TITLE: CFA for DIDS;

DATA: FILE IS DIDS.csv;

VARIABLE: NAMES ARE idcm01-idcm05 ideb06-ideb11

idre12-idre15 idic16-idic20 ided21-ided25;

USEVARIABLES ARE idcm01-idcm05 ideb06-ideb11

idre13-idre15 idic16-idic20;

MISSING ARE ALL (-99);

ANALYSIS: TYPE IS GENERAL;

  ESTIMATOR IS ML;

  STARTS = 50;

  ITERATIONS = 1000;

  CONVERGENCE = .0005;

MODEL:

  FAC1 BY idcm01 idcm02 idcm03 idcm04 idcm05;

  FAC2 BY ideb06 ideb07 ideb08 ideb09 ideb10;

  FAC3 BY idic16 idic17 idic18 idic19 idic20 ideb11;

  FAC4 BY idre13 idre14 idre15;

  DIDS BY FAC1 FAC2 FAC3 FAC4;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;

Table H15

Standardized Coefficients for Identity Development Items and Latent Variable: Step 6

	Estimate	S.E.	Est./S.E.	p-value
IDCM By				
IDCM01	0.89	0.02	54.39	0.000
IDCM02	0.81	0.03	32.23	0.000
IDCM03	0.92	0.01	65.31	0.000
IDCM04	0.79	0.03	29.82	0.000
IDCM05	0.82	0.02	34.22	0.000
IDEB By				
IDEB06	0.63	0.07	8.67	0.000
IDEB07	0.71	0.07	9.67	0.000
IDEB08	0.78	0.06	12.41	0.000
IDEB09	0.69	0.06	12.45	0.000
IDEB10	0.79	0.06	12.81	0.000
IDIC By				
IDIC16	0.65	0.04	15.70	0.000
IDIC17	0.80	0.03	28.04	0.000
IDIC18	0.81	0.03	29.59	0.000
IDIC19	0.74	0.03	22.04	0.000
IDIC20	0.76	0.03	23.88	0.000
IDEB11	-0.70	0.04	-18.67	0.000

	Estimate	S.E.	Est./S.E.	p-value
IDRE By				
IDRE13	0.84	0.03	25.09	0.000
IDRE14	0.88	0.03	27.67	0.000
IDRE15	0.46	0.06	8.18	0.000
DIDS By				
IDCM	0.89	0.04	25.16	0.000
IDEB	-0.28	0.08	-3.48	0.001
IDIC	0.86	0.04	23.34	0.000
IDRE	-0.69	0.05	-13.87	0.000
Intercepts				
IDCM01	3.85	0.19	20.48	0.000
IDCM02	4.42	0.21	20.78	0.000
IDCM03	3.66	0.18	20.35	0.000
IDCM04	4.73	0.23	20.90	0.000
IDCM05	3.38	0.17	20.12	0.000
IDEB06	4.89	0.23	20.96	0.000
IDEB07	5.02	0.24	21.00	0.000
IDEB08	3.43	0.17	20.17	0.000
IDEB09	4.89	0.23	20.96	0.000
IDEB10	4.25	0.21	20.70	0.000
IDEB11	2.22	0.12	18.41	0.000
IDRE13	2.82	0.15	19.50	0.000
IDRE14	2.88	0.15	19.58	0.000
IDRE15	2.76	0.14	19.41	0.000
IDIC16	5.34	0.25	21.09	0.000
IDIC17	3.47	0.17	20.20	0.000
IDIC18	2.89	0.15	19.60	0.000
IDIC19	4.43	0.21	20.78	0.000
IDIC20	3.37	0.17	20.12	0.000
Variances				
DIDS	1.00	0.00	999.00	999.000
Residual	**Variances**			
IDCM01	0.21	0.03	7.12	0.000
IDCM02	0.35	0.04	8.53	0.000
IDCM03	0.16	0.03	6.34	0.000
IDCM04	0.37	0.04	8.78	0.000
IDCM05	0.33	0.04	8.46	0.000
IDEB06	0.60	0.09	6.52	0.000

	Estimate	S.E.	Est./S.E.	p-value
IDEB07	0.50	0.10	4.89	0.000
IDEB08	0.40	0.10	4.09	0.000
IDEB09	0.53	0.08	6.99	0.000
IDEB10	0.37	0.10	3.76	0.000
IDEB11	0.51	0.05	9.85	0.000
IDRE13	0.30	0.06	5.35	0.000
IDRE14	0.22	0.06	4.00	0.000
IDRE15	0.79	0.05	15.29	0.000
IDIC16	0.58	0.05	10.65	0.000
IDIC17	0.36	0.05	7.93	0.000
IDIC18	0.34	0.04	7.71	0.000
IDIC19	0.45	0.05	8.89	0.000
IDIC20	0.42	0.05	8.78	0.000
IDCM	0.21	0.06	3.39	0.001
IDEB	0.92	0.04	20.92	0.000
IDIC	0.26	0.06	4.18	0.000
IDRE	0.53	0.07	7.76	0.000

Table H16

R-squares for Identity Development Latent Variable: Step 6

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
IDCM01	0.79	0.03	27.20	0.000
IDCM02	0.65	0.04	16.11	0.000
IDCM03	0.84	0.03	32.66	0.000
IDCM04	0.63	0.04	14.91	0.000
IDCM05	0.67	0.04	17.11	0.000
IDEB06	0.40	0.09	4.33	0.000
IDEB07	0.50	0.10	4.84	0.000
IDEB08	0.60	0.10	6.21	0.000
IDEB09	0.47	0.08	6.23	0.000
IDEB10	0.63	0.10	6.41	0.000
IDEB11	0.49	0.05	9.34	0.000
IDRE13	0.70	0.06	12.54	0.000
IDRE14	0.78	0.06	13.83	0.000
IDRE15	0.21	0.05	4.09	0.000
IDIC16	0.42	0.05	7.85	0.000
IDIC17	0.64	0.05	14.02	0.000
IDIC18	0.66	0.04	14.79	0.000
IDIC19	0.55	0.05	11.02	0.000
IDIC20	0.58	0.05	11.94	0.000

Latent Variable	Estimate	S.E.	Est./S.E.	p-value
IDCM	0.79	0.06	12.58	0.000
IDEB	0.08	0.04	1.74	0.082
IDIC	0.74	0.06	11.67	0.000
IDRE	0.47	0.07	6.93	0.000

Table H17

Correlation for Identity Development Latent Variable: Step 6

	IDCM	IDEB	IDIC	IDRE	DIDS
IDCM	1.00				
IDEB	-0.25	1.00			
IDIC	0.76	-0.24	1.00		
IDRE	-0.61	0.19	-0.59	1.00	
DIDS	0.89	-0.28	0.86	-0.69	1

Appendix I

Hope- Data Analysis

Mplus Syntax, Descriptive Statistics and Confirmatory Factor Analysis Statistics

Step 1 Syntax

TITLE: CFA for Hope with Agency and Pathway;

DATA: FILE IS Hope.csv;

VARIABLE: NAMES ARE hp01   hp02   hp03   hp04   ha01   ha02   ha03   ha04;

MISSING ARE ALL (-99);

ANALYSIS: TYPE IS GENERAL;

ESTIMATOR IS ML;

STARTS = 50;

ITERATIONS = 1000;

CONVERGENCE = .0005;

MODEL:

AGEN BY ha01 ha02 ha03 ha04;

PATH BY hp01 hp02 hp03 hp04;

HOPE BY AGEN PATH;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;

Table I1

Descriptive Statistics for Hope

Item[1,2]	N	Mean	Variance	Skewness	Kurtosis
HP01	238	6.16	1.46	-1.24	2.74
HP02	238	6.48	1.46	-0.82	1.14
HP03	237	6.22	1.67	-0.77	0.96
HP04	237	5.82	1.60	-0.43	0.35
HA01	238	6.16	1.82	-0.81	1.00
HA02	238	6.29	2.33	-0.95	0.82
HA03	237	6.33	1.72	-1.19	2.68
HA04	238	6.06	2.08	-1.36	2.11

[1]The first two characters in the item name represent the subscale they belong to in the original scale. [2]Appendix B presents details of the content of items.

Step 1: Error message displayed: "The standard errors of the model parameter estimates could not be computed. The model may not be identified. Check your model.

Problem involving the following parameter: Parameter 26, hope

The condition number is -0.113d-06.

Factor scores will not be computed due to nonconvergence or nonidentified model."

Table I2

Correlation for Hope Latent Variables: Step 1

	AGEN	PATH	HOPE
AGEN	1.00		
PATH	0.33	1.00	
HOPE	0.51	0.44	1.00

Step 2 Syntax

TITLE: CFA for Hope with all items as one factor;

DATA: FILE IS Hope.csv;

VARIABLE: NAMES ARE hp01   hp02   hp03   hp04   ha01   ha02   ha03   ha04;

    MISSING ARE ALL (-99);

ANALYSIS: TYPE IS GENERAL;

    ESTIMATOR IS ML;

```
    STARTS = 50;

    ITERATIONS = 1000;

    CONVERGENCE = .0005;

MODEL:

    HOPE BY ha01 ha02 ha03 ha04 hp01 hp02 hp03 hp04;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;

SAVEDATA: File is Hope;

    Format is Free;

    Save=fscores;
```

Table I3

Standardized Coefficients for Hope items and Latent Variables: Step 2

	Estimate	S.E.	Est./S.E.	p-value
HOPE By				
HA01	0.69	0.04	17.76	0.000
HA02	0.74	0.04	20.88	0.000
HA03	0.68	0.04	16.43	0.000
HA04	0.67	0.04	15.98	0.000
HP01	0.61	0.05	13.56	0.000
HP02	0.50	0.05	9.43	0.000
HP03	0.77	0.03	23.38	0.000
HP04	0.72	0.04	18.94	0.000
Intercepts				
HP01	5.10	0.24	21.02	0.000
HP02	5.38	0.26	21.10	0.000
HP03	4.82	0.23	20.92	0.000
HP04	4.60	0.22	20.84	0.000
HA01	4.56	0.22	20.84	0.000
HA02	4.13	0.20	20.64	0.000
HA03	4.83	0.23	20.91	0.000
HA04	4.20	0.20	20.68	0.000
Variances				
HOPE	1.00	0.00	999.00	999.000
Residual Variances				
HP01	0.62	0.06	11.21	0.000
HP02	0.75	0.05	13.94	0.000
HP03	0.41	0.05	7.98	0.000
HP04	0.49	0.05	9.01	0.000
HA01	0.52	0.05	9.66	0.000
HA02	0.45	0.05	8.69	0.000
HA03	0.54	0.06	9.54	0.000
HA04	0.55	0.06	9.88	0.000

Table I4

R-squares for Hope Latent Variable: Step 2

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
HP01	0.38	0.06	6.78	0.000
HP02	0.25	0.05	4.71	0.000
HP03	0.59	0.05	11.69	0.000
HP04	0.51	0.05	9.47	0.000
HA01	0.48	0.05	8.88	0.000
HA02	0.55	0.05	10.44	0.000
HA03	0.46	0.06	8.22	0.000
HA04	0.45	0.06	7.99	0.000

Appendix J

Purpose- Data Analysis

Mplus Syntax, Descriptive Statistics and Confirmatory Factor Analysis Statistics

Step 1 Syntax

TITLE: CFA for Purpose with subfactors meaningfulness, goal-setting, beyond-the-self;

DATA: FILE IS Purpose.csv;

VARIABLE: NAMES ARE pm01 pm02 pm03 pm04 pgs01 pgs02

            pgs03 pgs04 pbts01 pbts02 pbts03 pbts04;

      MISSING ARE ALL (-99);

ANALYSIS: TYPE IS GENERAL;

      ESTIMATOR IS ML;

      STARTS = 50;

      ITERATIONS = 1000;

      CONVERGENCE = .0005;

MODEL:

     PM BY pm01-pm04;

     PGS BY pgs01-pgs04;

     PBTS BY pbts01-pbts04;

     PURPOSE BY PM PGS PBTS;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;

Table J1

Descriptive Statistics for Purpose

Item[1,2]	N	Mean	Variance	Skewness	Kurtosis
PM01	238	3.24	1.13	-0.41	-0.41
PM02	238	3.40	1.00	-0.27	-0.48
PM03	238	3.11	1.30	-0.21	-0.64
PM04	238	3.45	1.01	-0.26	-0.45
PGS01	238	3.70	0.81	-0.63	0.28
PGS02	238	3.77	0.70	-0.58	0.33
PGS03	238	3.74	0.70	-0.47	-0.04
PGS04	238	3.22	0.75	0.15	-0.59
PBTS01	238	3.68	1.06	-0.55	-0.24
PBTS02	238	3.72	1.01	-0.58	-0.24
PBTS03	238	3.74	0.98	-0.43	-0.61
PBTS04	238	3.97	0.90	-0.82	0.24

[1]The first two, three and four characters for meaningfulness, goal-orientation, and beyond-the-self dimension, respectively, in the item name represent the subscale they belong to in the original scale. [2]Appendix C presents details of the content of items.

Table J2

Standardized Coefficients for Purpose items and Latent Variables

	Estimate	S.E.	Est./S.E.	p-value
PM By				
PM01	0.79	0.03	25.60	0.000
PM02	0.76	0.03	22.32	0.000
PM03	0.86	0.03	33.75	0.000
PM04	0.74	0.04	20.84	0.000
PGS By				
PGS01	0.84	0.03	32.32	0.000
PGS02	0.84	0.03	31.97	0.000
PGS03	0.79	0.03	25.63	0.000
PGS04	0.63	0.04	14.17	0.000
PBTS By				
PBTS01	0.77	0.03	25.32	0.000
PBTS02	0.86	0.02	37.68	0.000
PBTS03	0.87	0.02	39.65	0.000
PBTS04	0.81	0.03	29.38	0.000
PURPOSE By				
PM	0.87	0.14	6.34	0.000
PGS	0.64	0.11	5.87	0.000
PBTS	0.33	0.08	4.10	0.000
Intercepts				
PM01	3.06	0.15	19.80	0.000
PM02	3.41	0.17	20.15	0.000
PM03	2.73	0.14	19.37	0.000
PM04	3.43	0.17	20.17	0.000
PGS01	4.12	0.20	20.64	0.000
PGS02	4.51	0.22	20.82	0.000
PGS03	4.46	0.22	20.80	0.000
PGS04	3.72	0.18	20.39	0.000
PBTS01	3.57	0.18	20.29	0.000
PBTS02	3.70	0.18	20.38	0.000
PBTS03	3.78	0.19	20.44	0.000
PBTS04	4.19	0.20	20.67	0.000
Variances				
PURPOSE	1.00	0.00	999.00	999.000

	Estimate	S.E.	Est./S.E.	p-value
Residual Variances				
PM01	0.38	0.05	7.70	0.000
PM02	0.42	0.05	8.16	0.000
PM03	0.26	0.04	6.03	0.000
PM04	0.45	0.05	8.52	0.000
PGS01	0.29	0.04	6.51	0.000
PGS02	0.30	0.04	6.71	0.000
PGS03	0.37	0.05	7.62	0.000
PGS04	0.61	0.06	10.88	0.000
PBTS01	0.40	0.05	8.51	0.000
PBTS02	0.26	0.04	6.73	0.000
PBTS03	0.24	0.04	6.42	0.000
PBTS04	0.35	0.04	7.88	0.000
PM	0.25	0.24	1.06	0.290
PGS	0.60	0.14	4.34	0.000
PBTS	0.89	0.05	17.07	0.000

Table J3

R-squares for Purpose Items and Latent Variables: Step 1

Variable	Estimate	S.E.	Est./S.E.	p-value
PM01	0.62	0.05	12.80	0.000
PM02	0.58	0.05	11.16	0.000
PM03	0.74	0.04	16.87	0.000
PM04	0.55	0.05	10.42	0.000
PGS01	0.71	0.04	16.16	0.000
PGS02	0.70	0.04	15.99	0.000
PGS03	0.63	0.05	12.82	0.000
PGS04	0.39	0.06	7.09	0.000
PBTS01	0.60	0.05	12.66	0.000
PBTS02	0.74	0.04	18.84	0.000
PBTS03	0.76	0.04	19.82	0.000
PBTS04	0.65	0.04	14.69	0.000

Latent Variable	Estimate	S.E.	Est./S.E.	p-value
PM	0.75	0.24	3.17	0.002
PGS	0.40	0.14	2.93	0.003
PBTS	0.11	0.05	2.05	0.040

Table J4

Correlation for Purpose Latent Variables: Step 1

	PM	PGS	PBTS	PURPOSE
PM	1.00			
PGS	0.55	1.00		
PBTS	0.28	0.21	1.00	
PURPOSE	0.87	0.64	0.33	1.00

Step 2 Syntax

TITLE: CFA for meaningfulness, goal-setting, beyond-the-self;

DATA: FILE IS Purpose.csv;

VARIABLE: NAMES ARE pm01 pm02 pm03 pm04 pgs01 pgs02

        pgs03 pgs04 pbts01 pbts02 pbts03 pbts04;

    MISSING ARE ALL (-99);

```
ANALYSIS: TYPE IS GENERAL;

      ESTIMATOR IS ML;

      STARTS = 50;

      ITERATIONS = 1000;

      CONVERGENCE = .0005;

MODEL:

    PM BY pm01-pm04;

    PGS BY pgs01-pgs04;

    PBTS BY pbts01-pbts04;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;

SAVEDATA: File is Purpose_Latent;

      Format is Free;

      Save=fscores;
```

Appendix K

Curiosity and Exploration- Data Analysis

Mplus Syntax, Descriptive Statistics and Confirmatory Factor Analysis Statistics

Step 1 Syntax

TITLE: CFA for Curiosity & Exploration with subfactors stretching and embracing;

DATA: FILE IS Curio_Expl.csv;

VARIABLE: NAMES ARE stre01 stre02 stre03 stre04 stre05

   emb01 emb02 emb03 emb04 emb05;

   MISSING ARE ALL (-99);

ANALYSIS: TYPE IS GENERAL;

   ESTIMATOR IS ML;

   STARTS = 50;

   ITERATIONS = 1000;

   CONVERGENCE = .0005;

MODEL:

   STRE BY stre01-stre05;

   EMB BY emb01-emb05;

   CURIOEXP BY STRE EMB;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;

Table K1

Descriptive Statistics for Curiosity and Exploration

Item[1,2]	N	Mean	Variance	Skewness	Kurtosis
STRE01	238	3.73	0.68	-0.31	-0.17
STRE02	238	3.17	1.09	-0.14	-0.47
STRE03	238	3.48	1.02	-0.22	-0.54
STRE04	237	3.22	1.14	-0.28	-0.64
STRE05	238	3.32	0.98	-0.17	-0.55
EMB01	238	2.43	1.34	0.28	-0.94
EMB02	236	3.27	1.05	-0.25	-0.51
EMB03	238	2.59	1.17	0.23	-0.73
EMB04	238	2.63	1.25	0.17	-0.72
EMB05	238	3.04	1.26	-0.10	-0.70

[1]The first three and four characters for embracing and stretching, respectively, in the item name represent the subscale they belong to in the original scale. [2]Appendix D presents details of the content of items.

Step 1: Error message displayed: "the standard errors of the model parameter estimates may not be trustworthy for some parameters due to a non-positive definite first-order derivative product matrix. This may be due to the starting values but may also be an indication of model nonidentification. The condition number is -0.566d-17. Problem involving the following parameter: parameter 32, CURIOEXP

Warning: the latent variable covariance matrix (psi) is not positive definite. This could indicate a negative variance/residual variance for a latent variable, a correlation greater or equal to one between two latent variables, or a linear dependency among more than two latent variables. Check the tech4 output for more information. Problem involving variable EMB.

Modification indices could not be computed. The model may not be identified."

Table K2

Standardized Coefficients for Curiosity and Exploration items and Latent Variables: Step 1

	Estimate	S.E.	Est./S.E.	p-value
STRE By				
STRE01	0.47	0.06	8.41	0.000
STRE02	0.67	0.04	16.57	0.000
STRE03	0.75	0.03	21.99	0.000
STRE04	0.78	0.03	24.63	0.000
STRE05	0.81	0.03	28.81	0.000
EMB By				
EMB01	0.70	0.04	17.71	0.000
EMB02	0.74	0.04	20.44	0.000
EMB03	0.63	0.05	14.14	0.000
EMB04	0.67	0.04	15.72	0.000
EMB05	0.74	0.04	20.71	0.000
CURIOEXP By				
STRE	0.70	4.51	0.16	0.877
EMB	1.23	7.92	0.16	0.877
Intercepts				
STRE01	4.51	0.22	20.82	0.000
STRE02	3.04	0.15	19.78	0.000
STRE03	3.44	0.17	20.18	0.000
STRE04	3.02	0.15	19.75	0.000
STRE05	3.35	0.17	20.10	0.000
EMB01	2.10	0.12	18.11	0.000
EMB02	3.20	0.16	19.88	0.000
EMB03	2.39	0.13	18.78	0.000
EMB04	2.35	0.13	18.70	0.000
EMB05	2.71	0.14	19.35	0.000
Variances				
CURIOEXP	1.00	0.00	999.00	999.000
Residual	Variances			
STRE01	0.78	0.05	15.22	0.000
STRE02	0.55	0.06	10.00	0.000
STRE03	0.44	0.05	8.56	0.000
STRE04	0.39	0.05	8.02	0.000
STRE05	0.34	0.05	7.34	0.000

	Estimate	S.E.	Est./S.E.	p-value
EMB01	0.51	0.06	9.22	0.000
EMB02	0.45	0.05	8.46	0.000
EMB03	0.60	0.06	10.54	0.000
EMB04	0.56	0.06	9.91	0.000
EMB05	0.45	0.05	8.61	0.000
STRE	0.51	6.33	0.08	0.936
EMB	-0.51	999.00	999.00	999.000

Table K3

R-squares for Curiosity and Exploration Items and Latent Variables

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
STRE01	0.22	0.05	4.20	0.000
STRE02	0.45	0.06	8.29	0.000
STRE03	0.56	0.05	11.00	0.000
STRE04	0.61	0.05	12.31	0.000
STRE05	0.66	0.05	14.41	0.000
EMB01	0.49	0.06	8.86	0.000
EMB02	0.55	0.05	10.22	0.000
EMB03	0.40	0.06	7.07	0.000
EMB04	0.44	0.06	7.86	0.000
EMB05	0.55	0.05	10.35	0.000

Latent Variable	Estimate	S.E.	Est./S.E.	p-value
STRE	0.49	6.33	0.08	0.938
EMB	Undefined	1.51		

Table K4

Correlation for Curiosity and Exploration Latent Variables: Step 1

	STRE	EMB	CURIOEXP
STRE	1.00		
EMB	0.86	1.00	
CURIOEXP	0.70	1.23	1.00

Step 2 Syntax

TITLE: CFA for Curiosity & Exploration without subfactors;

DATA: FILE IS Curio_Expl.csv;

VARIABLE: NAMES ARE stre01 stre02 stre03 stre04 stre05

emb01 emb02 emb03 emb04 emb05;

MISSING ARE ALL (-99);

ANALYSIS: TYPE IS GENERAL;

ESTIMATOR IS ML;

STARTS = 50;

ITERATIONS = 1000;

CONVERGENCE = .0005;

MODEL:

CURIOEXP BY stre01 stre02 stre03 stre04 stre05

emb01 emb02 emb03 emb04 emb05;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;

SAVEDATA: File is CurioExpl_Latent;

Format is Free;

Save=fscores;

Table K5

Standardized Coefficients for Curiosity and Exploration items and Latent Variables: Step 2

	Estimate	S.E.	Est./S.E.	p-value
CURIOEXP By				
STRE01	0.44	0.06	7.79	0.000
STRE02	0.65	0.04	15.51	0.000
STRE03	0.73	0.04	20.91	0.000
STRE04	0.77	0.03	24.63	0.000
STRE05	0.78	0.03	26.34	0.000
EMB01	0.64	0.04	14.89	0.000
EMB02	0.73	0.04	20.90	0.000
EMB03	0.60	0.05	13.03	0.000
EMB04	0.62	0.04	14.28	0.000
EMB05	0.71	0.04	19.71	0.000
Intercepts				
STRE01	4.51	0.22	20.82	0.000
STRE02	3.04	0.15	19.78	0.000
STRE03	3.44	0.17	20.18	0.000
STRE04	3.02	0.15	19.75	0.000
STRE05	3.35	0.17	20.10	0.000
EMB01	2.10	0.12	18.11	0.000
EMB02	3.20	0.16	19.89	0.000
EMB03	2.39	0.13	18.78	0.000
EMB04	2.35	0.13	18.70	0.000
EMB05	2.71	0.14	19.35	0.000
Variances				
CURIOEXP	1.00	0.00	999.00	999.000
Residual	Variances			
STRE01	0.81	0.05	16.45	0.000
STRE02	0.58	0.05	10.77	0.000
STRE03	0.47	0.05	9.27	0.000
STRE04	0.41	0.05	8.60	0.000
STRE05	0.39	0.05	8.31	0.000
EMB01	0.59	0.06	10.88	0.000
EMB02	0.47	0.05	9.21	0.000
EMB03	0.64	0.06	11.76	0.000
EMB04	0.61	0.06	11.20	0.000
EMB05	0.49	0.05	9.59	0.000

Table K6

R-squares for Curiosity and Exploration Items and Latent Variables: Step 2

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
STRE01	0.19	0.05	3.89	0.000
STRE02	0.42	0.05	7.76	0.000
STRE03	0.53	0.05	10.45	0.000
STRE04	0.59	0.05	12.31	0.000
STRE05	0.61	0.05	13.17	0.000
EMB01	0.41	0.06	7.45	0.000
EMB02	0.53	0.05	10.45	0.000
EMB03	0.36	0.06	6.51	0.000
EMB04	0.39	0.06	7.14	0.000
EMB05	0.51	0.05	9.86	0.000

Intrapersonal- Data Analysis

Mplus Syntax and Confirmatory Factor Analysis Statistics

Syntax

TITLE: Intrapersonal Dimension with the help of Curiosity and exploration, Hope,

Meaningfulness, Goal Setting, and Beyond the self;

DATA: FILE IS SEMinMPlus_data.csv;

VARIABLE: NAMES ARE idcm01 idcm02 idcm03 idcm04 idcm05

idcb06 ideb07 ideb08 ideb09 ideb10 ideb11

idre12 idre13 idre14 idre15

idic16 idic17 idic18 idic19 idic20

ided21 ided22 ided23 ided24 ided25

hp01 hp02 hp03 hp04

ha01 ha02 ha03 ha04

pm01 pm02 pm03 pm04

pgs01 pgs02 pgs03 pgs04

pbts01 pbts02 pbts03 pbts04

stre01 stre02 stre03 stre04 stre05

emb01 emb02 emb03 emb04 emb05

sstur01 sstur02 sstur03

sstafr01 sstafr02 sstafr03

ae01 ae02 ae03

sva01 sva02 sva03

si01 si02 si03

coh01 coh02 coh03 coh04 coh05 coh06 coh07

ex01 ex02 ex03

conr01 conr02 conr03 conr04 conr05 conr06;

USEVARIABLES ARE hp01 hp02 hp03 hp04

ha01 ha02 ha03 ha04

pm01 pm02 pm03 pm04

```
            pgs01 pgs02 pgs03 pgs04

            pbts01 pbts02 pbts03 pbts04

            stre01 stre02 stre03 stre04 stre05

            emb01 emb02 emb03 emb04 emb05;

    MISSING ARE ALL (-99);

ANALYSIS: TYPE IS GENERAL;

    ESTIMATOR IS ML;

    STARTS = 50;

    ITERATIONS = 1000;

    CONVERGENCE = .0005;

MODEL:

    HOPE BY hp01 hp02 hp03 hp04

        ha01 ha02 ha03 ha04;

    CURIOEXP BY stre01 stre02 stre03 stre04 stre05

            emb01 emb02 emb03 emb04 emb05;

    PM BY pm01 pm02 pm03 pm04;

    PGS BY pgs01 pgs02 pgs03 pgs04;

    PBTS BY pbts01 pbts02 pbts03 pbts04;

    INTRA BY HOPE CURIOEXP PM PGS PBTS;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;

SAVEDATA: File is Intra_Latent;

    Format is Free;

    Save=fscores;
```

Table L1

Standardized Coefficients for Intrapersonal Latent Variables

	Estimate	S.E.	Est./S.E.	p-value
HOPE By				
HP01	0.60	0.05	12.93	0.000
HP02	0.51	0.05	9.60	0.000
HP03	0.77	0.03	23.93	0.000
HP04	0.72	0.04	19.98	0.000
HA01	0.72	0.04	19.95	0.000
HA02	0.73	0.04	20.81	0.000
HA03	0.67	0.04	16.19	0.000
HA04	0.67	0.04	16.13	0.000
CURIOEXP By				
STRE01	0.45	0.06	8.07	0.000
STRE02	0.66	0.04	16.38	0.000
STRE03	0.74	0.03	21.66	0.000
STRE04	0.76	0.03	23.90	0.000
STRE05	0.79	0.03	27.96	0.000
EMB01	0.62	0.04	14.28	0.000
EMB02	0.73	0.04	20.83	0.000
EMB03	0.59	0.05	12.56	0.000
EMB04	0.61	0.05	13.71	0.000
EMB05	0.71	0.04	19.91	0.000
PM By				
PM01	0.79	0.03	25.53	0.000
PM02	0.76	0.03	22.65	0.000
PM03	0.86	0.03	34.50	0.000
PM04	0.75	0.04	21.43	0.000
PGS By				
PGS01	0.84	0.03	32.17	0.000
PGS02	0.84	0.03	31.42	0.000
PGS03	0.79	0.03	25.94	0.000
PGS04	0.64	0.04	14.68	0.000
PBTS By				
PBTS01	0.78	0.03	25.46	0.000
PBTS02	0.86	0.02	38.03	0.000
PBTS03	0.87	0.02	39.65	0.000
PBTS04	0.81	0.03	29.17	0.000

	Estimate	S.E.	Est./S.E.	p-value
INTRA By				
HOPE	0.84	0.05	18.86	0.000
CURIOEXP	0.59	0.06	10.44	0.000
PM	0.73	0.05	14.30	0.000
PGS	0.68	0.05	12.69	0.000
PBTS	0.39	0.07	5.75	0.000
Intercepts				
HP01	5.10	0.24	21.02	0.000
HP02	5.38	0.26	21.10	0.000
HP03	4.82	0.23	20.92	0.000
HP04	4.60	0.22	20.84	0.000
HA01	4.56	0.22	20.84	0.000
HA02	4.13	0.20	20.64	0.000
HA03	4.82	0.23	20.91	0.000
HA04	4.20	0.20	20.68	0.000
PM01	3.06	0.15	19.80	0.000
PM02	3.41	0.17	20.15	0.000
PM03	2.73	0.14	19.37	0.000
PM04	3.43	0.17	20.17	0.000
PGS01	4.12	0.20	20.64	0.000
PGS02	4.51	0.22	20.82	0.000
PGS03	4.46	0.22	20.80	0.000
PGS04	3.72	0.18	20.39	0.000
PBTS01	3.57	0.18	20.29	0.000
PBTS02	3.70	0.18	20.38	0.000
PBTS03	3.78	0.19	20.44	0.000
PBTS04	4.19	0.20	20.67	0.000
STRE01	4.51	0.22	20.82	0.000
STRE02	3.04	0.15	19.78	0.000
STRE03	3.44	0.17	20.18	0.000
STRE04	3.02	0.15	19.75	0.000
STRE05	3.35	0.17	20.10	0.000
EMB01	2.10	0.12	18.11	0.000
EMB02	3.20	0.16	19.88	0.000
EMB03	2.39	0.13	18.78	0.000
EMB04	2.35	0.13	18.70	0.000
EMB05	2.71	0.14	19.34	0.000
Variances				
INTRA	1.00	0.00	999.00	999.000

	Estimate	S.E.	Est./S.E.	p-value
Residual Variances				
HP01	0.65	0.06	11.74	0.000
HP02	0.75	0.05	14.03	0.000
HP03	0.41	0.05	8.35	0.000
HP04	0.48	0.05	9.09	0.000
HA01	0.48	0.05	9.27	0.000
HA02	0.47	0.05	9.06	0.000
HA03	0.55	0.06	10.02	0.000
HA04	0.56	0.06	10.15	0.000
PM01	0.38	0.05	7.88	0.000
PM02	0.42	0.05	8.23	0.000
PM03	0.26	0.04	6.18	0.000
PM04	0.44	0.05	8.52	0.000
PGS01	0.29	0.04	6.61	0.000
PGS02	0.30	0.04	6.85	0.000
PGS03	0.37	0.05	7.66	0.000
PGS04	0.59	0.06	10.64	0.000
PBTS01	0.40	0.05	8.49	0.000
PBTS02	0.26	0.04	6.69	0.000
PBTS03	0.25	0.04	6.46	0.000
PBTS04	0.35	0.04	7.95	0.000
STRE01	0.80	0.05	16.12	0.000
STRE02	0.56	0.05	10.54	0.000
STRE03	0.46	0.05	9.22	0.000
STRE04	0.43	0.05	8.82	0.000
STRE05	0.37	0.05	8.17	0.000
EMB01	0.61	0.06	11.19	0.000
EMB02	0.47	0.05	9.31	0.000
EMB03	0.66	0.05	12.08	0.000
EMB04	0.63	0.05	11.51	0.000
EMB05	0.49	0.05	9.61	0.000
HOPE	0.29	0.08	3.86	0.000
CURIOEXP	0.65	0.07	9.63	0.000
PM	0.47	0.07	6.34	0.000
PGS	0.54	0.07	7.49	0.000
PBTS	0.85	0.05	16.08	0.000

Table L2

R-squares for Intrapersonal Latent Variables

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
HP01	0.36	0.06	6.47	0.000
HP02	0.26	0.05	4.80	0.000
HP03	0.59	0.05	11.97	0.000
HP04	0.52	0.05	9.99	0.000
HA01	0.52	0.05	9.97	0.000
HA02	0.54	0.05	10.41	0.000
HA03	0.45	0.06	8.10	0.000
HA04	0.44	0.06	8.06	0.000
PM01	0.62	0.05	12.76	0.000
PM02	0.58	0.05	11.33	0.000
PM03	0.74	0.04	17.25	0.000
PM04	0.56	0.05	10.72	0.000
PGS01	0.71	0.04	16.08	0.000
PGS02	0.70	0.04	15.71	0.000
PGS03	0.63	0.05	12.97	0.000
PGS04	0.41	0.06	7.34	0.000
PBTS01	0.60	0.05	12.73	0.000
PBTS02	0.74	0.04	19.02	0.000
PBTS03	0.75	0.04	19.83	0.000
PBTS04	0.65	0.04	14.58	0.000
STRE01	0.20	0.05	4.04	0.000
STRE02	0.44	0.05	8.19	0.000
STRE03	0.54	0.05	10.83	0.000
STRE04	0.58	0.05	11.95	0.000
STRE05	0.63	0.05	13.98	0.000
EMB01	0.39	0.06	7.14	0.000
EMB02	0.53	0.05	10.42	0.000
EMB03	0.34	0.05	6.28	0.000
EMB04	0.37	0.05	6.86	0.000
EMB05	0.51	0.05	9.96	0.000

Latent Variable	Estimate	S.E.	Est./S.E.	p-value
HOPE	0.71	0.08	9.43	0.000
CURIOEXP	0.35	0.07	5.22	0.000
PM	0.53	0.07	7.15	0.000
PGS	0.46	0.07	6.34	0.000
PBTS	0.15	0.05	2.87	0.004

Table L3

Correlation for Intrapersonal Latent Variables

	HOPE	CURIOEXP	PM	PGS	PBTS
HOPE	1.00				
CURIOEXP	0.50	1.00			
PM	0.61	0.43	1.00		
PGS	0.57	0.40	0.49	1.00	
PBTS	0.33	0.23	0.28	0.26	1.00
INTRA	0.84	0.59	0.73	0.68	0.39

School Environment- Data Analysis

Mplus Syntax, Descriptive Statistics and Confirmatory Factor Analysis Statistics

Syntax of Hypothesized Model

TITLE: CFA for School Environment with all subfactors as per model in dissertation;

DATA: FILE IS School_Env.csv;

VARIABLE: NAMES ARE sstur01 sstur02 sstur03

         sstafr01 sstafr02 sstafr03

         ae01 ae02 ae03

         sva01 sva02 sva03

         si01 si02 si03;

    MISSING ARE ALL (99);

ANALYSIS: TYPE IS GENERAL;

    ESTIMATOR IS ML;

    STARTS = 50;

    ITERATIONS = 1000;

    CONVERGENCE = .0005;

MODEL:

    SSTUR BY sstur01 sstur02 sstur03;

    SSTAFR BY sstafr01 sstafr02 sstafr03;

    AE BY ae01 ae02 ae03;

    SVA BY sva01 sva02 sva03;

    SI BY si01 si02 si03;

    SC BY SSTUR SSTAFR AE SVA SI;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;

Syntax of Gálvez-Nieto et al.'s (2021) original scale model

TITLE: CFA for School Environment with all subfactors as per original scale;

DATA: FILE IS School_Env.csv;

VARIABLE: NAMES ARE sstur01 sstur02 sstur03

```
            sstafr01 sstafr02 sstafr03
            ae01 ae02 ae03
            sva01 sva02 sva03
            si01 si02 si03;
        MISSING ARE ALL (-99);
ANALYSIS: TYPE IS GENERAL;
        ESTIMATOR IS ML;
        STARTS = 50;
        ITERATIONS = 1000;
        CONVERGENCE = .0005;
MODEL:
    SSTUR BY sstur01 sstur02 sstur03;
    SSTAFR BY sstafr01 sstafr02 sstafr03;
    AE BY ae01 ae02 ae03;
    SVA BY sva01 sva02 sva03;
    SI BY si01 si02 si03;
    SC BY SSTUR SSTAFR AE SVA;
    SC WITH SI;
OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;
PLOT: TYPE=PLOT3;
```

Table M1

Descriptive Statistics for School Environment

Item[1,2]	N	Mean	Variance	Skewness	Kurtosis
SSTUR01	238	3.32	1.22	-0.42	-0.85
SSTUR02	238	3.35	0.99	-0.40	-0.66
SSTUR03	238	3.32	1.14	-0.44	-0.93
SSTAFR01	238	3.64	1.28	-0.50	-0.71
SSTAFR02	238	3.43	1.31	-0.46	-0.67
SSTAFR03	238	3.72	1.11	-0.83	0.16
AE01	238	3.95	0.96	-1.06	0.74
AE02	238	4.07	0.87	-1.19	1.40
AE03	238	3.51	1.31	-0.44	-0.81
SVA01	237	3.24	1.59	-0.28	-1.07
SVA02	237	3.70	1.21	-0.68	-0.41
SVA03	238	3.49	1.33	-0.47	-0.71
SI01	237	3.68	1.36	-0.63	-0.52
SI02	238	3.30	1.60	-0.26	-1.02
SI03	238	3.11	1.72	-0.08	-1.17

[1]The first few alphabets for the item name represent the subscale they belong to in the original scale. [2]Appendix E presents details of the content of items.

Table M2

Standardized Coefficients for School Environment items and Latent Variables

	Estimate	S.E.	Est./S.E.	p-value
SSTUR By				
SSTUR01	0.89	0.02	44.51	0.000
SSTUR02	0.92	0.02	50.04	0.000
SSTUR03	0.77	0.03	24.95	0.000
SSTAFR By				
SSTAFR01	0.75	0.03	22.50	0.000
SSTAFR02	0.88	0.02	42.18	0.000
SSTAFR03	0.89	0.02	43.66	0.000
AE By				
AE01	0.72	0.04	18.30	0.000
AE02	0.76	0.04	20.64	0.000
AE03	0.78	0.04	22.56	0.000
SVA By				
SVA01	0.74	0.04	20.34	0.000
SVA02	0.46	0.06	7.78	0.000
SVA03	0.76	0.04	19.57	0.000
SI By				
SI01	0.83	0.02	35.88	0.000
SI02	0.96	0.01	77.09	0.000
SI03	0.87	0.02	47.31	0.000
SC By				
SSTUR	0.69	0.04	15.46	0.000
SSTAFR	0.82	0.03	23.96	0.000
AE	0.86	0.04	23.43	0.000
SVA	0.96	0.04	27.57	0.000
SC with				
SI	0.72	0.04	17.66	0.000
Intercepts				
SSTUR01	3.00	0.15	19.73	0.000
SSTUR02	3.36	0.17	20.11	0.000
SSTUR03	3.12	0.16	19.87	0.000
SSTAFR01	3.22	0.16	19.98	0.000

	Estimate	S.E.	Est./S.E.	p-value
SSTAFR02	3.00	0.15	19.73	0.000
SSTAFR03	3.54	0.18	20.26	0.000
AE01	4.04	0.20	20.59	0.000
AE02	4.36	0.21	20.75	0.000
AE03	3.07	0.16	19.82	0.000
SVA01	2.57	0.14	19.09	0.000
SVA02	3.36	0.17	20.08	0.000
SVA03	3.03	0.15	19.77	0.000
SI01	3.16	0.16	19.90	0.000
SI02	2.61	0.14	19.19	0.000
SI03	2.37	0.13	18.72	0.000

Variances				
SI	1.00	0.00	999.00	999.000
SC	1.00	0.00	999.00	999.000

Residual	Variances			
SSTUR01	0.21	0.04	5.95	0.000
SSTUR02	0.16	0.03	4.89	0.000
SSTUR03	0.42	0.05	8.85	0.000
SSTAFR01	0.44	0.05	8.97	0.000
SSTAFR02	0.23	0.04	6.15	0.000
SSTAFR03	0.21	0.04	5.87	0.000
AE01	0.48	0.06	8.44	0.000
AE02	0.43	0.06	7.67	0.000
AE03	0.39	0.05	7.16	0.000
SVA01	0.45	0.05	8.23	0.000
SVA02	0.79	0.06	14.27	0.000
SVA03	0.43	0.06	7.28	0.000
SI01	0.32	0.04	8.25	0.000
SI02	0.08	0.02	3.14	0.002
SI03	0.24	0.03	7.42	0.000
SSTUR	0.53	0.06	8.72	0.000
SSTAFR	0.32	0.06	5.70	0.000
AE	0.27	0.06	4.27	0.000
SVA	0.07	0.07	1.06	0.288

Table M3

R-squares for School Environment Items and Latent Variables

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
SSTUR01	0.79	0.04	22.25	0.000
SSTUR02	0.84	0.03	25.02	0.000
SSTUR03	0.59	0.05	12.47	0.000
SSTAFR01	0.56	0.05	11.25	0.000
SSTAFR02	0.77	0.04	21.09	0.000
SSTAFR03	0.79	0.04	21.83	0.000
AE01	0.52	0.06	9.15	0.000
AE02	0.57	0.06	10.32	0.000
AE03	0.61	0.05	11.28	0.000
SVA01	0.55	0.05	10.17	0.000
SVA02	0.21	0.06	3.89	0.000
SVA03	0.57	0.06	9.79	0.000
SI01	0.69	0.04	17.94	0.000
SI02	0.93	0.02	38.54	0.000
SI03	0.76	0.03	23.65	0.000

Latent Variable	Estimate	S.E.	Est./S.E.	p-value
SSTUR	0.47	0.06	7.73	0.000
SSTAFR	0.68	0.06	11.98	0.000
AE	0.73	0.06	11.72	0.000
SVA	0.93	0.07	13.78	0.000

Table M4

Correlation for School Environment Latent Variables

	SSTUR	SSTAFR	AE	SVA	SI
SSTUR	1.00				
SSTAFR	0.56	1.00			
AE	0.59	0.71	1.00		
SVA	0.66	0.79	0.83	1.00	
SI	0.50	0.60	0.62	0.70	1.00
SC	0.69	0.82	0.86	0.96	0.72

Appendix N

Family Environment- Data Analysis

Mplus Syntax, Descriptive Statistics and Confirmatory Factor Analysis Statistics

Step 1 Syntax

TITLE: CFA for Family Environment with all subfactors;

DATA: FILE IS Family_Env.csv;

VARIABLE: NAMES ARE coh01 coh02 coh03 coh04 coh05 coh06 coh07

        ex01 ex02 ex03

        conr01 conr02 conr03 conr04   conr05 conr06;

    MISSING ARE ALL (-99);

ANALYSIS: TYPE IS GENERAL;

    ESTIMATOR IS ML;

    STARTS = 50;

    ITERATIONS = 1000;

    CONVERGENCE = .0005;

MODEL:

    COH BY coh01 coh02 coh03 coh04 coh05 coh06 coh07;

    EX BY ex01 ex02 ex03;

    CON BY conr01 conr02 conr03 conr04 conr05 conr06;

    FAMENV BY COH EX CON;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;

Table N1

Descriptive Statistics for Family Environment

Item[1,2]	N	Mean	Variance	Skewness	Kurtosis
COH01	238	2.78	0.22	-2.02	3.33
COH02	238	2.30	0.48	-0.48	-0.86
COH03	238	2.61	0.30	-0.99	-0.07
COH04	237	2.62	0.31	-1.12	0.25
COH05	238	2.70	0.25	-1.27	0.50
COH06	238	2.77	0.22	-1.87	2.68
COH07	238	2.63	0.28	-1.03	0.00
EX01	238	2.49	0.34	-0.66	-0.53
EX02	238	2.32	0.43	-0.45	-0.73
EX03	238	2.40	0.49	-0.75	-0.67
CONR01	237	2.15	0.46	-0.19	-0.82
CONR02	237	2.59	0.37	-1.18	0.33
CONR03	238	2.32	0.46	-0.48	-0.80
CONR04	238	2.69	0.31	-1.60	1.60
CONR05	238	2.88	0.14	-3.31	10.88
CONR06	238	1.98	0.50	0.03	-1.00

[1]The first few alphabets in the item name represent the subscale they belong to in the original scale. [2]Appendix F presents details of the content of items.

Step 1 Warning

"The latent variable covariance matrix (psi) is not positive definite. This could indicate a negative variance/residual variance for a latent variable, a correlation greater or equal to one between two latent variables, or a linear dependency among more than two latent variables.

Check the tech4 output for more information.

Problem involving variable COH."

Table N2

Standardized Coefficients for Family Environment items and Latent Variables: Step 1

	Estimate	S.E.	Est./S.E.	p-value
COH By				
COH01	0.77	0.03	25.41	0.000
COH02	0.57	0.05	12.05	0.000
COH03	0.54	0.05	10.96	0.000
COH04	0.76	0.03	24.56	0.000
COH05	0.78	0.03	26.76	0.000
COH06	0.75	0.03	22.86	0.000
COH07	0.80	0.03	29.32	0.000
EX By				
EX01	0.78	0.04	20.04	0.000
EX02	0.65	0.05	13.97	0.000
EX03	0.74	0.04	17.78	0.000
CON By				
CONR01	0.77	0.03	22.40	0.000
CONR02	0.78	0.03	23.40	0.000
CONR03	0.69	0.04	16.89	0.000
CONR04	0.71	0.04	18.15	0.000
CONR05	0.47	0.06	8.39	0.000
CONR06	0.64	0.05	14.33	0.000
FAMENV By				
COH	1.07	0.07	16.04	0.000
EX	0.68	0.06	10.95	0.000
CON	0.62	0.06	10.22	0.000

Intercepts				
COH01	5.87	0.28	21.21	0.000
COH02	3.32	0.17	20.08	0.000
COH03	4.79	0.23	20.92	0.000
COH04	4.69	0.22	20.87	0.000
COH05	5.45	0.26	21.12	0.000
COH06	5.91	0.28	21.22	0.000
COH07	4.94	0.24	20.98	0.000
EX01	4.26	0.21	20.71	0.000
EX02	3.55	0.18	20.27	0.000
EX03	3.42	0.17	20.17	0.000
CONR01	3.19	0.16	19.93	0.000

	Estimate	S.E.	Est./S.E.	p-value
CONR02	4.26	0.21	20.69	0.000
CONR03	3.42	0.17	20.16	0.000
CONR04	4.86	0.23	20.95	0.000
CONR05	7.78	0.36	21.47	0.000
CONR06	2.80	0.14	19.47	0.000
Variances				
FAMENV	1.00	0.00	999.00	999.000
Residual	Variances			
COH01	0.40	0.05	8.60	0.000
COH02	0.67	0.05	12.47	0.000
COH03	0.71	0.05	13.27	0.000
COH04	0.42	0.05	8.76	0.000
COH05	0.39	0.05	8.45	0.000
COH06	0.44	0.05	9.11	0.000
COH07	0.36	0.04	8.06	0.000
EX01	0.39	0.06	6.34	0.000
EX02	0.58	0.06	9.43	0.000
EX03	0.45	0.06	7.37	0.000
CONR01	0.41	0.05	7.76	0.000
CONR02	0.39	0.05	7.61	0.000
CONR03	0.52	0.06	9.12	0.000
CONR04	0.49	0.06	8.80	0.000
CONR05	0.78	0.05	14.97	0.000
CONR06	0.59	0.06	10.18	0.000
COH	-0.15	999.00	999.00	999.000
EX	0.54	0.08	6.41	0.000
CON	0.62	0.08	8.29	0.000

Table N3

R-squares for Family Environment Items and Latent Variables: Step 1

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
COH01	0.60	0.05	12.71	0.000
COH02	0.33	0.05	6.03	0.000
COH03	0.29	0.05	5.48	0.000
COH04	0.58	0.05	12.28	0.000
COH05	0.61	0.05	13.38	0.000
COH06	0.56	0.05	11.43	0.000
COH07	0.65	0.04	14.66	0.000
EX01	0.61	0.06	10.02	0.000
EX02	0.43	0.06	6.98	0.000
EX03	0.55	0.06	8.89	0.000
CONR01	0.59	0.05	11.20	0.000
CONR02	0.61	0.05	11.70	0.000
CONR03	0.48	0.06	8.44	0.000
CONR04	0.51	0.06	9.08	0.000
CONR05	0.22	0.05	4.20	0.000
CONR06	0.41	0.06	7.17	0.000
Latent Variable	Estimate	S.E.	Est./S.E.	p-value
COH	Undefined	1.15		
EX	0.46	0.08	5.48	0.000
CON	0.38	0.08	5.11	0.000

Table N4

Correlation Family Environment Latent Variables: Step 1

	COH	EX	CON	FAMENV
COH	1.00			
EX	0.73	1.00		
CON	0.66	0.42	1.00	
FAMENV	1.07	0.68	0.62	1.00

Step 2 Syntax

TITLE: CFA for one factor family environment;

DATA: FILE IS Family_Env.csv;

VARIABLE: NAMES ARE coh01 coh02 coh03 coh04 coh05 coh06 coh07

      ex01 ex02 ex03

      conr01 conr02 conr03 conr04 conr05 conr06;

  MISSING ARE ALL (-99);

ANALYSIS: TYPE IS GENERAL;

   ESTIMATOR IS ML;

   STARTS = 50;

   ITERATIONS = 1000;

   CONVERGENCE = .0005;

MODEL:

   FAMENV BY coh01 coh02 coh03 coh04 coh05 coh06 coh07

   ex01 ex02 ex03

   conr01 conr02 conr03 conr04 conr05 conr06;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;

Step 3 Syntax

TITLE: CFA for Cohesion, Expressiveness, Conflict without the hierarchical factor;

DATA: FILE IS Family_Env.csv;

VARIABLE: NAMES ARE coh01 coh02 coh03 coh04 coh05 coh06 coh07

      ex01 ex02 ex03

      conr01 conr02 conr03 conr04   conr05 conr06;

   MISSING ARE ALL (-99);

ANALYSIS: TYPE IS GENERAL;

   ESTIMATOR IS ML;

   STARTS = 50;

   ITERATIONS = 1000;

   CONVERGENCE = .0005;

MODEL:

COH BY coh01 coh02   coh03 coh04   coh05 coh06   coh07;

EX BY ex01 ex02 ex03;

CON BY conr01 conr02 conr03 conr04 conr05 conr06;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;

Table N5

Standardized Coefficients for Family Environment items and Latent Variables: Step 2

	Estimate	S.E.	Est./S.E.	p-value
FAMENV By				
COH01	0.75	0.03	23.83	0.000
COH02	0.55	0.05	11.38	0.000
COH03	0.51	0.05	9.98	0.000
COH04	0.74	0.03	22.55	0.000
COH05	0.76	0.03	24.17	0.000
COH06	0.74	0.03	22.58	0.000
COH07	0.81	0.03	30.61	0.000
EX01	0.57	0.05	12.18	0.000
EX02	0.43	0.06	7.60	0.000
EX03	0.60	0.05	13.38	0.000
CONR01	0.55	0.05	11.14	0.000
CONR02	0.65	0.04	15.99	0.000
CONR03	0.45	0.06	8.23	0.000
CONR04	0.68	0.04	17.54	0.000
CONR05	0.40	0.06	6.85	0.000
CONR06	0.43	0.06	7.63	0.000
Intercepts				
COH01	5.87	0.28	21.21	0.000
COH02	3.32	0.17	20.08	0.000
COH03	4.79	0.23	20.92	0.000
COH04	4.68	0.22	20.87	0.000
COH05	5.45	0.26	21.12	0.000
COH06	5.91	0.28	21.22	0.000
COH07	4.94	0.24	20.98	0.000
EX01	4.26	0.21	20.71	0.000
EX02	3.55	0.18	20.27	0.000
EX03	3.42	0.17	20.17	0.000
CONR01	3.19	0.16	19.92	0.000

	Estimate	S.E.	Est./S.E.	p-value
CONR02	4.26	0.21	20.69	0.000
CONR03	3.42	0.17	20.16	0.000
CONR04	4.86	0.23	20.95	0.000
CONR05	7.78	0.36	21.47	0.000
CONR06	2.80	0.14	19.47	0.000
Variances				
FAMENV	1.00	0.00	999.00	999.000
Residual	Variances			
COH01	0.43	0.05	9.14	0.000
COH02	0.70	0.05	13.14	0.000
COH03	0.74	0.05	14.25	0.000
COH04	0.45	0.05	9.34	0.000
COH05	0.43	0.05	9.10	0.000
COH06	0.46	0.05	9.43	0.000
COH07	0.35	0.04	8.32	0.000
EX01	0.67	0.05	12.59	0.000
EX02	0.82	0.05	17.02	0.000
EX03	0.64	0.05	11.98	0.000
CONR01	0.70	0.05	13.06	0.000
CONR02	0.57	0.05	10.78	0.000
CONR03	0.80	0.05	15.94	0.000
CONR04	0.54	0.05	10.41	0.000
CONR05	0.84	0.05	18.54	0.000
CONR06	0.82	0.05	16.85	0.000

Table N6

R-squares for Family Environment Items and Latent Variables: Step 2

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
COH01	0.57	0.05	11.91	0.000
COH02	0.30	0.05	5.69	0.000
COH03	0.26	0.05	4.99	0.000
COH04	0.55	0.05	11.28	0.000
COH05	0.57	0.05	12.09	0.000
COH06	0.55	0.05	11.29	0.000
COH07	0.65	0.04	15.31	0.000
EX01	0.33	0.05	6.09	0.000
EX02	0.18	0.05	3.80	0.000
EX03	0.36	0.05	6.69	0.000
CONR01	0.30	0.05	5.57	0.000
CONR02	0.43	0.05	8.00	0.000
CONR03	0.21	0.05	4.11	0.000
CONR04	0.46	0.05	8.77	0.000
CONR05	0.16	0.05	3.42	0.001
CONR06	0.19	0.05	3.82	0.000

Table N7

Standardized Coefficients for Family Environment items and Latent Variables: Step 3

	Estimate	S.E.	Est./S.E.	p-value
COH By				
COH01	0.77	0.03	25.41	0.000
COH02	0.57	0.05	12.05	0.000
COH03	0.54	0.05	10.96	0.000
COH04	0.76	0.03	24.56	0.000
COH05	0.78	0.03	26.76	0.000
COH06	0.75	0.03	22.86	0.000
COH07	0.80	0.03	29.32	0.000
EX By				
EX01	0.78	0.04	20.04	0.000
EX02	0.65	0.05	13.97	0.000
EX03	0.74	0.04	17.78	0.000
CON By				
CONR01	0.77	0.03	22.40	0.000

	Estimate	S.E.	Est./S.E.	p-value
CONR02	0.78	0.03	23.40	0.000
CONR03	0.69	0.04	16.89	0.000
CONR04	0.71	0.04	18.15	0.000
CONR05	0.47	0.06	8.39	0.000
CONR06	0.64	0.05	14.33	0.000
EX with				
COH	0.73	0.05	15.95	0.000
CON with				
COH	0.66	0.05	13.84	0.000
EX	0.42	0.07	6.04	0.000

Intercepts				
COH01	5.87	0.28	21.21	0.000
COH02	3.32	0.17	20.08	0.000
COH03	4.79	0.23	20.92	0.000
COH04	4.69	0.22	20.87	0.000
COH05	5.45	0.26	21.12	0.000
COH06	5.91	0.28	21.22	0.000
COH07	4.94	0.24	20.98	0.000
EX01	4.26	0.21	20.71	0.000
EX02	3.55	0.18	20.27	0.000
EX03	3.42	0.17	20.17	0.000
CONR01	3.19	0.16	19.93	0.000
CONR02	4.26	0.21	20.69	0.000
CONR03	3.42	0.17	20.16	0.000
CONR04	4.86	0.23	20.95	0.000
CONR05	7.78	0.36	21.47	0.000
CONR06	2.80	0.14	19.47	0.000

Variances				
COH	1.00	0.00	999.00	999.000
EX	1.00	0.00	999.00	999.000
CON	1.00	0.00	999.00	999.000

Residual	Variances			
COH01	0.40	0.05	8.60	0.000
COH02	0.67	0.05	12.47	0.000
COH03	0.71	0.05	13.27	0.000
COH04	0.42	0.05	8.76	0.000
COH05	0.39	0.05	8.45	0.000
COH06	0.44	0.05	9.11	0.000

	Estimate	S.E.	Est./S.E.	p-value
COH07	0.36	0.04	8.06	0.000
EX01	0.39	0.06	6.34	0.000
EX02	0.57	0.06	9.43	0.000
EX03	0.45	0.06	7.37	0.000
CONR01	0.41	0.05	7.76	0.000
CONR02	0.39	0.05	7.61	0.000
CONR03	0.52	0.06	9.12	0.000
CONR04	0.49	0.06	8.80	0.000
CONR05	0.78	0.05	14.97	0.000
CONR06	0.59	0.06	10.18	0.000

Table N8

R-squares for Family Environment Items and Latent Variables: Step

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
COH01	0.60	0.05	12.71	0.000
COH02	0.33	0.05	6.03	0.000
COH03	0.29	0.05	5.48	0.000
COH04	0.58	0.05	12.28	0.000
COH05	0.61	0.05	13.38	0.000
COH06	0.56	0.05	11.43	0.000
COH07	0.65	0.04	14.66	0.000
EX01	0.61	0.06	10.02	0.000
EX02	0.43	0.06	6.98	0.000
EX03	0.55	0.06	8.89	0.000
CONR01	0.59	0.05	11.20	0.000
CONR02	0.61	0.05	11.70	0.000
CONR03	0.48	0.06	8.44	0.000
CONR04	0.51	0.06	9.08	0.000
CONR05	0.22	0.05	4.20	0.000
CONR06	0.41	0.06	7.17	0.000

Appendix O

Interpersonal- Data Analysis

MPlus Syntax, Descriptive Statistics and Confirmatory and Exploratory Factor Analysis

Statistics

Step 1 Syntax

TITLE: Interpersonal Dimension with the help of school climate, school identification, coh
DATA: FILE IS SEMinMPlus_data.csv;
VARIABLE: NAMES ARE idcm01 idcm02 idcm03 idcm04 idcm05

      ideb06 ideb07 ideb08 ideb09 ideb10 ideb11

      idre12 idre13 idre14 idre15

      idic16 idic17 idic18 idic19 idic20

      ided21 ided22 ided23 ided24 ided25

      hp01 hp02 hp03 hp04

      ha01 ha02 ha03 ha04

      pm01 pm02 pm03 pm04

      pgs01 pgs02 pgs03 pgs04

      pbts01 pbts02 pbts03 pbts04

      stre01 stre02 stre03 stre04 stre05

      emb01 emb02 emb03 emb04 emb05

      sstur01 sstur02 sstur03

      sstafr01 sstafr02 sstafr03

      ae01 ae02 ae03

      sva01 sva02 sva03

      si01 si02 si03

      coh01 coh02 coh03 coh04 coh05 coh06 coh07

      ex01 ex02 ex03

      conr01 conr02 conr03 conr04 conr05 conr06;

   USEVARIABLES ARE sstur01 sstur02 sstur03

      sstafr01 sstafr02 sstafr03

ae01 ae02 ae03

        sva01 sva02 sva03

        si01 si02 si03

        coh01 coh02 coh03 coh04 coh05 coh06 coh07

        ex01 ex02 ex03

        conr01 conr02 conr03 conr04 conr05 conr06;

    MISSING ARE ALL (-99);

ANALYSIS: TYPE IS GENERAL;

    ESTIMATOR IS ML;

    STARTS = 50;

    ITERATIONS = 1000;

    CONVERGENCE = .0005;

MODEL:

    SSTUR BY sstur01 sstur02 sstur03;

    SSTAFR BY sstafr01 sstafr02 sstafr03;

    AE BY ae01 ae02 ae03;

    SVA BY sva01 sva02 sva03;

    SI BY si01 si02 si03;

    SC BY SSTUR SSTAFR AE SVA;

    COH BY coh01 coh02 coh03 coh04   coh05 coh06   coh07;

    EX BY ex01 ex02 ex03;

    CON BY conr01 conr02 conr03 conr04   conr05 conr06;

    INTER BY SC SI COH EX CON;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;

Step 1 Warning

"The latent variable covariance matrix (psi) is not positive definite. This could indicate a

negative variance/residual variance for a latent variable, a correlation greater or equal to one

between two latent variables, or a linear dependency among more than two latent variables.

    Check the tech4 output for more information.

Problem involving variable COH."

Table O1

Standardized Coefficients for Interpersonal Latent Variables: Step 1

		Estimate	S.E.	Est./S.E.	p-value
SSTUR	BY				
SSTUR01		0.89	0.02	43.68	0.000
SSTUR02		0.92	0.02	49.84	0.000
SSTUR03		0.76	0.03	24.72	0.000
SSTAFR	BY				
SSTAFR01		0.75	0.03	22.53	0.000
SSTAFR02		0.88	0.02	42.30	0.000
SSTAFR03		0.89	0.02	44.05	0.000
AE	BY				
AE01		0.73	0.04	19.22	0.000
AE02		0.77	0.04	21.54	0.000
AE03		0.77	0.04	21.60	0.000
SVA	BY				
SVA01		0.72	0.04	17.31	0.000
SVA02		0.48	0.06	7.98	0.000
SVA03		0.78	0.04	18.73	0.000
SI	BY				
SI01		0.81	0.03	32.67	0.000
SI02		0.98	0.01	69.82	0.000
SI03		0.86	0.02	41.43	0.000
COH	BY				
COH01		0.77	0.03	24.94	0.000
COH02		0.57	0.05	11.87	0.000
COH03		0.55	0.05	11.31	0.000
COH04		0.77	0.03	25.03	0.000
COH05		0.78	0.03	26.65	0.000
COH06		0.75	0.03	22.90	0.000
COH07		0.80	0.03	29.38	0.000
EX	BY				
EX01		0.78	0.04	19.97	0.000
EX02		0.65	0.05	13.71	0.000

	Estimate	S.E.	Est./S.E.	p-value
EX03	0.74	0.04	17.89	0.000
CON BY				
CONR01	0.77	0.03	22.63	0.000
CONR02	0.77	0.03	22.85	0.000
CONR03	0.70	0.04	17.01	0.000
CONR04	0.71	0.04	17.94	0.000
CONR05	0.47	0.06	8.34	0.000
CONR06	0.65	0.05	14.54	0.000
SC BY				
SSTUR	0.67	0.05	14.04	0.000
SSTAFR	0.86	0.03	26.29	0.000
AE	0.90	0.03	26.09	0.000
SVA	0.90	0.04	21.77	0.000
INTER BY				
SC	0.39	0.07	5.65	0.000
SI	0.35	0.07	5.31	0.000
COH	1.00	0.04	23.38	0.000
EX	0.72	0.05	14.18	0.000
CON	0.65	0.05	13.05	0.000
Intercepts				
SSTUR01	3.00	0.15	19.73	0.000
SSTUR02	3.36	0.17	20.11	0.000
SSTUR03	3.12	0.16	19.87	0.000
SSTAFR01	3.22	0.16	19.98	0.000
SSTAFR02	3.00	0.15	19.73	0.000
SSTAFR03	3.54	0.18	20.26	0.000
AE01	4.04	0.20	20.59	0.000
AE02	4.36	0.21	20.75	0.000
AE03	3.07	0.16	19.82	0.000
SVA01	2.57	0.14	19.09	0.000
SVA02	3.36	0.17	20.08	0.000
SVA03	3.03	0.15	19.77	0.000
SI01	3.16	0.16	19.90	0.000
SI02	2.61	0.14	19.19	0.000
SI03	2.37	0.13	18.72	0.000
COH01	5.87	0.28	21.21	0.000
COH02	3.32	0.17	20.08	0.000
COH03	4.79	0.23	20.92	0.000
COH04	4.68	0.22	20.87	0.000

	Estimate	S.E.	Est./S.E.	p-value
COH05	5.45	0.26	21.12	0.000
COH06	5.91	0.28	21.22	0.000
COH07	4.94	0.24	20.98	0.000
EX01	4.26	0.21	20.71	0.000
EX02	3.55	0.18	20.27	0.000
EX03	3.42	0.17	20.17	0.000
CONR01	3.19	0.16	19.93	0.000
CONR02	4.26	0.21	20.69	0.000
CONR03	3.42	0.17	20.16	0.000
CONR04	4.86	0.23	20.95	0.000
CONR05	7.78	0.36	21.47	0.000
CONR06	2.80	0.14	19.47	0.000

Variances				
INTER	1.00	0.00	999.00	999.000

Residual	Variances			
SSTUR01	0.21	0.04	5.92	0.000
SSTUR02	0.16	0.03	4.68	0.000
SSTUR03	0.42	0.05	8.91	0.000
SSTAFR01	0.44	0.05	9.00	0.000
SSTAFR02	0.23	0.04	6.19	0.000
SSTAFR03	0.21	0.04	5.90	0.000
AE01	0.47	0.06	8.41	0.000
AE02	0.41	0.06	7.52	0.000
AE03	0.41	0.05	7.60	0.000
SVA01	0.48	0.06	7.93	0.000
SVA02	0.77	0.06	13.13	0.000
SVA03	0.40	0.07	6.12	0.000
SI01	0.34	0.04	8.42	0.000
SI02	0.04	0.03	1.29	0.199
SI03	0.26	0.04	7.36	0.000
COH01	0.41	0.05	8.69	0.000
COH02	0.68	0.05	12.61	0.000
COH03	0.70	0.05	13.03	0.000
COH04	0.41	0.05	8.70	0.000
COH05	0.39	0.05	8.49	0.000
COH06	0.44	0.05	9.12	0.000
COH07	0.36	0.04	8.09	0.000
EX01	0.39	0.06	6.29	0.000
EX02	0.58	0.06	9.55	0.000
EX03	0.45	0.06	7.27	0.000
CONR01	0.40	0.05	7.68	0.000

	Estimate	S.E.	Est./S.E.	p-value
CONR02	0.40	0.05	7.66	0.000
CONR03	0.52	0.06	9.07	0.000
CONR04	0.50	0.06	8.80	0.000
CONR05	0.78	0.05	15.02	0.000
CONR06	0.58	0.06	10.07	0.000
SSTUR	0.56	0.06	8.86	0.000
SSTAFR	0.27	0.06	4.85	0.000
AE	0.20	0.06	3.20	0.001
SVA	0.19	0.08	2.50	0.012
SI	0.88	0.05	18.68	0.000
SC	0.85	0.06	15.38	0.000
COH	-0.01	999.00	999.00	999.000
EX	0.48	0.07	6.45	0.000
CON	0.58	0.06	9.10	0.000

Table O2

R-squares for Interpersonal Latent Variables: Step 1

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
SSTUR01	0.79	0.04	21.84	0.000
SSTUR02	0.84	0.03	24.92	0.000
SSTUR03	0.58	0.05	12.36	0.000
SSTAFR01	0.56	0.05	11.27	0.000
SSTAFR02	0.77	0.04	21.15	0.000
SSTAFR03	0.79	0.04	22.03	0.000
AE01	0.53	0.06	9.61	0.000
AE02	0.59	0.06	10.77	0.000
AE03	0.59	0.05	10.80	0.000
SVA01	0.52	0.06	8.65	0.000
SVA02	0.23	0.06	3.99	0.000
SVA03	0.61	0.07	9.37	0.000
SI01	0.66	0.04	16.34	0.000
SI02	0.97	0.03	34.91	0.000
SI03	0.74	0.04	20.72	0.000
COH01	0.59	0.05	12.47	0.000
COH02	0.32	0.05	5.94	0.000
COH03	0.30	0.05	5.65	0.000
COH04	0.59	0.05	12.51	0.000
COH05	0.61	0.05	13.32	0.000
COH06	0.56	0.05	11.45	0.000

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
COH07	0.65	0.04	14.69	0.000
EX01	0.61	0.06	9.99	0.000
EX02	0.42	0.06	6.86	0.000
EX03	0.55	0.06	8.95	0.000
CONR01	0.60	0.05	11.32	0.000
CONR02	0.60	0.05	11.42	0.000
CONR03	0.48	0.06	8.50	0.000
CONR04	0.51	0.06	8.97	0.000
CONR05	0.22	0.05	4.17	0.000
CONR06	0.42	0.06	7.27	0.000

Latent Variable	Estimate	S.E.	Est./S.E.	p-value
SSTUR	0.44	0.06	7.02	0.000
SSTAFR	0.73	0.06	13.15	0.000
AE	0.80	0.06	13.05	0.000
SVA	0.81	0.08	10.89	0.000
SI	0.12	0.05	2.65	0.008
SC	0.16	0.06	2.82	0.005
COH	Undefined	1.01		
EX	0.52	0.07	7.09	0.000
CON	0.42	0.06	6.52	0.000

Table O3

Correlation for Interpersonal Latent Variables: Step 1

	SSTUR	SSTAFR	AE	SVA	SI	SC	COH	EX	CON	INTER
SSTUR	1.00									
SSTAFR	0.57	1.00								
AE	0.60	0.77	1.00							
SVA	0.60	0.77	0.81	1.00						
SI	0.09	0.12	0.12	0.13	1.00					
SC	0.67	0.86	0.90	0.90	0.14	1.00				
COH	0.26	0.34	0.35	0.36	0.35	0.40	1.00			
EX	0.19	0.24	0.26	0.26	0.26	0.29	0.73	1.00		
CON	0.17	0.22	0.23	0.23	0.23	0.25	0.65	0.47	1.00	
INTER	0.26	0.34	0.35	0.36	0.35	0.39	1.00	0.72	0.65	1

Step 2 Syntax

TITLE: Interpersonal Dimension without cohesion with the help of school climate,

school identification, expressiveness, conflict;

DATA: FILE IS SEMinMPlus_data.csv;

VARIABLE: NAMES ARE idcm01 idcm02 idcm03 idcm04 idcm05

        ideb06 ideb07 ideb08 ideb09 ideb10 ideb11

        idre12 idre13 idre14 idre15

        idic16 idic17 idic18 idic19 idic20

        ided21 ided22 ided23 ided24 ided25

        hp01 hp02 hp03 hp04

        ha01 ha02 ha03 ha04

        pm01 pm02 pm03 pm04

        pgs01 pgs02 pgs03 pgs04

        pbts01 pbts02 pbts03 pbts04

        stre01 stre02 stre03 stre04 stre05

        emb01 emb02 emb03 emb04 emb05

        sstur01 sstur02 sstur03

        sstafr01 sstafr02 sstafr03

        ae01 ae02 ae03

        sva01 sva02 sva03

        si01 si02 si03

        coh01 coh02 coh03 coh04 coh05 coh06 coh07

        ex01 ex02 ex03

        conr01 conr02 conr03 conr04 conr05 conr06;

    USEVARIABLES ARE sstur01 sstur02 sstur03

        sstafr01 sstafr02 sstafr03

        ae01 ae02 ae03

        sva01 sva02 sva03

        si01 si02 si03

        ex01 ex02 ex03

        conr01 conr02 conr03 conr04 conr05 conr06;

    MISSING ARE ALL (-99);

ANALYSIS: TYPE IS GENERAL;

ESTIMATOR IS ML;

STARTS = 50;

ITERATIONS = 1000;

CONVERGENCE = .0005;

MODEL:

SSTUR BY sstur01 sstur02 sstur03;

SSTAFR BY sstafr01 sstafr02 sstafr03;

AE BY ae01 ae02 ae03;

SVA BY sva01 sva02 sva03;

SI BY si01 si02 si03;

SC BY SSTUR SSTAFR AE SVA;

EX BY ex01 ex02 ex03;

CON BY conr01 conr02 conr03 conr04 conr05 conr06;

INTER BY SC SI EX CON;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;

Table O4

Standardized Coefficients for Interpersonal Latent Variables: Step 2

	Estimate	S.E.	Est./S.E.	p-value
SSTUR BY				
SSTUR01	0.89	0.02	44.67	0.000
SSTUR02	0.91	0.02	49.64	0.000
SSTUR03	0.77	0.03	24.89	0.000
SSTAFR BY				
SSTAFR01	0.75	0.03	22.48	0.000
SSTAFR02	0.88	0.02	42.33	0.000
SSTAFR03	0.89	0.02	43.55	0.000
AE BY				
AE01	0.72	0.04	18.26	0.000
AE02	0.76	0.04	20.68	0.000
AE03	0.78	0.04	22.68	0.000
SVA BY				

		Estimate	S.E.	Est./S.E.	p-value
SVA01		0.74	0.04	20.15	0.000
SVA02		0.47	0.06	7.91	0.000
SVA03		0.76	0.04	19.67	0.000
SI	BY				
SI01		0.83	0.02	35.95	0.000
SI02		0.96	0.01	76.91	0.000
SI03		0.87	0.02	47.46	0.000
EX	BY				
EX01		0.82	0.05	18.04	0.000
EX02		0.66	0.05	13.58	0.000
EX03		0.70	0.05	14.11	0.000
CON	BY				
CONR01		0.80	0.03	25.39	0.000
CONR02		0.73	0.04	19.41	0.000
CONR03		0.74	0.04	19.74	0.000
CONR04		0.66	0.04	14.99	0.000
CONR05		0.45	0.06	7.91	0.000
CONR06		0.68	0.04	16.47	0.000
SC	BY				
SSTUR		0.69	0.04	15.43	0.000
SSTAFR		0.82	0.03	23.94	0.000
AE		0.86	0.04	23.63	0.000
SVA		0.96	0.04	27.61	0.000
INTER	BY				
SC		0.90	0.07	12.43	0.000
SI		0.80	0.07	11.92	0.000
EX		0.36	0.08	4.79	0.000
CON		0.22	0.08	2.87	0.004
Intercepts					
SSTUR01		3.00	0.15	19.73	0.000
SSTUR02		3.36	0.17	20.11	0.000
SSTUR03		3.12	0.16	19.87	0.000
SSTAFR01		3.22	0.16	19.98	0.000
SSTAFR02		3.00	0.15	19.73	0.000
SSTAFR03		3.54	0.18	20.26	0.000
AE01		4.04	0.20	20.59	0.000
AE02		4.36	0.21	20.75	0.000

	Estimate	S.E.	Est./S.E.	p-value
AE03	3.07	0.16	19.82	0.000
SVA01	2.57	0.14	19.09	0.000
SVA02	3.36	0.17	20.08	0.000
SVA03	3.03	0.15	19.77	0.000
SI01	3.16	0.16	19.90	0.000
SI02	2.61	0.14	19.19	0.000
SI03	2.37	0.13	18.72	0.000
EX01	4.26	0.21	20.71	0.000
EX02	3.55	0.18	20.27	0.000
EX03	3.42	0.17	20.17	0.000
CONR01	3.19	0.16	19.92	0.000
CONR02	4.26	0.21	20.69	0.000
CONR03	3.42	0.17	20.16	0.000
CONR04	4.86	0.23	20.95	0.000
CONR05	7.78	0.36	21.47	0.000
CONR06	2.80	0.14	19.47	0.000

Variances				
INTER	1.00	0.00	999.00	999.000

Residual	Variances			
SSTUR01	0.21	0.04	5.88	0.000
SSTUR02	0.17	0.03	4.94	0.000
SSTUR03	0.42	0.05	8.85	0.000
SSTAFR01	0.44	0.05	8.99	0.000
SSTAFR02	0.22	0.04	6.12	0.000
SSTAFR03	0.21	0.04	5.89	0.000
AE01	0.48	0.06	8.48	0.000
AE02	0.43	0.06	7.67	0.000
AE03	0.39	0.05	7.15	0.000
SVA01	0.45	0.05	8.29	0.000
SVA02	0.78	0.06	14.13	0.000
SVA03	0.42	0.06	7.23	0.000
SI01	0.32	0.04	8.25	0.000
SI02	0.08	0.02	3.20	0.001
SI03	0.24	0.03	7.39	0.000
EX01	0.33	0.08	4.35	0.000
EX02	0.57	0.06	8.81	0.000
EX03	0.52	0.07	7.56	0.000
CONR01	0.36	0.05	7.08	0.000
CONR02	0.46	0.06	8.30	0.000
CONR03	0.46	0.06	8.39	0.000
CONR04	0.57	0.06	9.73	0.000

	Estimate	S.E.	Est./S.E.	p-value
CONR05	0.80	0.05	15.38	0.000
CONR06	0.53	0.06	9.46	0.000
SSTUR	0.53	0.06	8.74	0.000
SSTAFR	0.33	0.06	5.76	0.000
AE	0.26	0.06	4.24	0.000
SVA	0.07	0.07	1.09	0.278
SI	0.36	0.11	3.30	0.001
SC	0.20	0.13	1.51	0.131
EX	0.87	0.05	16.17	0.000
CON	0.95	0.03	28.54	0.000

Table O5

R-squares for Interpersonal Latent Variables: Step 2

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
SSTUR01	0.79	0.04	22.33	0.000
SSTUR02	0.83	0.03	24.82	0.000
SSTUR03	0.58	0.05	12.44	0.000
SSTAFR01	0.56	0.05	11.24	0.000
SSTAFR02	0.78	0.04	21.17	0.000
SSTAFR03	0.79	0.04	21.78	0.000
AE01	0.52	0.06	9.13	0.000
AE02	0.57	0.06	10.34	0.000
AE03	0.61	0.05	11.34	0.000
SVA01	0.55	0.05	10.08	0.000
SVA02	0.22	0.06	3.95	0.000
SVA03	0.58	0.06	9.84	0.000
SI01	0.69	0.04	17.98	0.000
SI02	0.92	0.02	38.45	0.000
SI03	0.76	0.03	23.73	0.000
EX01	0.68	0.08	9.02	0.000
EX02	0.44	0.06	6.79	0.000
EX03	0.48	0.07	7.06	0.000
CONR01	0.64	0.05	12.70	0.000
CONR02	0.54	0.06	9.70	0.000
CONR03	0.54	0.06	9.87	0.000
CONR04	0.44	0.06	7.49	0.000
CONR05	0.21	0.05	3.95	0.000
CONR06	0.47	0.06	8.24	0.000

Latent Variable	Estimate	S.E.	Est./S.E.	p-value
SSTUR	0.47	0.06	7.71	0.000
SSTAFR	0.68	0.06	11.97	0.000
AE	0.74	0.06	11.82	0.000
SVA	0.93	0.07	13.80	0.000
SI	0.64	0.11	5.96	0.000
SC	0.81	0.13	6.22	0.000
EX	0.13	0.05	2.39	0.017
CON	0.05	0.03	1.43	0.152

Table O6

Correlation for Interpersonal Latent Variables: Step 2

	SSTUR	SSTAFR	AE	SVA	SI	SC	EX	CON	INTER
SSTUR	1.00								
SSTAFR	0.56	1.00							
AE	0.59	0.71	1.00						
SVA	0.66	0.79	0.83	1.00					
SI	0.49	0.59	0.62	0.69	1.00				
SC	0.69	0.82	0.86	0.96	0.72	1.00			
EX	0.22	0.27	0.28	0.31	0.29	0.32	1.00		
CON	0.13	0.16	0.17	0.19	0.18	0.20	0.08	1.00	
INTER	0.61	0.74	0.77	0.86	0.80	0.90	0.36	0.22	1.00

Step 3 Syntax

TITLE: EFA for Interpersonal Dimension;

DATA: FILE IS SEMinMPlus_data.csv;

VARIABLE: NAMES ARE idcm01 idcm02 idcm03 idcm04 idcm05

　　　　　ideb06 ideb07 ideb08 ideb09 ideb10 ideb11

　　　　　idre12 idre13 idre14 idre15

　　　　　idic16 idic17 idic18 idic19 idic20

　　　　　ided21 ided22 ided23 ided24 ided25

　　　　　hp01 hp02 hp03 hp04

　　　　　ha01 ha02 ha03 ha04

　　　　　pm01 pm02 pm03 pm04

pgs01 pgs02 pgs03 pgs04

pbts01 pbts02 pbts03 pbts04

stre01 stre02 stre03 stre04 stre05

emb01 emb02 emb03 emb04 emb05

sstur01 sstur02 sstur03

sstafr01 sstafr02 sstafr03

ae01 ae02 ae03

sva01 sva02 sva03

si01 si02 si03

coh01 coh02 coh03 coh04 coh05 coh06 coh07

ex01 ex02 ex03

conr01 conr02 conr03 conr04 conr05 conr06;

USEVARIABLES ARE sstur01 sstur02 sstur03

sstafr01 sstafr02 sstafr03

ae01 ae02 ae03

sva01 sva02 sva03

si01 si02 si03

coh01 coh02 coh03 coh04 coh05 coh06 coh07

ex01 ex02 ex03

conr01 conr02 conr03 conr04 conr05 conr06;

MISSING ARE ALL (-99);

ANALYSIS: TYPE=EFA 1 8;

OUTPUT: MODINDICES;

Table O7

EFA Geomin Rotated Loadings - 6-factor: Step 3a

	1	2	3	4	5	6
SSTUR01	0.833*	0.018	0.043	0.003	0.069	0.061
SSTUR02	0.964*	0.005	-0.036	-0.019	-0.011	-0.029
SSTUR03	0.685*	0.043	0.096	-0.005	-0.02	0.003
SSTAFR01	0.015	0.705*	0.09	-0.002	-0.035	-0.024
SSTAFR02	0.122*	0.780*	-0.008	-0.036	0.101	-0.011
SSTAFR03	-0.029	0.925*	-0.009	-0.085	0.103	-0.026
AE01	0.041	0.614*	0.034	0.083	-0.052	0.002
AE02	-0.002	0.680*	-0.054	0.084	-0.045	0.031
AE03	0.263*	0.353*	0.164*	0.079	0.009	0.024
SVA01	0.300*	0.273*	0.276*	0.052	-0.057	-0.006
SVA02	-0.066	0.192*	0.276*	0.068	-0.002	0.122
SVA03	0.053	0.436*	0.288*	0.002	-0.017	0.089
SI01	0.129*	0.104	0.700*	0.058	0.021	-0.073
SI02	-0.011	-0.029	1.003*	-0.011	-0.006	-0.016
SI03	0.02	0	0.859*	-0.061	0.009	0.066
COH01	0.028	0.033	-0.086	0.839*	-0.021	-0.004
COH02	-0.131	-0.01	0.058	0.341*	0.002	0.318*
COH03	0.012	0.099	0.043	0.441*	-0.106	0.155
COH04	-0.062	0.126	0.03	0.534*	0.026	0.255*
COH05	0.038	0.021	-0.018	0.749*	-0.014	0.071
COH06	-0.046	0.011	0.086	0.689*	0.083	0.016
COH07	0.029	-0.026	0.087	0.561*	0.203*	0.171*
EX01	0.160*	-0.072	0.01	0.055	0.024	0.727*
EX02	0.021	-0.005	-0.067	-0.018	-0.097	0.746*
EX03	-0.033	0.075	0.005	0.115	0.08	0.611*
CONR01	-0.043	0.071	0.009	0.076	0.729*	0.086
CONR02	0.02	-0.059	-0.08	0.467*	0.528*	-0.058
CONR03	-0.048	0.025	0.09	0.039	0.740*	-0.026
CONR04	0.034	-0.018	-0.007	0.484*	0.389*	0.008
CONR05	0.007	-0.06	-0.006	0.297*	0.311*	-0.061
CONR06	0.041	0.017	-0.008	-0.141	0.742*	0.201*

Table O8

Correlation between the 6-factors: Step 3a

	1	2	3	4	5	6
1	1.000					
2	0.523*	1.000				
3	0.460*	0.549*	1.000			
4	0.129*	0.265*	0.309*	1.000		
5	0.056	0.045	0.068	0.368*	1.000	
6	0.094	0.198*	0.255*	0.581*	0.181*	1.000

Table O9

EFA Geomin Rotated Loadings – 5-factor: Step 3b

	1	2	3	4	5
SSTUR01	0.837*	0.016	0.035	0.04	0.068
SSTUR02	0.968*	0.005	-0.055	-0.039	-0.006
SSTUR03	0.690*	0.041	-0.005	0.091	-0.021
SSTAFR01	0.011	0.706*	-0.019	0.092	-0.033
SSTAFR02	0.120*	0.780*	-0.046	-0.007	0.094
SSTAFR03	-0.03	0.926*	-0.099*	-0.009	0.092
AE01	0.041	0.612*	0.093	0.031	-0.054
AE02	-0.004	0.677*	0.109	-0.052	-0.046
AE03	0.264*	0.350*	0.097	0.163*	0.01
SVA01	0.302*	0.273*	0.049	0.270*	-0.053
SVA02	-0.065	0.188*	0.181*	0.271*	-0.016
SVA03	0.055	0.432*	0.093	0.282*	-0.038
SI01	0.127*	0.11	-0.011	0.697*	0.051
SI02	-0.012	-0.028	-0.016	1.002*	0.007
SI03	0.022	0	0.01	0.852*	0
COH01	0.019	0.044	0.752*	-0.086	0.069
COH02	-0.133	-0.017	0.597*	0.054	-0.015
COH03	0.01	0.097	0.554*	0.037	-0.091
COH04	-0.065	0.122	0.721*	0.023	0.036
COH05	0.031	0.027	0.742*	-0.021	0.056
COH06	-0.051	0.019	0.641*	0.081	0.153*
COH07	0.029	-0.028	0.657*	0.081	0.235*
EX01	0.153*	-0.081	0.629*	0.015	-0.05
EX02	0.018	-0.023	0.595*	-0.059	-0.181*
EX03	-0.03	0.056	0.611*	0.007	0.011
CONR01	-0.035	0.069	0.092	0.009	0.739*
CONR02	0.022	-0.052	0.340*	-0.082	0.596*

	1	2	3	4	5
CONR03	-0.04	0.026	-0.034	0.089	0.761*
CONR04	0.033	-0.012	0.418*	-0.009	0.448*
CONR05	0.008	-0.055	0.196*	-0.006	0.359*
CONR06	0.051	0.011	-0.001	-0.009	0.693*

Table O10

Correlation between the 5-factors: Step 3b

	1	2	3	4	5
1	1.000				
2	0.530*	1.000			
3	0.154*	0.272*	1.000		
4	0.467*	0.547*	0.320*	1.000	
5	0.056	0.062	0.377*	0.070	1.000

Step 4 Syntax

TITLE: Interpersonal Dimension with the help of EFA 5 factor solution;

DATA: FILE IS SEMinMPlus_data.csv;

VARIABLE: NAMES ARE idcm01 idcm02 idcm03 idcm04 idcm05

idcb06 ideb07 ideb08 ideb09 ideb10 ideb11

idre12 idre13 idre14 idre15

idic16 idic17 idic18 idic19 idic20

ided21 ided22 ided23 ided24 ided25

hp01 hp02 hp03 hp04

ha01 ha02 ha03 ha04

pm01 pm02 pm03 pm04

pgs01 pgs02 pgs03 pgs04

pbts01 pbts02 pbts03 pbts04

stre01 stre02 stre03 stre04 stre05

emb01 emb02 emb03 emb04 emb05

sstur01 sstur02 sstur03

sstafr01 sstafr02 sstafr03

ae01 ae02 ae03

sva01 sva02 sva03

si01 si02 si03

coh01 coh02 coh03 coh04 coh05 coh06 coh07

ex01 ex02 ex03

conr01 conr02 conr03 conr04 conr05 conr06;

USEVARIABLES ARE sstur01 sstur02 sstur03

sstafr01 sstafr02 sstafr03

ae01 ae02

si01 si02 si03

coh01 coh02 coh03 coh04 coh05 coh06 coh07

ex01 ex02 ex03

conr01 conr02 conr03 conr04 conr05 conr06;

MISSING ARE ALL (-99);

ANALYSIS: TYPE IS GENERAL;

ESTIMATOR IS ML;

STARTS = 50;

ITERATIONS = 1000;

CONVERGENCE = .0005;

MODEL:

SSTUR BY sstur01 sstur02 sstur03;

STAFAE BY sstafr01 sstafr02 sstafr03 ae01 ae02;

SI BY si01 si02 si03;

COHEX BY coh01 coh02 coh03 coh04 coh05 coh06   coh07 ex01 ex02 ex03;

CON BY conr01 conr02 conr03 conr04 conr05 conr06;

INTER BY SSTUR STAFAE SI COHEX CON;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;

SAVEDATA: File is INTER_Latent;

Format is Free;

Save=fscores;

Table O11

Standardized Coefficients for Interpersonal Latent Variables: Step 4

		Estimate	S.E.	Est./S.E.	p-value
SSTUR	BY				
SSTUR01		0.89	0.02	43.77	0.000
SSTUR02		0.91	0.02	47.66	0.000
SSTUR03		0.76	0.03	24.48	0.000
STAFAE	BY				
SSTAFR01		0.77	0.03	24.62	0.000
SSTAFR02		0.86	0.02	37.97	0.000
SSTAFR03		0.87	0.02	40.79	0.000
AE01		0.66	0.04	15.83	0.000
AE02		0.65	0.04	15.40	0.000
SI	BY				
SI01		0.83	0.02	35.56	0.000
SI02		0.96	0.01	75.41	0.000
SI03		0.87	0.02	46.59	0.000
COHEX	BY				
COH01		0.76	0.03	23.58	0.000
COH02		0.58	0.05	12.47	0.000
COH03		0.56	0.05	11.63	0.000
COH04		0.77	0.03	25.38	0.000
COH05		0.78	0.03	25.86	0.000
COH06		0.73	0.03	21.15	0.000
COH07		0.79	0.03	27.13	0.000
EX01		0.61	0.05	13.63	0.000
EX02		0.49	0.05	9.13	0.000
EX03		0.63	0.04	14.40	0.000
CON	BY				
CONR01		0.80	0.03	25.28	0.000
CONR02		0.74	0.04	19.52	0.000
CONR03		0.73	0.04	19.68	0.000
CONR04		0.66	0.04	15.07	0.000
CONR05		0.45	0.06	7.92	0.000
CONR06		0.68	0.04	16.45	0.000
INTER	BY				
SSTUR		0.68	0.05	12.73	0.000

	Estimate	S.E.	Est./S.E.	p-value
STAFAE	0.79	0.05	15.81	0.000
SI	0.72	0.05	13.62	0.000
COHEX	0.43	0.07	6.11	0.000
CON	0.27	0.08	3.45	0.001
Intercepts				
SSTUR01	3.00	0.15	19.73	0.000
SSTUR02	3.36	0.17	20.11	0.000
SSTUR03	3.12	0.16	19.87	0.000
SSTAFR01	3.22	0.16	19.98	0.000
SSTAFR02	3.00	0.15	19.73	0.000
SSTAFR03	3.54	0.18	20.26	0.000
AE01	4.04	0.20	20.59	0.000
AE02	4.36	0.21	20.75	0.000
SI01	3.16	0.16	19.90	0.000
SI02	2.61	0.14	19.19	0.000
SI03	2.37	0.13	18.72	0.000
COH01	5.87	0.28	21.21	0.000
COH02	3.32	0.17	20.08	0.000
COH03	4.79	0.23	20.92	0.000
COH04	4.69	0.22	20.87	0.000
COH05	5.45	0.26	21.12	0.000
COH06	5.91	0.28	21.22	0.000
COH07	4.94	0.24	20.98	0.000
EX01	4.26	0.21	20.71	0.000
EX02	3.55	0.18	20.27	0.000
EX03	3.42	0.17	20.17	0.000
CONR01	3.19	0.16	19.92	0.000
CONR02	4.26	0.21	20.69	0.000
CONR03	3.42	0.17	20.16	0.000
CONR04	4.86	0.23	20.95	0.000
CONR05	7.78	0.36	21.47	0.000
CONR06	2.80	0.14	19.47	0.000
Variances				
INTER	1.00	0.00	999.00	999.000
Residual	Variances			
SSTUR01	0.20	0.04	5.58	0.000
SSTUR02	0.17	0.04	4.82	0.000
SSTUR03	0.42	0.05	8.88	0.000
SSTAFR01	0.41	0.05	8.52	0.000
SSTAFR02	0.26	0.04	6.73	0.000

	Estimate	S.E.	Est./S.E.	p-value
SSTAFR03	0.24	0.04	6.37	0.000
AE01	0.57	0.05	10.49	0.000
AE02	0.58	0.05	10.67	0.000
SI01	0.31	0.04	8.13	0.000
SI02	0.07	0.03	2.88	0.004
SI03	0.24	0.03	7.53	0.000
COH01	0.43	0.05	8.88	0.000
COH02	0.66	0.05	12.22	0.000
COH03	0.69	0.05	12.80	0.000
COH04	0.40	0.05	8.61	0.000
COH05	0.40	0.05	8.54	0.000
COH06	0.47	0.05	9.39	0.000
COH07	0.38	0.05	8.39	0.000
EX01	0.63	0.05	11.55	0.000
EX02	0.76	0.05	14.68	0.000
EX03	0.61	0.05	11.23	0.000
CONR01	0.36	0.05	7.11	0.000
CONR02	0.46	0.06	8.27	0.000
CONR03	0.46	0.06	8.41	0.000
CONR04	0.56	0.06	9.69	0.000
CONR05	0.80	0.05	15.37	0.000
CONR06	0.54	0.06	9.46	0.000
SSTUR	0.54	0.07	7.39	0.000
STAFAE	0.37	0.08	4.68	0.000
SI	0.49	0.08	6.43	0.000
COHEX	0.82	0.06	13.56	0.000
CON	0.93	0.04	21.76	0.000

Table O12

R-squares for Interpersonal Latent Variables: Step 4

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
SSTUR01	0.80	0.04	21.88	0.000
SSTUR02	0.83	0.04	23.83	0.000
SSTUR03	0.58	0.05	12.24	0.000
SSTAFR01	0.59	0.05	12.31	0.000
SSTAFR02	0.74	0.04	18.98	0.000
SSTAFR03	0.76	0.04	20.39	0.000
AE01	0.43	0.05	7.92	0.000
AE02	0.42	0.05	7.70	0.000
SI01	0.69	0.04	17.78	0.000
SI02	0.93	0.03	37.71	0.000
SI03	0.76	0.03	23.29	0.000
COH01	0.57	0.05	11.79	0.000
COH02	0.34	0.05	6.23	0.000
COH03	0.31	0.05	5.82	0.000
COH04	0.60	0.05	12.69	0.000
COH05	0.60	0.05	12.93	0.000
COH06	0.53	0.05	10.58	0.000
COH07	0.62	0.05	13.56	0.000
EX01	0.37	0.05	6.82	0.000
EX02	0.24	0.05	4.57	0.000
EX03	0.39	0.05	7.20	0.000
CONR01	0.64	0.05	12.64	0.000
CONR02	0.54	0.06	9.76	0.000
CONR03	0.54	0.06	9.84	0.000
CONR04	0.44	0.06	7.54	0.000
CONR05	0.21	0.05	3.96	0.000
CONR06	0.47	0.06	8.22	0.000

Latent Variable	Estimate	S.E.	Est./S.E.	P-Value
SSTUR	0.46	0.07	6.37	0.000
STAFAE	0.63	0.08	7.90	0.000
SI	0.51	0.08	6.81	0.000
COHEX	0.18	0.06	3.06	0.002
CON	0.07	0.04	1.72	0.085

Table O13

Correlation for Interpersonal Latent Variables: Step 4

	SSTUR	STAFAE	SI	COHEX	CON	INTER
SSTUR	1.00					
STAFAE	0.54	1.00				
SI	0.49	0.57	1.00			
COHEX	0.29	0.34	0.31	1.00		
CON	0.18	0.22	0.19	0.12	1.00	
INTER	0.68	0.79	0.72	0.43	0.27	1.00

Appendix P

Structural Equation Modeling for the Revised Model- Data Analysis

Step 1: Syntax for SEM on Figure 3 (variables under Intrapersonal aspects, Interpersonal

aspects, and Identity development as latent factors)

TITLE: Interpersonal and Intrapersonal on DIDS;
DATA: FILE IS SEMinMPlus_data.csv;
VARIABLE: NAMES ARE idcm01 idcm02 idcm03 idcm04 idcm05

       ideb06 ideb07 ideb08 ideb09 ideb10 ideb11

       idre12 idre13 idre14 idre15

       idic16 idic17 idic18 idic19 idic20

       ided21 ided22 ided23 ided24 ided25

       hp01 hp02 hp03 hp04

       ha01 ha02 ha03 ha04

       pm01 pm02 pm03 pm04

       pgs01 pgs02 pgs03 pgs04

       pbts01 pbts02 pbts03 pbts04

       stre01 stre02 stre03 stre04 stre05

       emb01 emb02 emb03 emb04 emb05

       sstur01 sstur02 sstur03

       sstafr01 sstafr02 sstafr03

       ae01 ae02 ae03

       sva01 sva02 sva03

       si01 si02 si03

       coh01 coh02 coh03 coh04 coh05 coh06 coh07

       ex01 ex02 ex03

       conr01 conr02 conr03 conr04 conr05 conr06;

    USEVARIABLES ARE idcm01 idcm02 idcm03 idcm04 idcm05

       ideb06 ideb07 ideb08 ideb09 ideb10 ideb11

       idre13 idre14 idre15

       idic16 idic17 idic18 idic19 idic20

```
            hp01 hp02 hp03 hp04
            ha01 ha02 ha03 ha04
            pm01 pm02 pm03 pm04
            pgs01 pgs02 pgs03 pgs04
            pbts01 pbts02 pbts03 pbts04
            stre01 stre02 stre03 stre04 stre05
            emb01 emb02 emb03 emb04 emb05
            sstur01 sstur02 sstur03
            sstafr01 sstafr02 sstafr03
            ae01 ae02
            si01 si02 si03
            coh01 coh02 coh03 coh04 coh05 coh06 coh07
            ex01 ex02 ex03
            conr01 conr02 conr03 conr04 conr05 conr06;
        MISSING ARE ALL (-99);
ANALYSIS: TYPE = RANDOM;
        ESTIMATOR IS ML;
        ALGORITHM=INTEGRATION;
MODEL:
    HOPE BY hp01 hp02 hp03 hp04
        ha01 ha02 ha03 ha04;
    CURIOEXP BY stre01 stre02 stre03 stre04 stre05
            emb01 emb02 emb03 emb04 emb05;
    PM BY pm01 pm02 pm03 pm04;
    PGS BY pgs01 pgs02 pgs03 pgs04;
    PBTS BY pbts01 pbts02 pbts03 pbts04;
    INTRA BY HOPE CURIOEXP PM PGS PBTS;
     SSTUR BY sstur01 sstur02 sstur03;
     STAFAE BY sstafr01 sstafr02 sstafr03 ae01 ae02;
     SI BY si01 si02 si03;
     COHEX BY coh01 coh02 coh03 coh04 coh05 coh06  coh07 ex01 ex02 ex03;
```

CON BY conr01 conr02 conr03 conr04 conr05 conr06;

INTER BY SSTUR STAFAE SI COHEX CON;

FAC1 BY idcm01 idcm02 idcm03 idcm04 idcm05;

FAC2 BY ideb06 ideb07 ideb08 ideb09 ideb10;

FAC3 BY idic16 idic17 idic18 idic19 idic20 ideb11 ;

FAC4 BY idre13 idre14 idre15;

DIDS BY FAC1 FAC2 FAC3 FAC4;

DIDS ON INTRA INTER;

IRAxIER | INTRA XWITH INTER;

DIDS ON IRAxIER;

OUTPUT: SAMPSTAT STDYX TECH4 TECH1 TECH8 MODINDICES;

PLOT: TYPE=PLOT3;

Step 1 Warning: The standard errors of the model parameter estimates may not be trustworthy

for some parameters due to a non-positive definite first-order derivative product matrix. This

may be due to the starting values but may also be an indication of model nonidentification. The

condition number is -0.915d-18. Problem involving the following parameter: parameter 240,

INTER with INTRA.

Note that the number of parameters is greater than the sample size.

Step 2: Syntax for Creating factor scores

TITLE: Creating all factor scores;
DATA: FILE IS SEMinMPlus_data.csv;
VARIABLE: NAMES ARE idcm01 idcm02 idcm03 idcm04 idcm05

idcb06 ideb07 ideb08 ideb09 ideb10 ideb11

idre12 idre13 idre14 idre15

idic16 idic17 idic18 idic19 idic20

ided21 ided22 ided23 ided24 ided25

hp01 hp02 hp03 hp04

ha01 ha02 ha03 ha04

pm01 pm02 pm03 pm04

pgs01 pgs02 pgs03 pgs04

pbts01 pbts02 pbts03 pbts04

stre01 stre02 stre03 stre04 stre05

emb01 emb02 emb03 emb04 emb05

sstur01 sstur02 sstur03

sstafr01 sstafr02 sstafr03

ae01 ae02 ae03

sva01 sva02 sva03

si01 si02 si03

coh01 coh02 coh03 coh04 coh05 coh06 coh07

ex01 ex02 ex03

conr01 conr02 conr03 conr04 conr05 conr06;

USEVARIABLES ARE idcm01 idcm02 idcm03 idcm04 idcm05

idcb06 idcb07 idcb08 idcb09 idcb10 idcb11

idre13 idre14 idre15

idic16 idic17 idic18 idic19 idic20

ided21 ided22 ided23 ided24 ided25

hp01 hp02 hp03 hp04

ha01 ha02 ha03 ha04

pm01 pm02 pm03 pm04

pgs01 pgs02 pgs03 pgs04

pbts01 pbts02 pbts03 pbts04

stre01 stre02 stre03 stre04 stre05

emb01 emb02 emb03 emb04 emb05

sstur01 sstur02 sstur03

sstafr01 sstafr02 sstafr03

ae01 ae02

si01 si02 si03

coh01 coh02 coh03 coh04 coh05 coh06 coh07

ex01 ex02 ex03

conr01 conr02 conr03 conr04 conr05 conr06;

```
          MISSING ARE ALL (-99);
ANALYSIS: TYPE = General;
          ESTIMATOR IS MLR;
MODEL:
     HOPE BY hp01 hp02 hp03 hp04
          ha01 ha02 ha03 ha04;
     CURIOEXP BY stre01 stre02 stre03 stre04 stre05
              emb01 emb02 emb03 emb04 emb05;
     PM BY pm01 pm02 pm03 pm04;
     PGS BY pgs01 pgs02 pgs03 pgs04;
     PBTS BY pbts01 pbts02 pbts03 pbts04;
      SSTUR BY sstur01 sstur02 sstur03;
      STAFAE BY sstafr01 sstafr02 sstafr03 ae01 ae02;
      SI BY si01 si02 si03;
      COHEX BY coh01 coh02 coh03 coh04  coh05 coh06   coh07 ex01 ex02 ex03;
      CON BY conr01 conr02 conr03 conr04 conr05 conr06;
       IDFAC1 BY idcm01 idcm02 idcm03 idcm04 idcm05;
       IDFAC2 BY ideb06 ideb07 ideb08 ideb09 ideb10;
       IDFAC3 BY idic16 idic17 idic18 idic19 idic20 ideb11 ;
       IDFAC4 BY idre13 idre14 idre15;
       IDFAC5 BY ided21 ided22 ided23 ided24 ided25;
OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;
PLOT: TYPE=PLOT3;
SAVEDATA: File is Allfactors_measured;
          Format is Free;
          Save=fscores;
```

Step 3: Syntax for SEM on Figure 4 (variables under Intrapersonal aspects, Interpersonal aspects, and Identity development as measured) without the interaction

TITLE: DIDS on INTRA INTER without IDFAC5;

DATA: FILE IS Allfactors_measured;

VARIABLE: NAMES ARE IDCM01   IDCM02   IDCM03   IDCM04   IDCM05

  IDEB06   IDEB07   IDEB08   IDEB09   IDEB10   IDEB11
  IDRE13   IDRE14   IDRE15
  IDIC16   IDIC17   IDIC18   IDIC19   IDIC20
  IDED21   IDED22   IDED23   IDED24   IDED25
  HP01   HP02   HP03   HP04   HA01   HA02   HA03   HA04
  PM01   PM02   PM03   PM04   PGS01   PGS02   PGS03   PGS04
  PBTS01   PBTS02   PBTS03   PBTS04
  STRE01   STRE02   STRE03   STRE04   STRE05   EMB01   EMB02   EMB03   EMB04
  EMB05   SSTUR01   SSTUR02   SSTUR03   SSTAFR01   SSTAFR02   SSTAFR03
  AE01   AE02   SI01   SI02   SI03   COH01   COH02   COH03   COH04   COH05
  COH06   COH07   EX01   EX02   EX03   CONR01   CONR02   CONR03   CONR04
  CONR05   CONR06   HOPE   HOPE_SE   CURIOEXP   CURIOEXP_SE
  PM   PM_SE   PGS   PGS_SE   PBTS   PBTS_SE   SSTUR   SSTUR_SE
  STAFAE   STAFAE_SE   SI   SI_SE   COHEX   COHEX_SE   CON   CON_SE
  IDFAC1   IDFAC1_SE   IDFAC2   IDFAC2_SE   IDFAC3   IDFAC3_SE
  IDFAC4   IDFAC4_SE   IDFAC5
  IDFAC5_SE;

USEVARIABLES ARE HOPE

  CURIOEXP
  PM
  PGS
  PBTS
  SSTUR
  STAFAE
  SI
  COHEX
  CON
  IDFAC1
  IDFAC2
  IDFAC3
  IDFAC4;

MISSING ARE ALL (-99);

ANALYSIS: TYPE = General;

        ESTIMATOR IS MLR;

        STARTS = 50;

        ITERATIONS = 1000;

        CONVERGENCE = .0005;

MODEL:

    INTRA BY HOPE CURIOEXP PM PGS PBTS;

    INTER BY SSTUR STAFAE SI COHEX CON;

    DIDS BY IDFAC1 IDFAC2 IDFAC3 IDFAC4;

     DIDS ON INTRA INTER;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;

Table P1

Standardized Coefficients for Structural Equation Modeling without interaction

		Estimate	S.E.	Est./S.E.	p-value
INTRA	BY				
HOPE		0.81	0.03	26.45	0.000
CURIOEXP		0.52	0.06	8.61	0.000
PM		0.87	0.03	32.93	0.000
PGS		0.75	0.03	21.92	0.000
PBTS		0.36	0.07	5.45	0.000
INTER	BY				
SSTUR		0.70	0.06	12.86	0.000
STAFAE		0.81	0.04	18.53	0.000
SI		0.75	0.04	16.94	0.000
COHEX		0.46	0.09	5.17	0.000
CON		0.30	0.09	3.14	0.002
DIDS	BY				
IDFAC1		0.82	0.03	27.11	0.000
IDFAC2		-0.14	0.07	-2.11	0.035
IDFAC3		1.01	0.02	59.42	0.000
IDFAC4		-0.64	0.05	-13.27	0.000
DIDS	ON				
INTRA		0.91	0.04	25.94	0.000
INTER		-0.13	0.06	-2.31	0.021
INTER	WITH				
INTRA		0.35	0.09	3.87	0.000
Intercepts					
HOPE		0.00	0.07	0.00	1.000
CURIOEXP		0.00	0.07	0.00	0.999
PM		0.00	0.07	0.00	1.000
PGS		0.00	0.07	0.00	1.000
PBTS		0.00	0.07	0.00	1.000
SSTUR		0.00	0.07	0.00	1.000
STAFAE		0.00	0.07	0.00	1.000
SI		0.00	0.07	0.00	1.000
COHEX		0.00	0.07	0.00	1.000

	Estimate	S.E.	Est./S.E.	p-value
CON	0.00	0.07	0.00	1.000
IDFAC1	0.00	0.07	0.00	1.000
IDFAC2	0.00	0.07	0.00	0.999
IDFAC3	0.00	0.07	0.00	1.000
IDFAC4	0.00	0.07	0.00	1.000

Variances				
INTRA	1.00	0.00	999.00	999.000
INTER	1.00	0.00	999.00	999.000

Residual	Variances			
HOPE	0.35	0.05	7.19	0.000
CURIOEXP	0.73	0.06	11.59	0.000
PM	0.25	0.05	5.42	0.000
PGS	0.44	0.05	8.51	0.000
PBTS	0.87	0.05	18.88	0.000
SSTUR	0.51	0.08	6.56	0.000
STAFAE	0.34	0.07	4.75	0.000
SI	0.44	0.07	6.77	0.000
COHEX	0.79	0.08	9.49	0.000
CON	0.91	0.06	16.46	0.000
IDFAC1	0.33	0.05	6.73	0.000
IDFAC2	0.98	0.02	54.51	0.000
IDFAC3	-0.01	999.00	999.00	999.000
IDFAC4	0.60	0.06	9.79	0.000
DIDS	0.25	0.04	5.57	0.000

Table P2

R-squares for Structural Equation Modeling Without Interaction

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
HOPE	0.65	0.05	13.23	0.000
CURIOEXP	0.27	0.06	4.30	0.000
PM	0.75	0.05	16.46	0.000
PGS	0.56	0.05	10.96	0.000
PBTS	0.13	0.05	2.72	0.006
SSTUR	0.50	0.08	6.43	0.000
STAFAE	0.66	0.07	9.27	0.000
SI	0.56	0.07	8.47	0.000
COHEX	0.21	0.08	2.59	0.010
CON	0.09	0.06	1.57	0.117
IDFAC1	0.67	0.05	13.56	0.000
IDFAC2	0.02	0.02	1.05	0.292
IDFAC3	Undefined	1.01		
IDFAC4	0.40	0.06	6.64	0.000

Latent Variable	Estimate	S.E.	Est./S.E.	p-value
DIDS	0.75	0.04	17.12	0.000

Table P3

Modification Indices for Structural Equation Modeling Without Interaction

			M.I.	E.P.C.	Std E.P.C.	StdYX E.P.C.
BY	Statements					
INTRA	BY	COHEX	22.944	0.214	0.118	0.343
INTRA	BY	IDFAC1	24.799	-1.067	-0.587	-0.688
INTRA	BY	IDFAC3	36.183	1.008	0.555	1.124
INTER	BY	PGS	14.481	-0.246	-0.163	-0.230
DIDS	BY	CURIOEXP	17.851	-0.305	-0.213	-0.600
DIDS	BY	PM	13.359	0.582	0.406	0.497
DIDS	BY	COHEX	26.412	0.162	0.113	0.329
WITH	Statements					
CURIOEXP	WITH	HOPE	25.472	0.049	0.049	0.399
PM	WITH	HOPE	10.590	-0.063	-0.063	-0.381
STAFAE	WITH	SSTUR	21.217	0.249	0.249	0.769
SI	WITH	HOPE	14.060	-0.082	-0.082	-0.323
SI	WITH	PM	16.687	0.096	0.096	0.380
COHEX	WITH	HOPE	12.589	0.034	0.034	0.275
COHEX	WITH	SSTUR	13.482	-0.062	-0.062	-0.306
CON	WITH	HOPE	17.343	0.059	0.059	0.317
CON	WITH	COHEX	105.219	0.103	0.103	0.738
IDFAC1	WITH	HOPE	13.006	-0.056	-0.056	-0.280
IDFAC1	WITH	PBTS	14.689	-0.092	-0.092	-0.264
IDFAC1	WITH	COHEX	14.833	-0.040	-0.040	-0.269
IDFAC2	WITH	HOPE	18.811	0.070	0.070	0.327
IDFAC3	WITH	COHEX	25.824	0.022	0.022	999.000
IDFAC4	WITH	PM	24.723	-0.117	-0.117	-0.411
IDFAC4	WITH	IDFAC1	21.240	-0.122	-0.122	-0.356
IDFAC4	WITH	IDFAC2	67.692	0.207	0.207	0.566
IDFAC4	WITH	IDFAC3	20.561	0.071	0.071	999.000

Table P4

Correlation for Latent Factors in Structural Equation Modeling Without Interaction

	INTRA	INTER	DIDS
INTRA	1.00		
INTER	0.35	1.00	
DIDS	0.86	0.18	1.00

Step 4: Syntax for SEM on Figure 4 (variables under Intrapersonal aspects, Interpersonal aspects, and Identity development as measured) with the interaction

TITLE: Creating all factor scores;

DATA: FILE IS Allfactors_measured;

VARIABLE: NAMES ARE IDCM01   IDCM02   IDCM03   IDCM04   IDCM05

  IDEB06   IDEB07   IDEB08   IDEB09   IDEB10   IDEB11
  IDRE13   IDRE14   IDRE15
  IDIC16   IDIC17   IDIC18   IDIC19   IDIC20
  IDED21   IDED22   IDED23   IDED24   IDED25
  HP01   HP02   HP03   HP04   HA01   HA02   HA03   HA04
  PM01   PM02   PM03   PM04   PGS01   PGS02   PGS03   PGS04
  PBTS01   PBTS02   PBTS03   PBTS04
  STRE01   STRE02   STRE03   STRE04   STRE05   EMB01   EMB02   EMB03   EMB04
  EMB05   SSTUR01   SSTUR02   SSTUR03   SSTAFR01   SSTAFR02   SSTAFR03
  AE01   AE02   SI01   SI02   SI03   COH01   COH02   COH03   COH04   COH05
  COH06   COH07   EX01   EX02   EX03   CONR01   CONR02   CONR03   CONR04
  CONR05   CONR06   HOPE   HOPE_SE   CURIOEXP   CURIOEXP_SE
  PM   PM_SE   PGS   PGS_SE   PBTS   PBTS_SE   SSTUR   SSTUR_SE
  STAFAE   STAFAE_SE   SI   SI_SE   COHEX   COHEX_SE   CON   CON_SE
  IDFAC1   IDFAC1_SE   IDFAC2   IDFAC2_SE   IDFAC3   IDFAC3_SE
  IDFAC4   IDFAC4_SE   IDFAC5
  IDFAC5_SE;

USEVARIABLES ARE HOPE
  CURIOEXP
  PM
  PGS
  PBTS
  SSTUR
  STAFAE
  SI
  COHEX
  CON
  IDFAC1
  IDFAC2
  IDFAC3
  IDFAC4
  IDFAC5;
      MISSING ARE ALL (-99);

ANALYSIS: TYPE = RANDOM;

```
    ESTIMATOR IS MLR;

        ALGORITHM=INTEGRATION;

MODEL:

    INTRA BY HOPE CURIOEXP PM PGS PBTS;

    INTER BY SSTUR STAFAE SI COHEX CON;

    DIDS BY IDFAC1 IDFAC2 IDFAC3 IDFAC4 IDFAC5;

     DIDS ON INTRA INTER;

     IRAxIER | INTRA XWITH INTER;

     DIDS ON IRAxIER;

OUTPUT: SAMPSTAT STDYX TECH4 MODINDICES;

PLOT: TYPE=PLOT3;
```

Table P5

Standardized Coefficients for Structural Equation Modeling with Interaction

		Estimate	S.E.	Est./S.E.	p-value
INTRA	BY				
HOPE		0.81	0.03	25.61	0.000
CURIOEXP		0.53	0.06	8.61	0.000
PM		0.86	0.03	28.87	0.000
PGS		0.76	0.03	22.11	0.000
PBTS		0.36	0.07	5.49	0.000
INTER	BY				
SSTUR		0.21	0.12	1.78	0.075
STAFAE		0.35	0.11	3.05	0.002
SI		0.39	0.10	4.06	0.000
COHEX		0.98	0.08	12.86	0.000
CON		0.72	0.05	14.47	0.000
DIDS	BY				
IDFAC1		0.81	0.03	26.06	0.000
IDFAC2		-0.12	0.06	-1.94	0.052
IDFAC3		1.02	0.02	53.23	0.000
IDFAC4		-0.62	0.05	-11.70	0.000
DIDS	ON				
INTRA		0.83	0.05	18.03	0.000
INTER		0.05	0.07	0.69	0.493
IRAXIER		0.02	0.06	0.26	0.793
INTER	WITH				
INTRA		0.42	0.07	5.69	0.000

Intercepts				
HOPE	0.00	0.07	0.01	0.995
CURIOEXP	0.00	0.07	0.01	0.996
PM	0.00	0.07	0.01	0.995
PGS	0.00	0.07	0.01	0.996
PBTS	0.00	0.07	0.00	0.998
SSTUR	0.00	0.07	0.00	0.998
STAFAE	0.00	0.07	0.00	0.997
SI	0.00	0.07	0.00	0.997
COHEX	0.00	0.07	0.01	0.991
CON	0.00	0.07	0.01	0.994

	Estimate	S.E.	Est./S.E.	p-value
IDFAC1	-0.01	0.07	-0.07	0.945
IDFAC2	0.00	0.07	0.01	0.991
IDFAC3	-0.01	0.07	-0.08	0.934
IDFAC4	0.00	0.07	0.05	0.958
Variances				
INTRA	1.00	0.00	999.00	999.000
INTER	1.00	0.00	999.00	999.000
Residual	Variances			
HOPE	0.34	0.05	6.61	0.000
CURIOEXP	0.72	0.06	11.30	0.000
PM	0.27	0.05	5.28	0.000
PGS	0.42	0.05	8.08	0.000
PBTS	0.87	0.05	18.71	0.000
SSTUR	0.96	0.05	18.87	0.000
STAFAE	0.88	0.08	11.14	0.000
SI	0.85	0.07	11.67	0.000
COHEX	0.04	0.15	0.24	0.809
CON	0.48	0.07	6.77	0.000
IDFAC1	0.35	0.05	7.00	0.000
IDFAC2	0.99	0.02	61.71	0.000
IDFAC3	-0.04	999.00	999.00	999.000
IDFAC4	0.62	0.07	9.62	0.000
DIDS	0.28	0.05	6.12	0.000

Table P6

R-squares for Structural Equation Modeling with Interaction

Observed Variable	Estimate	S.E.	Est./S.E.	p-value
HOPE	0.66	0.05	12.80	0.000
CURIOEXP	0.28	0.06	4.31	0.000
PM	0.73	0.05	14.44	0.000
PGS	0.58	0.05	11.05	0.000
PBTS	0.13	0.05	2.74	0.006
SSTUR	0.05	0.05	0.89	0.374
STAFAE	0.12	0.08	1.53	0.127
SI	0.15	0.07	2.03	0.043
COHEX	0.96	0.15	6.43	0.000
CON	0.52	0.07	7.24	0.000
IDFAC1	0.65	0.05	13.03	0.000
IDFAC2	0.02	0.02	0.97	0.331
IDFAC3	Undefined	1.04		
IDFAC4	0.38	0.07	5.85	0.000

Latent Variable	Estimate	S.E.	Est./S.E.	p-value
DIDS	0.72	0.05	15.99	0.000

Table P7

Correlation for Structural Equation Modeling with Interaction

	INTRA	INTER	DIDS	IRAXIER
INTRA	1.000			
INTER	0.420	1.000		
DIDS	0.849	0.397	1.000	
IRAXIER	0.000	0.000	0.016	1.000

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<u>**Education**</u>

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2018   PG Diploma in Education of the Gifted: Methods and Strategies
                      Jnana Prabodhini's Institute of Psychology,
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2017   M.A. Psychology
                      Banasthali University, Rajasthan, India

2015   B.Sc. (Hons.) Psychology
                      Gokhale Memorial Girls' College,
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<u>**Professional Experience**</u>

August 2022-   Administrative Editorial Assistant
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August 2021-   Graduate Assistant (Research)
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