

The Effects of Online Learning on School Connectedness and School Belonging and
its Relationship to At-Risk Adolescent Subjective Well-Being During COVID-19

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DEFINITION OF TERMS

Alternate Education Programs: A NY State educational program providing comprehensive secondary curriculum in a nontraditional learner-centered environment responsive to the unique needs of at-risk students (NYSED).

At Risk Students: Students and school-age youth who are under-performing academically in typical general education settings, may have learning disabilities, emotional or behavioral problems, resulting in academic and social challenges requiring temporary or ongoing interventions to succeed (Kochhar-Bryante & White, 2005).

Belonging: The basic human drive to form and maintain meaningful and positive relationships with others that are reciprocated (Williams & Galliher, 2006).

School Belonging: School belonging is defined as the innate drive to feel personally accepted, respected, included, and supported by others within the school social environment (Goodenow, 1993).

Connectedness: Refers to an individual's subjective awareness of being in a relationship with the social environment and occurs when a person is actively involved with another person, object, group or environment, (Hagerty et al, 1993).

School Connectedness: School connectedness is defined as the subjective awareness of being in a relationship with the school environment in which adults and peers genuinely care for their well-being as learners and as individuals (Resnick et al., 1997; CDC, 2009).

In-Person Learning: relies on teacher led face-to-face instruction and delivery of most curricula to students in a lecture format inside a school building.

Online Learning: instructor-led electronically supported learning that relies on the internet and a learning management system for instructional delivery, that connect students with educational material, as well as instructors and sometimes other students. Students work remotely with an online teacher who delivers the curriculum with no required visits to the physical school or campus.

Subjective Well-Being (SWB): represents an individual's appraisal of one's own level of happiness and overall life satisfaction. By examining one's affective well-being, which refers to the presence of pleasant affect versus the absence of unpleasant affect, and one's cognitive well-being which refers to one's evaluation of life overall (APA).

ABSTRACT

This study examines the impact of instructional modality and the relationship between school connectedness, school belonging and adolescent subjective well-being in an alternative high school setting. We seek to determine if instructional modality in a high school environment has a negative or positive effect on school connectedness and school belonging and how that mediates subjective well-being. The importance of assessing the effects of instructional modality on subjective well-being from the perspective of the adolescents and tailoring suitable programs, supports and interventions to address mental health will be addressed.

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CHAPTER 1

INTRODUCTION

On March 11, 2020, the World Health Organization declared COVID-19 a global pandemic. To contain the spread of the disease, the United States authorized unprecedented social containment measures. These measures required social distancing and the temporary physical closure of schools. This situation challenged the education system across the world and forced educators to shift to an online mode of teaching overnight. As a result, students and educators across all levels of education had to rapidly adapt. Online learning is contrasted with traditional classes taken in a brick-and-mortar school building. Online learning involves use of the internet and a learning management system for instructional delivery where students work remotely with an online teacher who delivers the curriculum. Many academic institutions that were earlier reluctant to change their traditional pedagogical approach had no option but to shift entirely to online learning. With time, knowledge and guidance from the Centers for Disease Control (CDC), some schools shifted to online learning, then returned to the physical classroom, and then shifted back online due to further surges in the rate of infection. In other cases, instruction was offered using a combination of attending online or in person. The impact of this sudden shift away from the classroom and the developments required to make online learning come about, could permanently change how education is delivered. However, the unplanned, rapid, and uncertain duration of the online approach presents challenges. Questions remain about whether the adoption of online learning will continue to persist post-pandemic, and how such a shift will impact student engagement, motivation and well-being.

According to Johnson (2008), education has both an academic side and a human side. While research has focused to a great degree on the academic side of learning (Goldstein, 1999),

the human side may be more challenging and may actually provide a more substantial foundation for both academic and collective social outcomes (Maslow, 1943). Educators need to help students develop skills that not only help them to thrive in school, but as human beings (Wilson, 2018). To meet Maslow's (1943) belongingness, self-esteem, love and safety needs, students may seek gratification from teachers or school staff. Awareness of each student's basic needs is likely to lead to the teacher's ability to help the student overcome their personal obstacles. Every step an educator makes toward contributing to these fundamental human needs will enhance a students' capacity for learning, achievement and well-being in the classroom and beyond.

According to Prati et al. (2017), school is an important environment that has a major influence on students' well-being. There is growing interest in positive aspects of adolescents psychological functioning, specifically subjective well-being (SWB) and its preventative role in behavioral and emotional problems in academic settings (Bartels et al., 2013). SWB is negatively correlated to both internalizing issues like mood disorders and depression (Proctor et al., 2009) as well as externalizing issues including violence, aggression and substance use (Valois et al., 2001). Russell & Carroll (1999) describe this as the dual-factor mental health model (Greenspoon & Saklofske, 2001), and until only recently have associations between SWB been correlated to environmental factors.

From this stance, connectedness and belonging are considered environmental-level protective factors (Arslan, 2018) and important social resources in coping with life experiences (Iwaniec et al., 2006). Previous studies suggest that connectedness and belonging play a protective role in an individual's mental health and well-being (Arslan, 2018; Iwaniec et al., 2006; Lee, 2010), and a mediating role in the process of coping with adversity (Duru, 2008; Lee et al., 2008). Students' experiences at school are one of the most influential factors in their

socialization and affects youth of all ages. Social isolation or lack of school connectedness and school belonging may exact a higher toll for high school students because friends, teachers, counselors and school staff play a far more important role in their lives (Repetto et al., 2014). At-risk students, that is students who require temporary or ongoing interventions to succeed academically, often convey disconnection from the school environment due to emotional or behavioral problems, truancy, poor academic performance, and profound disappointments by adults over the course of their lives (Richardson, 2014). These school environments can often be places of struggle for at-risk youth.

Schools have traditionally provided in-person learning environments that afford students natural opportunities to connect (Murphy & Rodríguez-Manzanares, 2008). In-person learning relies on face-to-face teachers to deliver most of their curricula to their students in a lecture format inside a school building. In these classrooms, education is a social process with students learning to deal with one another, to deal with issues, frustrations, and adults in ways that are acceptable. The lack of face-to-face interaction in the online learning classroom led to the adoption of the term “social presence” which is the non-verbal interactions and visual cues that promote closeness in a face-to-face setting. (Short, Williams, & Christie, in Rourke et al., 2001). Studies of social presence in online learning at the post-secondary level indicate that it may increase the satisfaction of students’ online experience (Newberry, 2001), leading to greater emotional satisfaction through a sense of well-being in the classroom environment (Rourke et al., 2001). Shin (2002) noted that social presence also refers to “connectedness and the belief that a reciprocal relationship exists between two or more parties” (p. 123).

Due to the majority of high school students currently enrolled in online courses as a result of COVID-19, the physical separation of students, teachers and peers in this online medium has

changed the nature of connectedness and belonging in schools (Watson et al., 2011). Although research in K-12 online learning environments remains lean, face-to-face contact has been shown to significantly impact student success (Rivkin et al., 2005). Much of the research comparing the effects of online education with in-person schooling reports negative effects on outcomes due to the lack of human interaction (Hawkins et al., 2011; Murphy & Rodríguez-Manzanares, 2008; Picciano et al., 2010). A study by Hawkins et al. (2011) reveals that the physical separation between online teachers and students is a major barrier to forming close relationships, particularly in K-12 where teachers and staff are held to a higher standard because of their roles as “quasi-parents” (Borup et al., 2013, pg. 796).

Schools that educate at-risk students offer intensive psychosocial support provided by helpful and involved teachers and administrators (Dupper, 2006; Raywid, 1995). Repetto et al. (2010) reports that while all students require attention, K-12 students tend to be less autonomous than college aged students and have more difficulty succeeding online (Cavanaugh et al., 2004). While research by Noddings (1988) indicates that an online social presence can be established, Murphy and Rodríguez-Manzanares (2008) go on to report that these social interactions are unlikely without planning and promotion.

Despite millions of high school students currently enrolled in online learning due to COVID-19, little research has examined the critical social-emotional components of successful online education, including the impact of online learning on school connectedness and school belonging as it relates to at-risk adolescent subjective well-being (SWB) and has seldom been investigated with established measures for both constructs. This limited research into the psychosocial effects of K-12 online learning has been attributed to the type of research that often precedes experimentation which has focused on delivery descriptions, academic effectiveness

and performance comparisons between learning delivery types (Barbour, 2010; Cavanaugh et al., 2009; Rice, 2006). Additionally, adolescent SWB has become an explicit educational objective in many educational systems, and it is considered that youths' SWB should represent a primary outcome of public schooling. In terms of social policy, this has resulted in supports and services aimed at improving adolescents' lives, which are not based on direct consultation but on adults' and experts' views of what is best for them (Alderson, 1995 as cited in Mullender et al., 2002). There is now a consensus that it is not possible to determine adolescents' SWB without asking them about it directly (Mullender et al., 2002; Fattore et al., 2017; Casas et al., 2013). Since results indicate that school connectedness and school belonging are positively associated with an individual's well-being and are critical social factors in adolescents, this study intends to fill in the necessary gaps to better understand the effects of online learning on school connectedness and school belonging with respect to SWB from the perspective of at-risk high school students.

Connectedness and Belonging

The need to belong, feel connected and build interpersonal relationships with others has long been established in psychological literature (Baumeister & Leary, 1995; Maslow, 1954, Bowlby, 1979). Attachment theory posits that the development of a strong foundation of key relationships is what paves the way for individual growth and exploration (Foster et al., 2017; Bernat & Resnick, 2009). The concept of connectedness has been used to describe levels of connections and relationships in various contexts related to development including social support (Cobb, 1976; Cohen & Wills, 1985), social integration (Durkheim, 1987), and social connection (Barber & Schluterman, 2008).

The need for connectedness can be recognized in Adler's concept of social interest (Ansbacher, 1991), where he refers to the individual's relationship and attitude towards society or

social connectedness as a determinant for positive outcomes in life and mental health. In Self-Determination Theory (Ryan & Deci, 1995), the pursuit of connectedness is one of three motivating principles that underscore the fundamental need for development of social relationships (Ryan & Deci, 2000; Smith & Mackie, 2000; Vansteenkiste et al., 2017). While connectedness refers to an individual's subjective awareness of being in a relationship with the social environment (Duru & Poyrazli, 2007), belonging refers to the individual's innate sense to be included, valued, and welcomed in that environment (Duru, 2015). The "belonging hypothesis" (Baumesieter & Leary, 1995) maintains that individuals seek relationships from family, friends, peers and other sources in order to facilitate a sense of attachment to others.

According to Bronfenbrenner's socio-ecological model (1986), individuals spend their lives continuously developing within systems of interconnected relationships affected by their surrounding environment. These dynamic systems are constantly changing and affect people in multifarious ways. When situations, circumstances or settings change, each individual's microsystem changes. Microsystems are the individuals, groups and institutions in a child's immediate surroundings that directly influence development including family, peer group and school setting. These shifts, known as ecological transitions, become important turning points in development. It is not only the key life contexts, but also the links between these contexts that are important in explaining individual outcomes. Taken together, connectedness and belonging may serve as community-level resilience factors in reducing negative outcomes and play a leading role in the development of positive SWB (Arslan, 2015).

Studies have focused on the role of connectedness and belonging as critical ingredients related to student well-being that can later predict mental health outcomes in adolescents (Bond et al., 2007; Wagle et al., 2018). The terms connectedness and belonging have been variously

defined by scholars and researchers and in many cases used interchangeably (Castro-Kemp et al., 2020; Christenson et al., 2012; Korpershoek et al., 2020; Resnick et al., 1997), creating a confusing spectrum of definitions despite similar general meanings. In this study we view belonging as a fundamental human motivation and define school belonging as the innate drive to feel personally accepted, respected, included, and supported by others in the school environment (Goodenow, 1993, p. 80). Connectedness relates to subjective awareness and for purposes of this study we define school connectedness as the subjective awareness of being in a relationship with the school environment in which adults and peers genuinely care for their well-being as learners and as individuals (Resnick et al., 1997; CDC, 2009). From this perspective, connectedness represents a global sense of the self in relation to the social world while belongingness is an innate human drive (Koepershok et al., 2020).

Connectedness

Connectedness refers to an individual's subjective awareness of being in a relationship with the social environment and occurs when a person is actively involved with another person, object, group or environment, (Hagerty et al., 1993, p. 293). Connectedness can influence one's emotions, cognitions, perceptions, and behaviors in relation to the social world. The literature on connectedness has increased over the past decade and reflects a growing recognition of connectedness as an important concept in adolescent research (Dang, 2014). Although studies of similar concepts, such as a "sense of acceptance," date back to the early 1990s, a growing interest in connectedness followed Resnick et al.'s (1997) influential paper, which found school connectedness to be both a protective factor among adolescents and one of the most powerful predictors of adolescent maladjustment. Feeling connected to essential life contexts helps adolescents deal with change by providing stability and a sense of acceptance (Crespo et al.,

2013). It is important to note that connectedness can exist between individuals or between individuals and social institutions, which includes schools. More recently, research on adolescence has begun to concentrate on how youth's connectedness to schools can account for positive aspects of their development (Jose et al., 2012).

School Connectedness

School connectedness is the extent to which students feel part of their school community (Karcher et al., 2006). It is a multitudinous construct that includes interpersonal relationships (e.g., classmates, teachers), relationships to school (e.g., feeling a part of one's school), attitudes toward school (e.g., doing well in school), and academic engagement (e.g., grades; Barber & Schluterman 2008; Libbey, 2004). Social Control Theory (Hirschi, 1969) suggests that forming strong bonds with social institutions, like schools, encourages youth to adopt the conventional norms of society that are considered to be incompatible with social deviance. According to this theory, school connectedness is expected to protect adolescents from engaging in a variety of risky behaviors (Meisel & Colder, 2017). School connectedness has also been found to serve as a significant protective factor against negative behavioral outcomes in adolescents, including interpersonal violence, substance use, depression, anxiety, sexual activity and school dropout (Henrich et al., 2005; Ozer & Weinstein, 2004; Gallus et al., 2015). In a systematic review examining emotional health, Kidger et al. (2012), demonstrated that school connectedness, and additional elements of the school environment (i.e., happiness with school, feeling safe at school, feeling close to people at school) has an inverse relationship to negative emotional health and suicidal behavior. In another systematic review including 18 studies, Markham et al. (2010), reveals that adolescent school connectedness protects against risky sexual activity. In light of

these findings, strengthening adolescent connectedness in schools should reduce risk, promote positive outcomes and be viewed as a promotive factor in adolescent health and development.

Although many researchers and theorists have increasingly used the construct of school connectedness in models and studies, the construct has been difficult to consistently operationalize (Jose et al., 2012). The majority of definitions of adolescent connectedness usually infer through measurement, the affective psychological states or the cognitive psychological states that play out in social contexts (Barber & Schluterman, 2008). Affective states include arousal, motivation and valence which refers to the subjective spectrum of positive to negative experiences an individual may have (Harmon et al., 2011). In contrast, cognitive psychological states refer to a more rational appraisal of being and includes perception, reasoning, thinking and satisfaction (Campbell et al., 1976). Definitions invoking psychological states of being include a sense of connectedness, a sense of acceptance, or a sense of community, and are usually characterized by adolescents' perceptions of the respect, care, support, or involvement shown by the school (Gallus et al., 2015; Goodenow, 1993; Whitlock, 2006). Karcher and Lee (2002) define connectedness as "one's perception of his or her own involvement in and affection for others, activities, and organizations" (p. 93).

In this study, I will focus on the concept of connectedness as conceived by Barber and Schluterman (2008), who defined it as "a tie between the adolescent and significant other persons, groups or institutions that provides a sense of acceptance, an absence of aloneness, a perceived bond and is produced by different levels of consistent, positive, predictable, supportive, interaction" (p.213). The core notion is that a history of positive interactions with specific social partners or institutions leads adolescents to construct generalized expectations about the nature of their own self in relationships (Furrer & Skinner, 2003), and over time can

have significant influence on an adolescent's mental health and developmental outcomes including self-esteem, self-concept, self-efficacy, identity and belief in the future (Jose et al., 2012; Lerner et al., 2000).

Since most adolescents spend the major part of their day in school settings, their identity and social sense of self is largely influenced by opportunities to interact with peers and adults within the school environment (Catalano et al., 2004; Feldman & Matjasko, 2005), providing a context through which positive wellbeing can be promoted (Murray & Greenberg, 2000). School has been cited as the strongest social influence, next to family (Feldman & Matjasko, 2005). Adolescents who are more bonded to school through activities, positive relationships with teachers and school staff, and developing friendships may feel more supported (Murray & Greenberg, 2000) and thus develop a better sense of who they are in that setting. While the available research suggests that having connections to multiple settings (e.g., family, religion, school) is more strongly associated with positive wellbeing (e.g., Jose et al., 2012), findings suggest that school connectedness alone benefits adolescents' wellbeing (Rose et al., 2019).

School Connectedness for At-Risk Youth

If school connectedness has the potential to buffer youth from the consequences of negative risk factors in their lives, then school connectedness should reveal positive effects in at-risk youth as well. In a longitudinal study by Loukas et al. (2010), school connectedness was found to be a protective factor for youth who had lower connectedness to parents, family, community, and peers, suggesting that youth disconnected in some social contexts may be significantly impacted by connections to school. The impact of just one close and supportive relationship with a non-parental adult for at-risk youth at school, indicated lower aggression and suicide risk (Ahrens et al., 2011), while youth suicidal ideation was negatively related to school

connectedness (Logan et al., 2011). While low levels of school connectedness have been linked to both externalizing and internalizing mental health problems (Hymel et al., 1990), experiencing a sense of school connection may serve as a protective factor against negative behaviors often observed in at-risk adolescents who displayed fewer externalizing behaviors including substance use, interpersonal violence (Brookmeyer et al., 2006; Henrich et al., 2005; Ozer & Weinstein, 2004), risky sexual behaviors (Catalano et al., 2004; Markham et al., 2010) and school dropout (Crespo et al., 2013).

Findings support the notion that connectedness is positively associated with life satisfaction, positive affect and higher levels of subjective well-being in adolescents (Diener & Seligman, 2002; Duru, 2015; Satıcı & Tekin, 2016; Yıldız, 2013). Considering the literature demonstrating this association above, one purpose of the present study will be to examine correlations between connectedness and SWB and the role of school connectedness in the relationship between instructional delivery and adolescent SWB.

Belonging

According to Diener and McGavran (2008), social relationships play a central role in human growth and well-being. Numerous studies suggest that connectedness is positively associated with SWB (Hendrickson et al., 2011; Lee et al., 2008; Malone et al., 2012; Duru, 2015), and current research conveys the impression that there is also a close association between belonging and SWB (Duru, 2015; Malone et al., 2012; Yildiz, 2013). Although connectedness and belonging are often used interchangeably in the literature, it is argued that connectedness represents a subjective sense of the self in relation to the social world while belongingness is a basic human drive (Korpershoek et al., 2020).

According to the “belongingness hypothesis,” human beings have a pervasive drive to form and maintain at least a small quantity of lasting, and significant positive relationships” (Baumeister & Leary, 1995, p. 497). Belonging is viewed as another type of social relationship, a fundamental innate human motivator that plays a role in positive development (Baumeister & Leary, 1995). The need to belong is a basic need for all individuals, highlighted by Maslow (1943), who theorized that until the fundamental need of belonging is met, other needs go unsatisfied. Belonging exists when individuals perceive themselves as being a meaningful member of the social group. Several studies suggest that belonging is strongly and positively linked with an individual’s mental health and well-being (Arslan, 2015; Baumeister & Leary, 1995; Osterman, 2000; Yildiz & Duy, 2014). According to both Baumeister and Leary (1995) and Osterman (2000), individuals reporting higher levels of belonging describe positive emotions that include joy, happiness, satisfaction, and calm. Conversely, socially excluded, rejected, or ignored individuals report negative feelings that include distress, sadness, resentment, and loneliness. Based on these findings, individuals with a higher sense of belonging should have higher levels of life satisfaction and happiness than individuals who feel excluded (Malone et al., 2012; Yildiz & Duy, 2014). Moreover, Yildiz (2013) was able to identify a positive relationship between life satisfaction and belonging, specifically in adolescents.

Like connectedness, belonging is positively associated with life satisfaction and positive affect, while negatively related to negative affect (Duru, 2015). According to Diener (2000), people experience high levels of subjective well-being when they are satisfied with life and have more pleasant and less painful experiences, (Diener & Chan, 2011). Because all individuals are

viewed as social beings and social relationships play a critical role in SWB, belonging can have a significant influence on SWB (Diener & McGavran, 2008).

School Belonging

School is a critical developmental environment for adolescents, providing opportunities for academic emotional and social development (Abubakar et al., 2016). This sense of belonging within the school environment is especially important during adolescence. At a time when adolescents start to think about who they are and want to be, adolescents are exploring features of their identity separate and distinct from parents and family. During this time, adolescents look to their friends, peers and non-family members for direction and support (Cauce, 1986). While a personal sense of belonging or membership in various social contexts tends to stabilize over the course of development, an adolescent's sense of belonging is pliable and easily influenced in both positive and negative directions.

School belonging is described as the student's innate desire to feel respected, accepted, included, and supported by others within the school social environment (Goodenow, 1993, also using the label school membership). This definition conceptualizes belonging as something that is not merely received but reciprocated as well (Whitlock, 2006). Wehlage et al. (1987) and Smerdon (2002) incorporated belonging within a broader definition of school membership using two additional interrelated dimensions, namely commitment to school and academics with the caveat that full membership only occurs when students perceive all three factors in their school environment. Belonging has also been associated with one factor within Self-Determination Theory (SDT), suggesting when basic psychological needs are met, positive outcomes occur. The need to belong is aligned with the SDT label, "need for relatedness" (Ryan & Deci, 2009), which facilitates the process of internalization. In other words, individuals tend to internalize

rules of conduct and standards of behavior from environments in which they experience a sense of belonging (Ryan & Niemiec, 2009).

Within the school environment, students are instinctually driven to develop and maintain meaningful relationships with teachers and peers, as well as the school as a whole. Numerous studies indicate that a supportive relationship with teachers and peers in school is negatively correlated with anxiety, depression, delinquency, anti-social behavior, substance use and school drop-out (Deci & Ryan, 2000; Lohmeier & Lee, 2011; Resnick et al., 1997; Shochet et al., 2006). Students lacking in a sense of belonging are likely to experience negative impacts on mental health and well-being (Baumeister & Leary, 1995). Consequently, an adolescent's sense of school belonging, or membership is related to a wide array of outcomes including academic engagement, academic achievement, motivation, mental health, behavior problems and high levels of SWB (Anderman, 2002; Goodenow & Grady, 1993; Hagborg, 1994; Sánchez et al, 2005; Shochet et al., 2011).

School Belonging for At-Risk Students

According to Farrell (1990), students struggle academically when they do not feel welcome and valued. This “belongingness” (Finn, 1989) or “school membership” (Wehlage, 1986) is considered a critical factor in school participation and retention of at-risk students. According to Wehlage et al. (1990), at-risk students who are socially isolated from other students and notably from school adults, are likely to disengage or drop out of school. Consequently, school belonging is only achieved through the reciprocal relationships between the student and others in school. Finn (1989) proposed the “Participation-Identification Model to account for drop-out rates for at-risk students. This model suggests that unless students develop a sense of belongingness to the school, feel welcomed, valued and respected by school peers, teachers and

staff, they begin to gradually disengage which can result in eventual dropping-out. Finn (1993) was able to pinpoint factors of school belonging, specifically student's perceptions of teachers support, predicted increased school engagement and participation.

The Carnegie Council Task Force on the Education of Adolescents (1989) recommended the development of supportive schools that promote “mutually respectful relationships with adults and peers fundamental for intellectual development and personal growth” (p.9). The inability or failure to achieve even a small sense of belonging or membership with at-risk students, can lead to lowered motivation, lack of engagement, declining grades, and withdrawal (Goodenow, 1993). While mainstream schools are not formally structured to promote a sense of belonging, alternate education programs for at-risk students offer a smaller and more personalized environment in which students can learn and form strong relationships with school staff and peers (Smith & Thomson, 2014). The social processes that prompt or inhibit belonging among at-risk students remain critical targets for researchers as well (Farrell, 1990). This sense of belonging or school membership influences the way students become engaged and interested in everyday school interactions and activities and is recognized as an important factor in school retention, participation and well-being for at-risk students. Based on the research linking school belonging and well-being (Arslan, 2018; Bond et al., 2007; Dowdy & Furlong, 2016; Moffa et al., 2016; Wagle et al., 2018) the current study will examine the correlation between school belonging, learning modality delivery, and SWB for at-risk adolescents.

Adolescents and Social-Emotional Change

Marked by rapid and significant growth and change, adolescence is identified as a distinct developmental stage situated between childhood and young adulthood. These changes include physical, behavioral, cognitive and emotional-social development. Researchers with the

Association of Maternal & Child Health Programs (AMCHP, 2020) suggest that adolescents undergo three primary developmental stages – early adolescence, middle adolescence and late adolescence or young adulthood. Early adolescence typically occurs between the ages of 10-14. During this period, adolescent's experience the beginning stages of puberty, with significant physical growth and where intellectual and sexual interests broaden and abstract thinking is limited. During middle adolescence ages 15-17, adolescents begin to set long term goals, and continue to develop abstract thinking and moral reasoning. This stage is marked by significant social-emotional changes with an increased desire for autonomy. Late adolescents aged 18 and over, typically experience fewer physical changes with increased cognitive growth. Adolescents in this stage are able to think more rationally, delay gratification, plan for the future and enjoy a firm sense of identity, marked by emotional stability and independence.

According to Self-Psychology Theory (Kohut, 1971), a sense of social connectedness develops early in life and extends throughout the life span. When parents fail to provide empathic responses, a child will not develop healthy self-esteem and will look to other sources, including school to gain a sense of worth and value (Baker & Baker, 1987; Lee & Robbins, 1995). As children transition into adolescence, they also transition into new social environments that affect their well-being and behavior (Telzer et al., 2015). Bronfenbrenner's (1986) ecological perspective mentioned previously, suggests that behavior and well-being develop from a complex system of dynamic interactions within and between social contexts in which adolescents interact. Due to the amount of time adolescents spend away from home, friends and teachers become facilitators of adolescent well-being and behavior (Traylor et al., 2016). Along these same lines, the social development model posits that schools and peers have direct and indirect influences on adolescent behavior. As adolescents begin to shape their

behavior, they require an environment that affords them the opportunity and the skills to attach themselves to individuals within each of their social settings, along with reinforcement for further developing and maintaining these attachments (Hawkins & Weis, 1985). These various interpersonal behaviors can draw people closer together and subsequently validate a sense of connectedness and belonging. Adolescence is a vulnerable period of transition and renegotiation for relationships and social ties, particularly with regard to school contexts (Eccles & Roeser, 2011). Thus, it is important to examine the implications of change over time in perceptions of school connections and belonging when assessing developmental outcomes. Apart from all these changes, adolescents seek mastery in dealing with feelings like excitement, worry, desperation and hopelessness, which intensify in this period of life (Satici, 2020).

At-Risk Adolescents

Public schools in the United States serve a wide range of students through diverse academic programs. Students who do not perform well in general education settings face academic and social challenges that interfere with school membership and academic success (Neild & Balfanz, 2006; Rumberger & Lim, 2008). Public schools will offer a range of targeted services and programs to help address escalating problematic behaviors including truancy, expulsion and high dropout rates. These youth are often identified as “at-risk” and are unlikely to succeed without intervention. The term "at-risk" was introduced after the article "A Nation at Risk," was published by the National Commission on Excellence in Education (1983). The article pronounced the U.S. society as being socially endangered and described at-risk students are those students in danger of academic failure (Placier, 1993). At-risk students frequently confront challenges that have been linked to maladaptive behaviors, poor psychosocial outcomes and impaired academic performance, (McKnight et al., 2002). These challenges include language

barriers, poverty, exposure to stressful life circumstances, feelings of alienation, neglectful parenting, home environments that expose children to alcohol and substance abuse, lack of school engagement, and unmet academic needs (Bogges & Linnemann, 2011; Finn & Owings, 2006; Rumberger & Lim, 2008).

Often school districts will offer alternative programs designed to meet the needs of students who are at high risk of failure and whose needs cannot be met through traditional educational means (Lehr et al., 2009). Students can elect alternative education but placements in alternate education programs are primarily mandatory for youth as a result of escalating truancy, expulsion or problematic behavior (Lehr et al., 2009). Created by separate and special acts of the New York State Legislature, alternate education schools in the state of New York provide unique educational and therapeutic opportunities to students who have experienced difficulty or failure in previous school settings. Alternate education programs are considered to be the most restrictive setting with the highest levels of academic and therapeutic supports for students who have not found success in more typical or least restrictive settings. These schools serve students with emotional disturbance along with learning disabilities and meet all state curriculum requirements for students through age 21. These students experience a range of significant problems in their home schools, ranging from attendance and academic problems, severe emotional disabilities and may have histories of delinquency or social maladjustment. Although they were initially created to serve a residential population, special act schools accept referrals of day students who are experiencing similar psychological, educational, or emotional disabilities. Some students attend the school for the remainder of their high school career while others stay for a shorter period of time based on their particular needs. Students are referred to the school from a number of different school districts and as a result, ethnicity of students attending the

schools are diverse, as is socioeconomic status and type of community in terms of urban, suburban, and rural backgrounds. Unlike the traditional school year that ends in June, alternate education schools have an extended school year which limits substantial regression of skills and knowledge and provides credit recovery for courses failed during the regular school year. Credit recovery is often touted as a dropout-prevention strategy as it allows students to catch up with course requirements in order to graduate on time.

Students in alternative educational settings are twice as likely to report physical abuse, familial substance use issues, and engagement in delinquent behaviors than those in mainstream schools (Harrison et al., 1997). Additionally, students who attend alternative schools are more likely to display risky behaviors resulting in emotional and behavior problems and criminal involvement (Lehr et al., 2009). Sexual abuse, physical abuse, teen pregnancy, academic, social-emotional, and behavioral issues, truancy, identification with high-risk peers, and drug and alcohol abuse are also concerns commonly faced by alternative school students (Amin et al., 2006; Foley & Pang, 2006; Kleiner et al., 2002; Arpawong et al., 2015). In addition, suicidal thoughts and feelings, and involvement in risky sexual behaviors and violence related behaviors are common challenges confronting these students (Grunbaum et al., 2001; Markham et al., 2010; Weller et al., 1999). Over time, these stressors accumulate, further intensifying negative emotional and behavioral psychological outcomes (Lovallo, 2001; McEwan, 2008; McKenry & Price, 2005).

Alternative schools are uniquely designed to effectively address these multiple risk factors. Successful alternative school programs offer flexible academic opportunities and intensive psychosocial support provided by helpful and involved teachers and administrators (Dupper, 2006; Raywid, 1995). Alternative schools strive to offer a supportive environment

(Kim & Taylor, 2008), with caring, non-authoritarian teachers (Quinn et al., 2006). Innovative, effective, and efficient interventions have been used in alternative schools to promote academic, social, and emotional success and student connectedness in order to help students at risk of school failure (Gregory, 2001). Relative to at-risk students who attend alternative education programs, few studies have been conducted that have investigated students' relationships with learning delivery and SWB. In this study, we will investigate the relationship between school connectedness and belonging as it relates to learning delivery and SWB as perceived by at-risk students who attend alternative schools.

Subjective Well-Being

In a broad sense, well-being can be viewed from either a psychological or subjective point of view (Tian et al., 2016). Psychological well-being refers to an individual's quality of life with a focus on creating personal goals and a desire for meaning and purpose (Ryff, 1989). SWB emphasizes an individual's capacity for satisfaction with life by experiencing positive feelings more often than negative feelings (Diener, 2000). SWB carries the name subjective because the individuals themselves judge how their lives are going, according to what they find important for happiness. Experiencing positive feelings or positive affect (PA) speaks to the regularity of favorable moods and feelings that included safety, hope, joy, pride and excitement. Negative affect (NA) involves subjective stress and dissatisfaction, associated with negative feelings like anger, hate, guilt and sadness (Diener, 2009). Life satisfaction overall includes judgements an individual makes in relation to satisfaction in numerous areas of life and is an indicator commonly used in research regarding SWB (Myers & Deiner, 1995). Changes to life satisfaction have helped to predict optimal functioning with respect to interpersonal relationships, mental and physical health (Gilman & Huebner, 2003; Park, 2004).

Positive psychology can provide an explanation for the circumstances and systems that contribute to optimal functioning (Steinmayr et al., 2018). SWB of both individuals and organizations is a core construct studied in the context of positive psychology. According to Seligman (2011) this multifaceted construct consists of engagement, meaning, positive relationships and achievements. SWB is referred to as a meta-construct because it takes into account not only the presence of positive thoughts, feelings and behaviors but also the absence of psychological symptoms and disorders and generates practical significance with respect to functioning (Kern et al., 2016, Seligman 2011). More recently, operationalizing SWB has been expanded to include personal, psychological and motivational attributes that help to establish optimal functioning, as well objective happiness which takes into account the extent to which an individual wants the experience currently being experienced to continue (Kahneman, 1999).

The extant literature highlights the various immediate and long-term positive life outcomes of SWB. It is not only important to find out to what extent optimal performance is achieved through a climate of well-being but also to explore what factors that might increase or decrease SWB (Lewis et al., 2011). The research outcomes indicate that people who report high levels of SWB are more cooperative, confident, creative, tolerant, and altruistic (Cohen & Pressman, 2006; Lyubomirsky et al., 2005). At the same time, people who regularly experience SWB in the form of frequent positive emotions have been shown to exhibit greater resilience to adversity (Opre et al., 2018).

Adolescent Subjective Well-Being

Life satisfaction is vital to effective youth functioning (Proctor et al., 2012) as adolescents with higher life satisfaction may process adolescent challenges using a more positive lens. In addition, life satisfaction is a key predictor of SWB (Gilman et al., 2004), by promoting positive

functioning in personal, relational, academic, and behavioral domains (Proctor et al., 2009), while at the same time reducing the negative effects of stressful life events and psychological problems (Suldo & Huebner, 2004).

The literature reveals that studying well-being in adolescents has fallen behind the study of well-being in adults (Bradshaw et al., 2011; Gilman & Huebner, 2003; Huebner & Dew, 1996). With the movement for children's rights that evolved in the 1990s, research into adolescents' SWB has increasingly gained momentum and the theoretical model of SWB originally constructed for adults is being extended to adolescents, (Gilman & Huebner, 2000; Long et al., 2012). There is a consensus that lack of reliability attributed to responses given by adolescents is one of the main reasons given for this lack of research (Navarro et al., 2017). The trend to extend SWB from global to domain-specific well-being and to investigate both internal and external (e.g., environment, school) variables is the reason interest in youths' SWB has expanded to include educational environments (Elmore & Huebner, 2010; Gilman & Huebner, 2000; Long et al., 2012; Tian et al., 2015; Renshaw et al., 2015). Those actively engaged in research and education concur that academic achievement and SWB are favorable outcomes for students (Steinmayr et al., 2018). According to the Organization for Economic Cooperation Development (OECD, 2017), emphasis should be placed on strengthening SWB in schools in order to achieve optimal learning conditions. The literature shows that domain-specific measures that target adolescents' SWB such as measures of positive affect and negative affect in the educational context as opposed to domain-general measures, can provide tangible guidance with respect to making much needed preventive and corrective improvements in schools with respect to clinical and administrative practices.

Consequently, well-being has now become an explicit educational objective in many school systems and youths' SWB is anticipated to represent a primary outcome of public schooling (Opre et al., 2018). Since adolescents spend substantial amounts of time in school, the school environment profoundly contributes to the health and development of its students (Jose et al., 2012; Phan et al., 2016), and has recently been the focus of several studies on understanding students' experience of SWB in school. This increasing interest in the SWB in schools is sustained by several results that reflect the important relationship between SWB and academic success and mental health. According to Renshaw and Arslan (2016), students' SWB is a good predictor of student academic results and was also found to be positively correlated with academic achievement, as well as physical health, mental health, use of substances, and goal-oriented behavior (Proctor et al., 2009). In addition, well-being at school has been associated with a lower number of risk behaviors (Caprara et al., 2000; Durlak et al., 2011; Hoyt et al., 2012), whereas adolescents with poor well-being has been linked to self-destructive behaviors and risk for negative emotional and behavioral outcomes (Loukas et al., 2010).

The positive and negative components of SWB refer to the frequency of experiencing emotions that are pleasant, such as happiness and excitement, and unpleasant, such as fear and shame. Adolescents reporting low SWB often experience negative academic and behavioral outcomes have been demonstrated negative indicators of mental health. These mental health indicators fall into patterns of internalizing and externalizing behaviors (Achenbach & Rescorla, 2001), with girls reporting more internalizing problems than boys beginning in early adolescence (Garber, 2006). Internalizing behaviors are damaging toward oneself and include symptoms of anxiety, depression, or somatization. Self-harm or the means of hurting yourself on purpose and suicide ideation are two of the most prevalent and growing internalizing behavior concerns for

adolescents today. According to the CDC (2020), suicide is now the second leading cause of death for school aged adolescents aged 14–18 years and suicide rates among youths aged 15–19 up by 90% from 6.0 to 11.4 per 100,000 population between 1999–2019. These internalizing problems associated with negative affect can result in significant academic, emotional and behavioral difficulties (Nolen-Hoeksema et al., 1986; Roeser et al., 2002) and in the extreme case, death.

Male adolescents are more likely to exhibit externalizing behaviors which are actions directed toward others including aggression and delinquency (Merikangas et al., 2010). Violence is a prevalent form of externalizing behavior in U.S. Schools. In every survey year from 2001 to 2017, a higher percentage of male students than of female students in high school reported having been in a physical fight during the previous 12 months, on school property. (National Center for Educational Statistics (NCES), 2021). Externalizing negative behaviors also extend to bullying which remains a serious concern in high schools. Bullying can be verbal or physical and occurs both in-person and virtually through social media. According to the NCES (2021) in the school year 2017-2018, approximately 5% of students surveyed reported being subject to physical bullying behavior (Musu et al., 2019) with 16% of U.S. schools reporting incidents of in-person bullying and 30% of US schools reporting cyber bullying. Frequent exposure to bullying is a risk factor for depression, suicidal ideation, suicide attempts and diminished academic achievement (King et al., 2008; Poteat & Espelage, 2007; Swearer et al., 2010). Bullies themselves do poorly in school and tend to engage in problem behaviors including drinking and smoking as compared to their non-bully peers (Nansel et al., 2001). Lastly, Hinshaw (1992) draws causation between externalizing behaviors and school withdrawal later in life. On the whole, approximately 25% of the school population has a mental health

challenge that impairs the student's daily academic and behavioral functioning both in and out of school (Roeser & Eccles, 2014). While advances have been made in identifying key behaviors that are associated with negative academic, social, emotional and behavioral functioning in schools, such findings justify efforts to minimize negative affect and should become the key targets of school-based improvements to SWB.

In contrast, individuals with high SWB typically experience more positive than negative emotions and have better academic, social, and physical health outcomes compared with youth who report low SWB (Suldo et al., 2015). Studies of positive affect in school settings are sparse but the findings indicate notable relationships between school-based positive affect and school performance. Research by Huebner et al. (2009), indicates that positive affect accounted for additional variance above NA to explain classroom behavior, interpersonal relationships in school and academic performance. Reschly et al. (2008) examined the role of positive affect in school within the context of Fredrickson's Theory of Positive Emotions (1998) and reported that frequent positive affect was associated with adapted coping and higher levels of student engagement. These findings suggest that adolescents who experience more frequent positive emotions in school are emotionally prepared to approach new tasks with confidence and solve problems leading to favorable outcomes in school (Reschly et al., 2008).

According to Gelhaar et al. (2007), there is a need for adolescents to manage an array of rapid physical, psychological and changes among multiple contexts. According to Fredrickson, (2009), achieving high levels of SWB can help to navigate these changes and promotes learning, adjustment to society and life quality. Additionally, Dahl (2001) finds that SWB can serve an important role when adolescents experience a major life crisis, reporting increased coping skills, resilience and improved functioning so that the negative situation will have a minimal impact on

their adjustment. Reschly et al. (2008) posits that adolescents with high SWB have an improved ability to bounce back from negative experiences and continue to adapt to their world of ever-changing demands. Recently, research has also examined the relationship between SWB and self-control (Ronen et al., 2013; Rosenbaum & Ronen, 2013) as a coping skill that improves adolescent functioning. Although the directionality of this link remains unclear, these studies suggest that the existence of high levels of self-control enable adolescents to overcome issues including aggression (Ronen & Rosenbaum, 2010), cope with parental divorce (Hamama & Ronen, 2012) and fear and anxiety resulting from war and terror attacks (Ronen & Seeman, 2007).

Policy makers now seriously consider the use of subjective measures of well-being to monitor progress and inform and appraise public policy (Dolan & Metcalfe, 2012). According to Ben-Arieh et al. (2014), the study of adolescents' SWB should take into account adolescents' perceptions, evaluations and aspirations regarding their own lives, and the perceptions, evaluations and aspirations of other relevant social agents. Previous research focusing upon adolescents' own SWB was often found deficient due to underdeveloped qualitative data collection methodology and scarcity of psychometric tools designed to assess SWB specifically geared toward youth. There are now sufficient scales deemed valid and reliable for measuring the construct of adolescent SWB. While it is not unusual to find qualitative research on the importance of adolescents SWB (Camfield et al., 2009; Coombes et al., 2013), few of the studies unearthed considered the adolescents own opinion or self-report of perceived SWB a necessary or relevant factor. In fact, many studies on adolescent SWB have traditionally surveyed the adults closest to them, usually parents and teachers, not the adolescents themselves. It could be inferred from this methodology, that the findings are actually related to the adults' attributions of

adolescent SWB rather than the adolescent's perceptions of their own well-being (Alderson, 1995 as cited in Mullender et al., 2002). In terms of social policy and mental health, this has resulted in supports and services aimed at improving adolescents' lives, which may not be based on the adolescent's opinion but rather, on adults' views of what is best for them. As a result, there is now a general opinion that it is impractical to consider adolescents' SWB without asking them about it directly (Casas et al. 2013; Fattore et al., 2007; Mullender et al., 2002). In the present study, our research interest is focused on adolescents SWB, a construct to be operationalized utilizing the adolescent's own self-reports and perceptions of their positive and negative affectivity and life satisfaction.

Subjective Well-Being for At-Risk Adolescents

Adolescence is a challenging time, characterized by significant physical, hormonal, social, emotional and intellectual change (Keyes, 2006). Such challenges are frequently heightened for at-risk adolescents for whom the exposure to stressful life circumstances, feelings of alienation, lack of school engagement, and unmet academic needs are the common experience (Tomy et al., 2015). Given the diverse challenges facing this population, it is not surprising that at-risk adolescents have also been found to experience significant mental health problems and lower levels of SWB.

SWB is a traditionally positive state of mind that accounts for the whole life experience (Cummins, 2010). Decades of research reveal that SWB is generally a stable construct over time and falls within a tight range of positive values (Cummins, 2010). Longitudinal studies (Cummins et al., 2014; Headey & Wearing, 1989) support this stability at both the individual level for both adults and adolescents over time. Homeostasis Theory (Cummins, 2010) maintains that while positive and negative emotional experiences may lead to increased and

decreased feelings of happiness in the short term, SWB will return back to a normal range due to a complex mechanism that serves to maintain and protect personal wellbeing around a biologically determined set-point. However, when life challenges are chronic and pervasive as seen in at-risk students, the homeostatic system may be overwhelmed, driving the level of SWB outside its normal set-point range (Headey & Wearing, 1989). The duration of this imbalance depends on the level of threat and the level of available resources to counter the threat. Positive factors such as connection and belonging may be used to strengthen a person's adaptive resources, allowing them to regain homeostatic control. However, when the challenges are pervasive and harmful, and protective resources are lacking, homeostasis may be impeded (Tomyn et al., 2015). When this occurs, negative thoughts attached to the life challenges may negate the positive aspects of SWB.

According to Nasir and Hand (2006), schools should be focused on social and cultural norms to better understand and support at-risk student learning and development. Archambault et al. (2010) finds that students who are considered at-risk are often enrolled into online learning programs to help address their unique set of academic and sociocultural needs. Although researchers have identified some promising features built into online instructional programs, past research has identified wide-ranging variation in both positive and negative effects on student achievement and well-being across schools and student subgroups intended to enhance learning and instructional quality (Ahn & McEachin, 2017; Heinrich et al., 2019; Heppen et al., 2017; Pane, 2018). While an online approach may have potential benefits for an at-risk student population, more K-12 research is needed to better understand how and why promoting online learning is a viable option for these students.

Online Learning

Traditional school environments have experienced challenges to meet the needs of diverse students to foster academic improvement. Over the past two decades, online learning had shown tremendous growth in K-12 education as an alternative to traditional face-to-face instruction (Powell et al., 2015; Watson et al., 2011) . Some of this growth can be attributed to adaptive and individualized opportunities that online learning can provide for students who have become disengaged from the traditional brick and mortar school setting (Powell et al., 2015; Washor & Mojkowski, 2014). Technological advancements and the ubiquity of electronics has contributed to the rapid popularity of online education.

In March of 2020, the rapid spread of the COVID-19 virus forced the education system in the United States to shift to online learning literally overnight. While online learning is a relatively new phenomenon to K-12 education, colleges and universities began offering education programs through the internet since 1989. While online learning has allowed education to carry on during this global pandemic, online learning has fundamentally changed how K-12 instruction is delivered (Archambault & Crippen, 2009). There are many terms (e.g., remote, distance, cyber, e-learning, virtual) used interchangeably for online learning (Picciano et al., 2010; Wicks, 2010). For purposes of this study, we define online learning as “electronically supported learning where students work remotely and rely on the internet for teacher/student interaction and the distribution of class materials.”

Modes of Delivery

Asynchronous and synchronous communications are modes of delivery for online learning. Asynchronous communication occurs when the teacher and student are in a different place and work at different times and different media (e.g., online platforms, video, email, discussion

boards, and instant messaging,) are used to post assignments and messages over the internet (Smith & Thomson, 2014). In contrast, synchronous communication occurs in real time, at the same time in a different place (Murphy & Rodríguez-Manzanares, 2008). In synchronous communication, student and teacher interactions happen together. Synchronous environments use communication tools including telephone calls, audio conferencing, and video conferencing for real time interactions.

Despite these increases in K-12 online learning, research on the critical components of successful high school online education is limited but expanding (Barbour & Reeves, 2009; Cavanaugh et al., 2009; Searson et al., 2011). Uniquely, online learning is an instructional format where student and teacher are in different locations (Watson et al., 2011, p.8). As the possibility of internet learning being used as a platform to develop a sense of social connectedness or belonging has been suggested, (Greenhow & Robelia, 2009; Lee, 2009; Lenhart et al., 2001; Turkle, 1999; Valkenburg & Peter, 2009), the degree to which students in online learning environments perceive themselves as belonging or being connected to their peers appears to be a key factor in predicting online course successes (Biocca et al., 2003; Slagter van Tryon, 2009).

According to social learning theorists, successful learning takes place in an environment where individuals can construct ideas, culture, histories, and meaning as the result of ongoing social interactions and collaborative functioning (Brown et al., 1989). The opportunities afforded learners working to construct their own knowledge, through experiencing the multiple perspectives of others, is well documented in the literature (Brown & Palincsar, 1989; Johnson & Johnson, 1994; Slagter van Tryon, 2009). Although the development of group social structure necessary for productive interactions might happen more seamlessly in face-to-face learning

environments, creating and maintaining these social connections in online learning environments can be handicapped by isolation, educator preparedness, ever-changing technology and computer mediated instability (Haefner, 2000; Reisetter & Boris, 2004; Slagter van Tryon, 2009).

COVID-19

The COVID-19 pandemic in the spring of 2020 dramatically shifted the way children and adolescents are being educated. The most salient change was the closure of brick and mortar schools forcing students to continue their education from home. Results from the U.S. Census Bureau on March 1, 2021 report that students in nearly 93% of households were engaged in some form of distance learning from home and 80% of students distance learning utilized online resources. While some believe that the unplanned and rapid move to online learning, with no training, and little preparation will result in a poor user experience that is not conducive to sustained growth, others believe that a new hybrid model of education will emerge, with significant benefits that include increased retention of information that takes less time and resources (Yates et al., 2020). In some cases, this imposed structure has allowed some adolescents to thrive, which is attributed to relief from social pressures, a student's personal preference for self-directed online learning and closer family ties (Dorfman, 2021). Although the effectiveness of online learning significantly varies amongst age groups and socio-economic status, the COVID-19 pandemic has introduced many striking impacts on students as a result of schools being closed, along with physical distancing guidelines and isolation. For vulnerable, at-risk students and those with mental health needs, school closures mean a lack of access to the resources and support personnel they usually have in the school (OECD, 2020). The potential for heightened mental health challenges affecting all students may now be confronting all schools. According to a Gallup Panel Polling in May 2020 of parents with school-aged children,

nearly 29% say their child is "already experiencing harm" to their emotional or mental health because of social distancing and closures and another 14% indicate their children are approaching their limits, reporting they could continue online learning and social distancing a few more weeks until their mental health suffers. While children make up relatively few cases among confirmed COVID-19 patients in the United States, these survey results suggest that pandemic response measures are taking a toll on the wellbeing of our students (Calderon, 2020). According to Lee (2020), not much is known about the long-term mental effects of large-scale disease outbreaks on adolescents, affirming the ongoing need to monitor young people's mental health over the long term to observe and evaluate how prolonged school closures necessitating online learning affects well-being.

Social Impacts of Online Learning

Unique to online education is the delivery medium over which courses are offered along with new strategies to foster a supportive learning environment. Connectedness and belonging remain a social and interpersonal need which is an important component of learning. Online learning can make the development of interpersonal relationships challenging due to "a loss of contact, loss of connection and a resultant sense of isolation," (Pratt, 2007, p.31). Consequently, today's adolescents require specific supports and coping skills to prepare them for a digitally connected society (James et al., 2017). Yet there are advantages of online learning including convenience, flexibility and privacy that may enhance school connections and belonging between and among students and teachers (Murphy & Rodríguez-Manzanares, 2008). In Bronfenbrenner Ecological Systems Theory (1977), individuals are both creators and byproducts of their own environment due to direct and indirect exposure to internal and external forces. These bidirectional influences are dynamic and ever-changing. Bronfenbrenner calls direct

influences the effect of third parties. These third parties can serve as supports or barriers to development. In this study, we seek to determine if online learning takes on the role of the “third party” and if it affects school connectedness and school belonging as it relates to adolescent SWB.

The rapid increase in internet use by adolescents has been met with clashing views about its social consequences (Valkenburg & Peter, 2007). Internet use may have both desirable and undesirable effects on well-being (Cheng et al., 2020). Some researchers report that online communication reduces the quality of adolescent’s existing relationships and well-being by displacing time that could be spent in face-to-face interactions and relationships. (Kraut et al., 1998). In what has been termed the displacement hypothesis, online communication is seen as a superficial association that fosters feelings of disconnection and can result in intensified depression and loneliness (Kraut et al., 1998). Alternatively, the increase or stimulation hypothesis proposes that the internet will augment social interaction and strengthen connectedness and belonging by preserving existing relationships and providing opportunities to develop new ones (Lee, 2009). Advocates of the stimulation hypothesis posit that online communication technology promotes ongoing communication with existing friends (Bryant et al., 2006). This hypothesis asserts that individuals with good existing face-to-face networks and social skills will maintain these same positive social outcomes online. In contrast, the social compensation hypothesis suggests that individuals who find a face-to-face learning difficult due to social deficits (e.g. anxiety, avoidance), may find that online learning helps them to develop online connections to compensate for their lack of face-to-face social relationships. (Lee, 2009). These theories imply that while some adolescents may prefer face-to-face connections, online learning can foster feelings of connectedness for others (McLoughlin et al., 2019). In the extreme

and unusual circumstance that face-to-face social interactions between adolescents are significantly limited or impeded as is the case with the COVID-19 virus and resulting social distancing mandates and lockdown, it is plausible to view the internet as a catalyst for social connection and accordingly adolescents' well-being (Valkenburg & Peter, 2007).

Online education is widely regarded as providing most individuals (including those with a disability) greater accessibility to higher education (Kinash et al., 2004). In a study of college students, online learning was found inadequate for interacting with teaching staff and fellow students and contributed greatly to feelings of isolation and disconnection (McManus et al., 2017). Additionally, the anonymity afforded by online education for students with mental health issues, as compared to on-campus study did not appear to alleviate some of the perceived benefits including participants' fears of disclosure and stigma, or avoidance of social interaction difficulties with fellow students. More disconcerting was the suggestion that online learning significantly reduces the likelihood of students with mental health issues receiving support and encouragement from a counselor, teacher, administrator or peer (McManus et al., 2017).

Researchers continue to identify gaps in the literature with respect to online learning and its impact on adolescents. In addition, it has been reported that there is currently more research on risk and harm than on opportunities and benefits of internet use by young people (Bannon et al 2015). In a search of literature from 1996 through 2008, Rice (2006), suggests that there were no experimental, control or quasi-experimental studies comparing the effectiveness of face-to-face instruction and online learning for K-12 students. This lack of research was caused in part by the focus on higher education and the absence of a theoretical framework for K-12 online learners who tend to be less autonomous and motivated (Rice, 2006). This gap in the research is quickly changing due to the rapid change of instructional delivery for K-12 schools due to COVID-19.

Slater et al. (2012) affirms that teacher contact in face-to-face environments has been shown to significantly impact student success. Belair (2012) claims that K-12 online teacher training and practice is a critical component requiring examination. According to Glazier (2016), the same college course taught by the same professor online, has higher attrition rates than its in-person counterpart, even when the exact same class materials and presentations are utilized (Roberts, 2015). When measuring student success, online courses often score lower in persistence, learning, and graduation rates (Patterson & McFadden, 2009; Stover, 2005; Xu & Jaggars, 2014).

Unfortunately, researchers have identified the physical separation between online teachers and students as a major barrier to forming close relationships (Hawkins et al., 2011; Murphy & Rodríguez-Manzanares, 2008; Picciano et al., 2010). However, researchers have observed teachers able to develop socially present and connected relationships with students through carefully planned and promoted social interactions (Borup et al., 2013; Velasquez et al., 2013). References to successful social interactions in the online learning environment frequently point to the achievement of “social presence” (Kreijns et al., 2014). In recent literature, social presence is the students’ perception of the presence of another in an online learning environment. According to Biocca et al. (2003), the focus of social presence must remain “fundamentally a theory of how technology mediates social interaction” (p. 474). When using any type of computer-mediated communication (CMC), humans strive to develop relationships by forming impressions of others based on the text-based information exchanged. Findings by Gunawardena and Zittle (1997) indicate that students became more social toward the latter part of these CMC dialogues and exchanged more messages as time went on. In linking online learning to social presence, Tu (2000) contends that social presence is essential to encourage and enhance online

social interaction. Because social presence is critical for maintaining high levels of online social interaction, “it is a significant predictor of course retention and final grade in the college online environment’ (Liu et al., 2009, p. 165). Social presence is also associated with learning outcomes and the degree of satisfaction of the group members (Gunawardena & Zittle, 1997; Garrison et al., 2000).

Online Learning Implications

Online learning differs from traditional classroom instruction. Online learning allows for personalized instruction, flexibility to complete work, increased attendance, removes geographic boundaries, and expands academic choices for students (Powell et al., 2015; Repetto & Spitler, 2014). A benefit of online learning is the choice of when, where, and how to learn with devices that support technology (Allen & Seaman, 2013; Watson et al., 2011). Online learning also offers the opportunity to make up course work in order to graduate on time (Picciano et al., 2010).

Challenges to online learning include equitable access to electronics and internet access, along with navigation capabilities, content quality, and rigor (Picciano et al., 2010; Smith & Thomson, 2014). Implications suggest that online learning may carry some risks including disconnectedness, missing teacher immediacy, and missing interpersonal interactions and social cues that are typically experienced when learning face-to-face (Haefner, 2000; Menchaca & Bekele, 2008; Reisetter & Boris, 2004). Online learning also has the potential to benefit adolescents by providing a sense of connectedness and belonging with others and minimizing feelings of isolation and stigma which may further support positive psychological outcomes in adolescents (Bannon et al., 2015)

Connectedness and belonging has been linked to positive psychological outcomes for adolescents including SWB (Lee & Robbins, 1998). In the context of online learning, SWB or optimal psychological functioning and experience involves relevant measures of positive and negative affect, life satisfaction, social connectedness, and belonging in order to evaluate mental health (Ryan & Deci, 2001). Clinicians, educators, administrators, parents, policy makers, and adolescents themselves are among the stakeholders interested in both supporting positive impacts and mitigating negative impacts of online learning particularly given its growing presence in adolescents' lives. Online learning research has generated reduced well-being related outcomes, such as diminished life satisfaction, internalizing negative experiences, and various dimensions of ill-being, such as depression, anxiety, attention problems, and offline stress (James et al., 2017). Research studies (Patrick & Powell, 2009, Repetto & Spitler, 2014) suggest that online learning may appeal to students struggling in a traditional setting and has the potential to close the achievement gap and expand quality educational opportunities for at-risk populations. From a clinical perspective, online learning warrants consideration as both a potential protective factor for specific populations of adolescents and consideration as a negative influence on adolescent SWB. From a research perspective the effects of online learning with respect to school connectedness and school belonging and its effects on at-risk adolescent SWB warrants our attention and further study.

Online Learning for At-Risk Students

As an alternative education program, online learning can provide at-risk students with opportunities to improve academic performance and a possible path to completing their course work and graduating (Picciano et al., 2010; Powell et al., 2015). While technology has changed the delivery of instruction, accommodations for special education students may be a challenge in

a virtual classroom. The atmosphere is an important component in stimulating at-risk students to engage in school. While an online approach to teaching has potential benefits (e.g., flexibility, individualized instruction, offers a broad range of courses) at-risk students have instructional needs that are different than those not considered at-risk. Picciano et al. (2010) suggest maturity and self-discipline are characteristics needed to succeed in an online environment; however, findings suggest many students who are at-risk may be lacking in these characteristics (p. 21).

Research on interventions for at-risk students engaged in online learning is limited compared to interventions in a traditional classroom (Means et al., 2010). The integration of technology that offers meaningful and engaging instruction (Holland & Holland, 2014) and programs that offer flexibility in meeting student's individual learning needs are more likely to promote success for at-risk students (Donnelly, 1987). However, at-risk students engaged in online learning are more likely to drop out of school without intervening social emotional measures to promote success (Means et al., 2010). Core elements found to be effective in teaching at-risk students include a supportive staff and connecting with students (Means et al., 2010; Repetto & Spitler, 2014). Vega et al. (2015) conclude the methods employed by schools to deliver online learning should engage all students, particularly at-risk students (p. 38).

Purpose Statement and Hypothesis

In order to reduce the high infection rate of COVID-19, school buildings closed forcing schools to migrate to online learning. Virtually overnight, COVID-19 took away the daily routines through which adolescents typically interact. Students were no longer able to physically access their social support network of friends, teacher, staff and peers. As a significant institution within the community, school plays an important role on adolescents' sense of well-being (Maier et al., 2017) Theories explaining SWB and healthy student development

(Bronfenbrenner, 1979; Eccles et al., 1993; Gilman et al., 2014) have put more focus on the environment rather than simply academics (Steinmayr et al., 2018). School can act as an important psychosocial resource in supporting young people, especially adolescents isolated from support networks (Rostosky et al., 2003; Satici, 2020). Further, school-based research literature finds that at-risk youth who feel they connect or belong to school, report better emotional well-being as well as less substance abuse, suicidal ideation, depressive symptoms, risk of violent or criminal behavior and unplanned pregnancy (Bonny et al., 2000; Eccles et al., 1997; Jacobson & Rowe, 1999; Resnick et al., 1997). Researchers continue to investigate the processes and variables that influence individuals' subjective well-being. Diener et al. (2017) highlight the importance of understanding the variables that affect subjective well-being for the establishment of effective interventions.

The present study seeks to explore the association between at-risk students' subjective well-being and instructional delivery and the mediating effects of school connectedness and school belonging for at-risk high school students. Given the previous findings encouraging the association between these variables (e.g., Arslan, 2015a; Diener, 2017, Diener & McGavran 2008; Duru, 2015; Iwaniec et al., 2006; Yıldız, 2013), and theoretical framework (Bronfenbrenner, 1977), it is hypothesized that school connectedness and school belonging would be mediators in the relationship between instructional modality and improved SWB. Further, only a few studies have the adolescents' own level of SWB considered a relevant factor when exploring their opinions on SWB (Navarro, 2017).

This study's importance lies in understanding the different mediating effects that school connectedness and school belonging have on SWB and to provide supplementary explanations regarding how online vs in-person learning affects SWB from the student's point of view. A

large share of the research to date has focused on several closely analogous constructs (Christensen et al., 2012; Newmann et al., 1992). While the previous research has focused on how school connectedness or school belonging effect SWB, rarely have they been investigated in tandem with established measures for both constructs. Our approach will allow for a more complex assessment of the proposed mediators and may help to determine if school connectedness and school belonging are homologous and interchangeable or distinctly separate constructs allowing us to target interventions specific to one construct or the other.

This knowledge can potentially help us to broaden our understanding of at-risk adolescents' SWB by bringing previously unknown aspects to light . Based on the study's findings, targeted intervention and prevention services can be developed Therefore, findings from this study have significant implications for educators, and mental health professionals in the context of biopsychosocial programs and services. The results can also be seen as contributing to both educational and social policy design by measuring adolescent SWB in required subgroup populations which would include at-risk adolescent populations (OECD, 2013; Tinkler & Hicks 2011). The following research questions and hypothesis will be examined:

Research Question 1: Will at-risk high school students participating in online learning have lower levels of school connectedness and belonging than students receiving in-person academic instruction?

***Hypothesis 1:** High school students participating in online learning will score lower levels of school connectedness and school belonging than students receiving in-person academic instruction.*

Research Question 2: Will at-risk high school online learners with lower levels of school connectedness and school belonging have lower levels of SWB?

***Hypothesis 2:** School connectedness and school belonging will predict levels of subjective wellbeing: adolescents with lower levels of school connectedness and school belonging will report lower levels of subjective well-being than adolescents with higher levels of school connectedness and school belonging.*

Research Question 3: Does school connectedness and school belonging mediate the relationship between instructional modality and SWB?

***Hypothesis 3:** School connectedness and school belonging will mediate the relationship between instructional delivery and SWB.*

Research Question 4: Does the mediating role of school connectedness between instructional modality and SWB differ between the mediating role of school belonging between instructional modality and SWB?

***Hypothesis 4:** School connectedness and school belonging will have a different indirect mediating effect through its relationship between instructional modality and SWB.*

CHAPTER 2

METHOD

This study will be based on a survey previously administered to at-risk high school students from four New York public high schools. Participants completed questionnaires on school connectedness, school belonging and SWB. Survey research collects information by asking participants questions and coding their responses in order to generate statistical analysis. Statistical analyses will allow us to test the potential links between constructs.

Participants

The study's participants were comprised of 205 high school students grade 9-12 who attend one of four separate alternate education high schools in a suburban New York special acts school district. All participants are classified as special education students with a NY State Individual Education Plans (IEP) for learning disabilities with a majority of comorbidities including emotional disturbance. Instructional delivery is provided in self-contained classroom and all students receive counseling as part of their IEP. Participants include both residential and day students. Ages of participants range from 13-21 years. Study participants are ethnically and racially diverse (36% Black, 34% Hispanic, 33% White and 27% Biracial) and a significant portion of the school's student body, 84%, receive free or reduced school lunch. Due to a fluctuating population at the alternate high school caused by continuous student enrollment, withdrawal, and chronic absenteeism, all eligible high school students were eligible to participate.

As a result of COVID-19, this school moved to online learning for all students in March 2021. By June 2021, the school presented their reopening plan for in-person instruction. The district continued to offer online learning and altered between in-person and online learning as

quarantine and safety needs dictated. Students had the option to choose between online learning and in-person learning, except in instances where home school districts would not or could not provide transportation for commuting day students. In these cases, students were required to continue with online learning only. It was not possible or legal to assign an eligible student to a particular delivery mode of instruction. As a result, propensity score analysis (PSM, Rubin & Rosenbaum, 1983), will be used to reduce or eliminate the effects of confounding when evaluating the observational data. In June 2021, the school had 48% of the of the students attending classes online and 52% attending classes in-person.

To determine whether instructional modality adds variance to the multivariate model, controlling for gender, age, race, and placement, an *a priori* power analysis using the *G-Power* software indicates that to detect small effects at .1, while maintaining power of .95 within a 95% confidence interval in a multiple linear regression analysis, the study needed at least 175 participants.

Procedure

Procedure strategies will include several stages. First, permission was obtained from the school district to conduct the study. We selected four special acts integrative schools from the district as representative of the student population. We contacted the superintendent of schools to obtain consent. Second, approval to conduct the study will be obtained from the Pace University Institution Review Board. Third, the finalized demographic questionnaire, and survey scales will be transferred onto the Qualtrics online survey platform.

In all schools, surveys were administered by classroom teachers or school counselors for administrative socioemotional (SEL) programming. The teachers and staff only answered administrative questions and referred participants to the instructions, which were written in clear,

simple language at the beginning of each survey. Students were told that the study seeks to learn about adolescents' lives in school and life satisfaction. Students were told that participation was strictly voluntary; that they could opt out or stop at any time. It was made clear that students would not be graded on responses to surveys, the questionnaires were anonymous, and the information would be kept confidential. Program participants included 205 eligible students enrolled in Grades 9-12 at one of the four alternative high schools on the days of the study. Exclusions include only those students the school district deems ineligible due to attendance or emotional and behavioral issues on the day of the study. Participants received a \$5.00 gift card from the school district as compensation for study participation.

Measures

Demographics. Participants completed a questionnaire including information pertaining to age, grade, gender, ethnicity, sexual orientation, placement type, and learning delivery type for the 2021 spring semester. Anonymity will be maintained through use of student identification numbers known only by school district staff. (Appendix A).

School Connectedness. School connectedness will be measured using the School Connectedness Scale (SCS). The survey developers adapted the SCS from the National Longitudinal Study of Adolescent Health's School Connectedness Scale (Furlong et al., 2011). This 5-item scale has been widely used in psychological, public health and educational research (Anderman, 2002; Bonny et al., 2000; Loukas et al., 2010; McNeely et al., 2002; Rice et al., 2008). The scale includes a series of five questions about students' sense of connection to the school: "How strongly do you agree or disagree with the following statements about your school?" 1) I feel close to people at this school; 2) I am happy to be at this school; 3) I feel like I am part of this school; 4) The teachers at this school treat students fairly; 5) I feel safe in my

school. The Likert response scale is 1 = *strongly disagree*, 2 = *disagree*, 3 = *neither disagree or agree*, 4 = *agree* and 5 = *strongly agree*, with a total SCS scores ranging from 5 to 25. Previous research suggests that the SCS has an internal consistency reliability of .78 (Anderman, 2002; Sieving et al., 2001). The scale exhibits acceptable reliability (α =.82 to .88) and showed concurrent validity with other key school experiential measures (r =.44 to .55) across 18 different sociocultural groups (Furlong et al., 2011). (Appendix B).

School Belonging. School belonging will be assessed using the Psychological Sense of School Membership (PSSM; Goodenow, 1993), which is the most commonly used measure of school belonging. This scale measures students' feelings of belonging and membership within a school setting by having students respond to 18 items regarding their personal feelings and experiences within school. It is designed to be used with students of all ages and nationalities. Students answer the items on a scale ranging from 1 to 5, where 1 indicates *Not at all true*, and 5 indicates *Completely true*. The items are intended to measure students' perceptions of acceptance, academic and social support, value, and contentment within their social relationships at school. The following are some examples of items that students respond to: "People here notice when I'm good at something," "Other students take my opinions seriously," and "I feel like a real part of this school." Research has found the PSSM to have high validity and reliability, attesting to its status as a valuable and functional measure of school belonging. (Appendix C).

Adolescent Subjective Well-Being. Subjective well-being will be measured using the Student Life Satisfaction Scale (SLSS; Huebner, 1991) and The Positive and Negative Affect Schedule for Children-Short Form (PANAS-C-SF; Ebesutani et al., 2011). The Student Life Satisfaction Scale is considered to be a strong tool in the measurement of the cognitive components developed to assess youth's (ages 8-18 years) life satisfaction and SWB. The scale

includes a series of seven statements and asks participants to give each statement a score; 1). My life is going well, 2). My life is just right, 3). I would like to change many things in my life, 4). I wish I had a different kind of life, 5). I have a good life, 6). I have what I want in life and 7). My life is better than most kids. The Likert response scale items are domain-free and require respondents to evaluate their satisfaction on a 6-point Likert scale ranging 1 = *strongly agree* though 6 = *strongly disagree*. The initial version of the scale comprised 10 items and was later reduced to 7-items due to further item analysis as well as data and reliability estimates (Huebner et al., 2003). The scale has been shown to display acceptable internal consistency, with alpha coefficients of 0.82 (Huebner, 1991; Huebner et al., 2004), and 0.86 (Dew & Huebner, 1994). The SLSS has demonstrated convergent validity by correlating well with other life satisfaction measures (Dew & Huebner, 1994; Huebner, 1991) and overall life satisfaction (Casas et al., 2013). The scale has also been shown to display good criterion (Huebner et al., 2003), discriminant (Huebner & Alderman, 1993), and predictive validity (Suldo & Huebner, 2004).

The short version of the PANAS-C-SF will assess PA and NA in youth aged 6 to 18 years. The PANAS can be administered with different instructions which reflect different time frames (e.g., state vs. trait versions). In the present study, participants were asked to indicate to what extent they have felt this way ‘during the past few weeks’ thereby measuring longer-lasting, mood states. (reflecting the trait version). Respondents are asked to indicate how often they feel certain emotions (e.g., “cheerful” or “miserable”) on a 5-point Likert-type intensity scale ranging from ‘*Very slightly or not at all*’; ‘*A little*’; ‘*Moderately*’; ‘*Quite a bit*’; to ‘*Extremely*’. Total scores for each subscale range from 10 to 50, with higher scores reflecting higher levels of trait PANAS positive affect (PA) or PANAS negative affect (NA). The original test consisted of two subscales of 5 items each, with good levels of internal consistency: PA ($\alpha =$

0.86; joyful, lively, happy, energetic, and proud) and NA ($\alpha = 0.82$; depressed, angry, fearful/scared, afraid, and sad). (Appendix D).

Statistical Analysis

The outcome variable, SWB, will be measured using scores on the SLLS or PANAS-C-SF. The predictor variables of school connection and belonging will be measured by scores on the SCS and PSSM. A variety of variables including gender, placement type, sexual orientation and learning delivery variables will be examined. Analysis will be conducted in SPSS to obtain descriptive qualities of the data. Measures of central tendency such as mean, median and mode and measures of dispersion such as range quartiles, variance and standard deviation will be inspected. Graphical descriptions in the forms of tables and charts will summarize the data generated.

To account for selection bias when estimating the effect of in-person versus online instructional delivery on outcomes, the researcher will use propensity score matching (PSM, Rubin and Rosenbaum, 1983), to reduce or eliminate the effects of confounding when evaluating the observational data. Propensity score analysis will allow the researcher to analyze this observational non-randomized study by estimating and subsequently balancing the distribution of selected observed baseline covariates like that of a randomized control trial, between online and in-person participants. Once the propensity scores are created, they will be used in our analyses for equating and comparing the two conditions with the goal of yielding better effect estimates.

- Pearson's correlations will be calculated for all variables to examine that magnitude and direction of the relationships between variables.
- An independent samples T-test will be conducted to compare the mean scores for online vs in-person learners and school connectedness and belonging.

- Multiple linear regression will be conducted to test whether online learning (versus in person learning) adds variance to the multivariate model controlling for gender, age, race, placement, social anxiety and avoidance.
- Simple mediation with bootstrapping using the PROCESS macro for SPSS (Hayes, 2013) will be conducted to determine if school connectedness and school belonging mediate the relationship between instructional modality and SWB.
- Parallel Mediation analyses using the PROCESS macro for SPSS (Hayes, 2013) will be conducted to test whether the mediating role of school connectedness and school belonging differ between instructional modality and SWB.

Figure 1

Simple Mediation Model

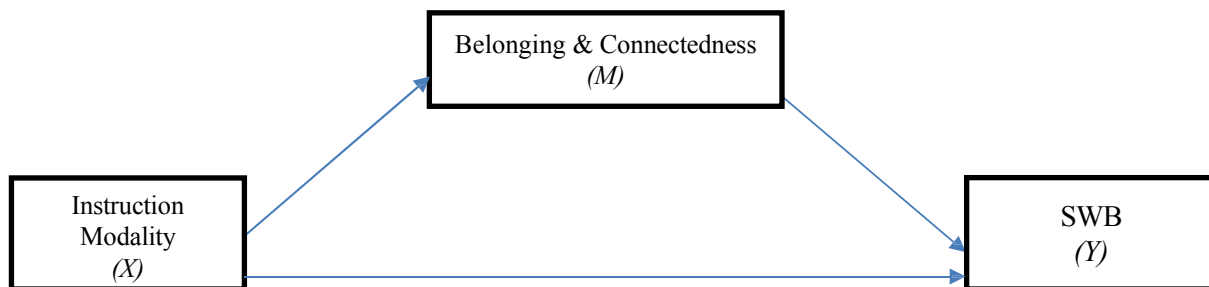
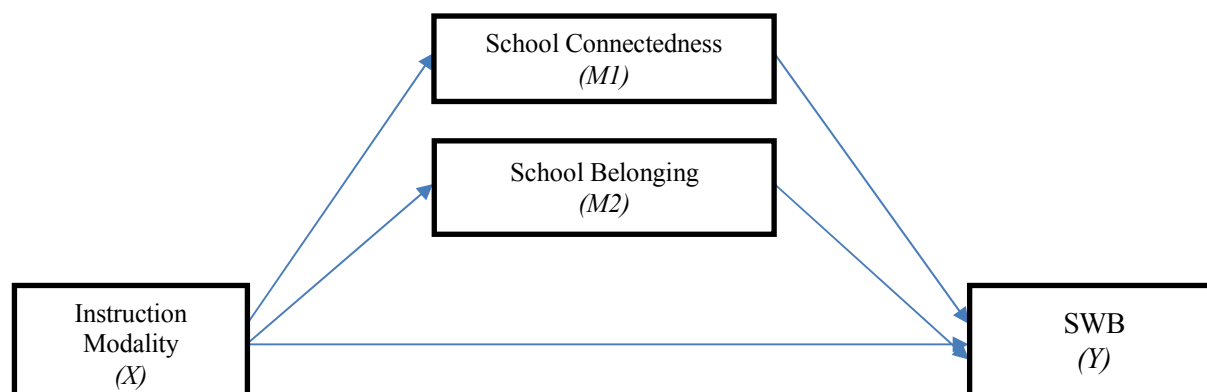


Figure 2*Parallel Mediation Model*

CHAPTER 3

RESULTS

Descriptive Statistics

Descriptive characteristics of the study population appear in Table 1. The high school students who participated in the survey attended one of four special act schools in suburban New York. The sample included 76.1% day-students and 23.9% residents, with 71.7% receiving in-person instruction and 28.3 attending remotely. All students were classified with emotional disturbance and/or another learning disabilities with ages ranging from 13 to age 21 ($M = 16.45$, $SD = 2.11$). This was a diverse sample included 57.1% males, 33.7% females and 9.3% designating other gender types of which 36.6% identified as black, 34.1% Hispanic, 16.1% White and 13.2 % representing other ethnicities.

Descriptive statistical analysis was conducted to examine the relationship between variables and check the normality assumption. According to Brown (2006), acceptable values of skewness fall between -3 and +3 and kurtosis from a range of -10 to +10 indicating an approximation of data to be normally distributed. Findings from observed variable characteristics indicated that skewness and kurtosis scores fell between -1 and +1 indicating ranges on all measurement scales were relatively normally distributed (see Table 2). Initial analyses explored associations between demographic factors and predictor variables using independent samples t-tests for continuous variables and chi-square analyses for categorical variables. T-tests examined age, ethnicity, gender, grade, orientation, placement, and school for differences in instructional modality demographic characteristics (see Table 3). Due to concerns about selection bias due to the imbalance of participants receiving in-person instruction as compared to online instruction, propensity score analysis was considered as a statistical method to mitigate known confounds by

estimating the probability that an individual would have received a particular treatment based on observed baseline characteristic. Evidence-based research presupposes the ability to accurately measure the effects of an intervention which can best be accomplished with random assignment. In many studies, random assignment is not always feasible if the research begins after the intervention has already been given to the participants. In the current quasi-experiment, students or their legal guardians selected their own condition (instructional modality) which is presumed to introduce selection bias into the study. Selection bias raises the risk that the observed effects might be attributed to differences in the participants in the condition rather than the intervention. Cross-tabulation was used to generate Chi-Square tests of independence to assess the relationship between instructional modality and age, ethnicity, gender, grade, orientation, placement, and school to determine whether each pair of variables was independent. Cross tab analysis resulted in no significant relationships between each pair of variables (see Table 4) except for school placement (day vs. residential students) which was expected since residential students did not have a choice regarding instructional modality. Based on the data, the variables examined are independent from instructional modality, allowing an approximation of complete randomization using the entire sample (n=205) without use of a propensity analysis.

Table 1*Descriptive Table of Demographics (N = 205)*

	Total Frequency	Total Percentage	In-Person Frequency	Remote Frequency	% In-Person
Gender					
Male	117	57.1%	88	29	59.9%
Female	69	33.7%	44	25	29.9%
Others	19	9.3%	15	4	10.2%
Age					
13-17	139	67.8%	97	42	65.9%
18-21	66	32.2%	50	16	34.1%
Ethnicity					
Black	75	36.6%	51	24	34.1%
Hispanic	70	34.1%	50	20	34.0%
White	33	16.1%	26	7	17.7%
All Others	27	13.2%	20	7	14.2%
Grade					
Freshman	55	26.8%	40	15	27.2%
Sophomore	30	14.6%	23	7	15.6%
Junior	76	37.1%	54	22	36.7%
Senior	44	21.5%	30	14	20.5%
Modality					
In-Person	147	71.7%	147	-	-
Remote	58	28.3%	-	58	-
Orientation					
Bisexual	29	14.1%	21	8	14.3%
Gay/lesbian	10	4.9%	6	4	4.1%
Heterosexual	114	55.6%	81	33	55.1%
Others/PNTS	52	25.4%	39	13	26.5%
Placement Type					
Day Student	156	76.1%	98	58	66.7%
Resident	49	23.9%	49	-	33.3%
School					
GA	67	32.7%	46	21	31.3%
KA	47	22.9%	35	12	23.8%
CA	52	25.4%	37	15	25.2%
RA	39	19.0%	29	10	19.7%

Table 2*Means and Standard Deviations of Study Variables*

Variables	Descriptive Statistics			
	Mean	Std. Deviation	Skewness	Kurtosis
School Connectedness	18.81	4.63	-.70	.19
School Belonging	60.26	11.75	-.46	-.08
Life Satisfaction	27.64	8.43	-.70	-.18
Positive Affect	17.78	6.12	-.45	-.90
Negative Affect	10.88	5.45	.88	-.11

Table 3*Instructional Modality Differences on Demographic Variables ($N_R = 58$, $N_I = 147$)*

	Remote Instruction			In-Person Instruction			<i>t</i>	<i>df</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>SEM</i>	<i>M</i>	<i>SD</i>	<i>SEM</i>			
Age	16.57	1.77	.23	16.65	1.89	.15	-.29	203	.77
Gender	.57	.62	.08	.50	.68	.06	.64	203	.52
Grade	2.60	1.12	.15	2.50	1.10	.09	.58	203	.56
Orientation	.57	.50	.04	.55	.50	.07	.23	203	.82
Placement	1.00	< .001	< .001	1.33	.47	.04	-8.54	203	< .001 [†]
School	2.24	1.13	.15	2.33	1.12	.09	-.53	203	.60

Note: * = $p < .05$. [†] = $p < .001$.

Table 4*Chi-Square Tests of Independence to Examine Instructional Modality Variable Differences*

Modality Crosstab with:	Pearson Chi-Square		
	X^2	df	p
Age	3.48	8	.90
Ethnicity	5.71	5	.34
Gender	3.45	3	.33
Grade	.68	3	.89
Orientation	1.11	4	.89
Placement	25.41	1	<.001
School	.63	3	.89

Note: * = $p < .05$. † = $p < .001$.**Hypothesis 1**

High school students receiving in-person academic instruction will score higher in levels of school connectedness and school belonging than students receiving online academic instruction. Mean scores (see Table 5) were slightly higher for in-person learners on both school connectedness ($M = 18.99$, $SD = 4.69$) and school belonging ($M = 60.51$, $SD = 11.79$) as compared to mean scores for online learners on school connectedness ($M = 18.36$, $SD = 4.48$) and school belonging ($M = 59.62$, $SD = 11.73$). Independent Samples *T*-Tests were conducted to determine whether there is statistical evidence that the associated means of school connectedness and school belonging are different for participants receiving in-person instruction as compared to online instruction (see Table 6). Although students receiving in-person

instruction scored slightly higher, no significant differences in mean levels of the measures were found between school connectedness scores ($t(203) = -.88, p = .38$) or school belonging ($t(203) = -.49, p = .63$). Overall, no significant differences in mean levels of the measures were found between participants based on instructional modality. Based on the data analyzed, our hypothesis was not supported. At-risk students receiving in-person academic instruction did not score significantly higher in levels of school connectedness and school belonging than students receiving online instruction.

Table 5

In-Person and Online Comparison of School Connectedness (SCS) and School Belonging (PSSM) Group Statistics

Predictors	Modality	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>SEM</i>
SCS Total Score	Online	58	18.36	4.48	.59
	In-Person	147	18.99	4.69	.39
PSSM Total Score	Online	58	59.62	11.73	1.54
	In-Person	147	60.51	11.79	.97

Table 6

Independent Samples T-Test Comparing School Connectedness (SCS) and Belonging (PSSM) by Modality

Predictors	<i>t</i>	<i>df</i>	<i>p</i>	Mean Difference	<i>SE</i> Difference	95% Confidence Interval		Cohen's <i>d</i>
						Lower	Upper	
Connectedness	-.88	203	.38	-.63	.72	-2.05	.79	4.63
Belonging	-.49	203	.63	-.89	1.83	-4.49	2.7	11.76

Note: * = $p < .05$. † = $p < .001$.

Hypothesis 2

School connectedness and school belonging will predict levels of subjective wellbeing. Adolescents with higher levels of school connectedness and school belonging will report higher levels of subjective well-being than adolescents with lower levels of school connectedness and school belonging. Bivariate correlations were calculated to display interrelationships among the proposed mediators and outcome variables and to test the presence of multicollinearity. None of the correlation coefficients exceeded .80, which confirmed that multicollinearity among study variables was not severe. A Pearson's Correlation examined the relationship between scores of school connectedness (SCS), school belonging (PMSS) and indicators of SWB. While life satisfaction (SLSS) will be used as a well-being indicator, we will also examine positive affect (PANAS-P) and negative affect (PANAS-N) in an effort to reveal more nuanced effects of SWB. Bivariate analysis confirms that life satisfaction is significantly and positively correlated with positive affect ($SLSS = r(203) = .68, p < .001$) and both have a significant negative association with negative affect respectively ($PANAS-P = r(203) = -.54, p < .001$; $PANAS-N = r(203) = -.48, p < .001$). The results of the correlation analysis are presented in Table 7. Results indicate that the measures for school connectedness and school belonging ($r(203) = .70, p < .001$) have a strong and significant positive association with each other. School connectedness is significantly and positively correlated with life satisfaction ($r(203) = .35, p < .001$) and positive affect ($r(203) = .52, p < .001$) with a significant negative correlation with negative affect ($r(203) = -.40, p < .001$). Similarly, school belonging is significantly and positively correlated with life satisfaction ($r(203) = .45, p < .001$) and positive affect ($r(203) = .61, p < .001$) with a significant negative correlation with negative affect ($r(203) = -.46, p < .001$). Based on the data analyzed, our

hypothesis that school connectedness and school belonging will predict levels of SWB was supported.

Table 7

Pearson Correlation Table for Predictor and Outcome Measures (N = 205)

Variables	Predictors		Outcomes		
	SCS	PSSM	SLSS	PANAS-P	PANAS-N
School Connected (SCS)	1				
School Belonging (PSSM)	.70 [†]	1			
Life Satisfaction (SLSS)	.35 [†]	.45 [†]	1		
Positive Affect (PANAS-P)	.52 [†]	.61 [†]	.68 [†]	1	
Negative Affect (PANAS-N)	-.40 [†]	-.46 [†]	-.54 [†]	-.48	1

Note. [†] = $p < .001$

Hypothesis 3

School connectedness and school belonging will mediate the relationship between instructional delivery and SWB. Conditional process analysis was used to test the mediating role of school connectedness and school belonging in the relationship between instructional modality and SWB in at-risk adolescents. Mediation analysis was conducted using procedures outlined by Hayes (2012). Instructional modality was the predictor in all six models with scores on the SLSS (life satisfaction), PANAS-P (positive affect) and PANAS-N (negative affect) representing the outcome variables. A bootstrap estimation approach with 5000 samples was implemented to test the indirect effect of instructional modality on outcome measures. In addition to the indirect effects addressed, the total indirect effect and the difference between those partial indirect effects was evaluated. Hypotheses were tested in both single mediator models as well as a multiple

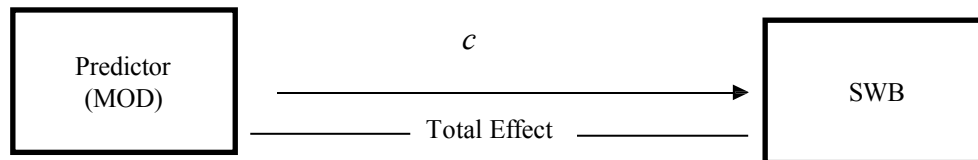
mediator models. Result patterns remained consistent in simple and parallel models. Figures 1-9 and Tables 8-18 summarize findings of mediational analyses.

Mediation Effects

An analysis of the predictive relationship between instructional modality and changes in each of the well-being indicators was conducted (*c* Path, see Figure 3). The total effect between instructional modality (MOD) and life satisfaction (SLSS) $c = \beta = .44$, $t = .34$, $p = .74$, 95% *CI* [-2.14, 3.02,], indicated that instructional modality was not a significant predictor of life satisfaction. An examination of the predictive relationship between instructional modality and changes in positive affect (PANAS-P) was conducted $c = \beta = 1.03$, $t = .109$, $p = .28$, 95% *CI* [-.84, 2.90], which was not significant. The predictive relationship between instructional modality and negative affect (PANAS-N) was conducted and was also not significant $c = \beta = -.29$, $t = -.34$, $p = .73$, 95% *CI* [-1.96, 1.38]. Total effects were not statistically significant between instructional modality and all three indicators of SWB.

Figure 3

Simple Mediation Model for Total Effects



SLSS: $c = \beta = .44$, $t = .34$, $p = .74$, 95% *CI* [-2.14, 3.02]

PA: $c = \beta = 1.03$, $t = .109$, $p = .28$, 95% *CI* [-.84, 2.90]

NA: $c = \beta = -.29$, $t = -.34$, $p = .73$, 95% *CI* [-1.96, 1.38]

School Connectedness (SCS). An examination of the relationship between instructional modality and school connectedness using unstandardized regression coefficients (*a* path, Figure 4) was conducted. In-person instruction did not significantly predict school connectedness as measured by the SCS scores, $a = \beta = .63$, $t = .89$, $p = .38$, 95% *CI* [-.78, 2.05], (see Table 8). The results of the regression indicated that the relationship between instructional modality and school connectedness explained less than 1% of the variance ($R = .06$, $R^2 = .004$, $F(1, 203) = .77$, $p = .38$). It was found that for this sample, instructional modality does not significantly predict school connectedness. Next, an examination of the relationship between school connectedness (SCS) and indicators of well-being using PROCESS mediation and unstandardized regression coefficients (*b* path) was conducted.

School Connectedness on Life Satisfaction (SLSS). School connectedness positively predicted life satisfaction, $b = \beta = .64$, $t = 5.30$, $p < .001$, 95% *CI* [.40, .87], (see Table 8). The results of the regression indicated that the relationship between school connectedness and life satisfaction explained 12.28% of the variance ($R = .35$, $R^2 = .12$, $F(1, 202) = 14.13$, $p < .001$). It was found that for this sample, school connectedness significantly predicts life satisfaction. The direct effect of instructional modality on life satisfaction, absent the mediator (*c'* path, see Figure 4) was calculated ($c' = \beta = .04$, $t = .03$, $p = .97$, 95% *CI* [-2.39, 2.47] and was not significant. The indirect effect of instructional modality on life satisfaction through school connectedness was calculated ($\beta = .40$, $SE = .46$, 95% *Bootstrap CI* [-.52, 1.30]). Since the bootstrap confidence interval straddles zero, there is no significant relationship. For mediation to take place, mediators must have a significant relationship with both the predictor and outcomes. As reported above, school connectedness had a significant relationship with life satisfaction but did not have a

significant relationship with instructional modality, and therefore the conditions for mediation were not satisfied.

Figure 4

Simple Mediation Analyses with School Connectedness (SCS) Mediating Life Satisfaction (SLSS)

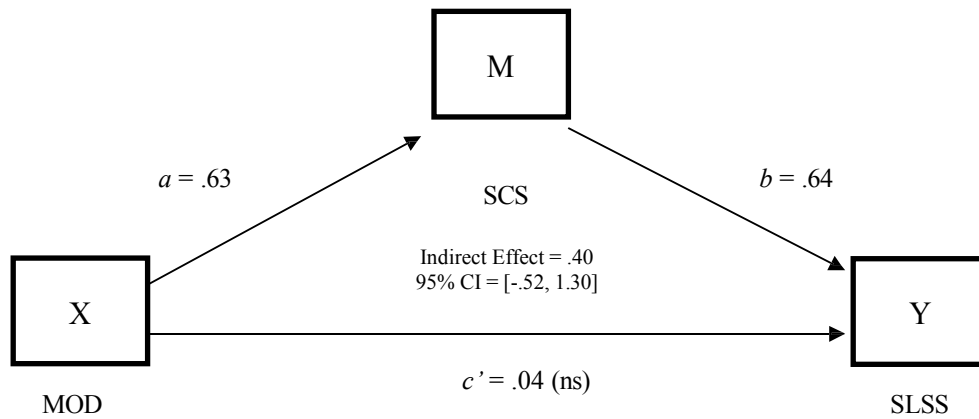


Table 8

Regression Coefficients, Standard Error and Model Summary Information for Simple Mediation with School Connectedness (SCS) and Life Satisfaction (SLSS) as Outcome

		Consequent						
		M (SCS)			Y (SLSS)			
Antecedent		Coeff.	SE	p	Coeff.	SE	p	
X (MOD)	a	.63	.71	.38	c'	.034	1.23	.98
M (SCS)		-	-	-	b	.64	.12	< .001
Constant	i_{M1}	18.36	.61	< .001	i_{M2}	15.62	2.44	< .001
$R^2 = .004$				$R^2 = .12$				
$F(1, 203) = .77, p = .38$				$F(1, 202) = 14.13, p < .001$				

School Connectedness on Positive Affect (PANAS-P). School connectedness positively predicted positive affect, $b = \beta = .69$, $t = 8.69$, $p < .001$, 95% CI [.53, .85], (see Table 9). The results of the regression indicated that the relationship between school connectedness and positive affect explained 27.63% of the variance ($R = .53$, $R^2 = .28$, $F(1, 202) = 38.56$, $p < .001$). It was found that for this sample, school connectedness significantly predicts positive affect. The direct effect of instructional modality on positive affect, absent the mediator (c' path, see Figure 5) was calculated ($c' = \beta = .60$, $t = .74$, $p = .46$, 95% CI [-1.00, 2.20] and was not significant. The indirect effect of instructional modality on positive affect through school connectedness was calculated ($\beta = .43$, $SE = .49$, 95% Bootstrap CI [-.52, 1.37]). Since the confidence intervals lie across zero, the relationship is not significant. School connectedness had a significant relationship with positive affect but no significant relationship with instructional modality, therefore the conditions for mediation were not satisfied.

Figure 5

Simple Mediation Analyses with School Connectedness (SCS) Mediating Positive Affect (PANAS-P)

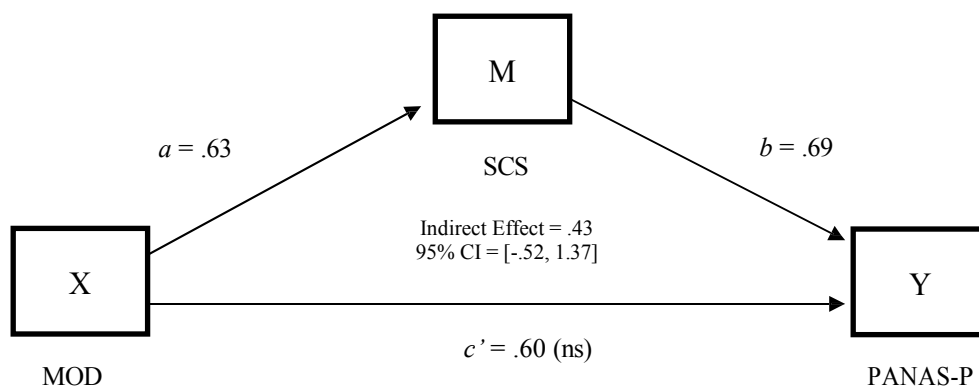


Table 9

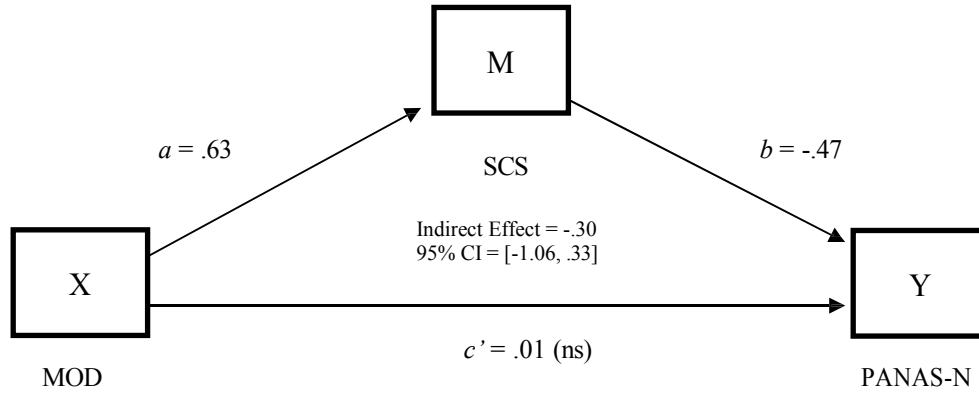
Regression Coefficients, Standard Error and Model Summary Information for Simple Mediation with School Connectedness (SCS) and Positive Affect (PANAS-P) as Outcome

		Consequent						
		M (SCS)			Y (PANAS-P)			
Antecedent		Coeff.	SE	p		Coeff.	SE	p
X (MOD)	<i>a</i>	.63	.72	.381	<i>c'</i>	.60	.81	.46
M (SCS)		-	-	-	<i>b</i>	.69	.08	< .001
Constant	<i>i_{MI}</i>	18.36	.61	< .001	<i>i_{M2}</i>	4.38	1.61	.007
		$R^2 = .004$			$R^2 = .28$			
		$F(1, 203) = .77, p = .38$			$F(1, 202) = 38.56, p < .001$			

School Connectedness on Negative Affect (PANAS-N). School connectedness negatively predicted negative affect (PANAS-N), $b = \beta = -.47, t = -6.16, p < .001, 95\% CI [-.62, -.32]$, (see Table 10). The results of the regression indicated that the relationship between school connectedness and negative affect explained 15.85% of the variance ($R = .40, R^2 = .16, F(1, 202) = 19.02, p < .001$). It was found that for this sample, lower scores of school connectedness significantly predict higher negative affect. The direct effect of instructional modality on negative affect, absent the mediator (c' path, see Figure 6) was calculated ($c' = \beta = .01, t = .01, p = .99, 95\% CI [-1.53, 1.54]$) and was not significant. The indirect effect of instructional modality and life satisfaction through school connectedness was calculated ($\beta = -.30, SE = .35, 95\% Bootstrap CI [-1.06, .33]$). Since the confidence intervals cross through zero, the relationship is not significant. Since school connectedness had a non-significant relationship with both instructional modality and negative affect, the conditions for mediation were not satisfied.

Figure 6

Simple Mediation Analyses with School Connectedness (SCS) Mediating Negative Affect (PANAS-N)

**Table 10**

Regression Coefficients, Standard Error and Model Summary Information for Simple Mediation with School Connectedness (SCS) and Negative Affect (PANAS-N) as Outcome

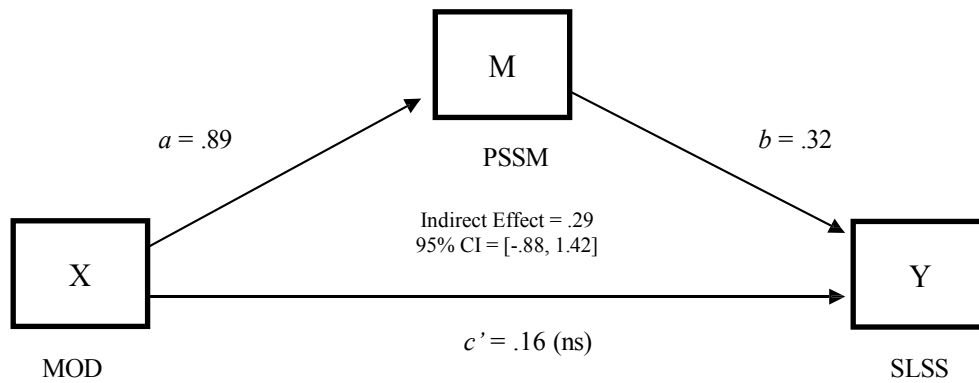
Consequent								
		M (SCS)			Y (PANAS-N)			
Antecedent		Coeff.	SE	p		Coeff.	SE	p
X (MOD)	<i>a</i>	.63	.72	.38	<i>c'</i>	.005	.78	.99
M (SCS)		-	-	-	<i>b</i>	-.47	.08	< .001
Constant	<i>i_{M1}</i>	18.36	.61	< .001	<i>i_{M2}</i>	19.69	1.55	< .001
<i>R</i> ² = .004					<i>R</i> ² = .16			
<i>F</i> (1, 203) = .77 , <i>p</i> = .38					<i>F</i> (1, 202) = 19.02 , <i>p</i> < .001			

School Belonging (PSSM). An examination of the relationship between instructional modality and school belonging using unstandardized regression coefficients (*a* path, Figure 3) was conducted. In-person instruction did not significantly predict school belonging as measured by the PSSM scores, $\beta = .89$, $t = .49$, $p = .63$, 95% *CI* [-2.71, 4.49] (see Table 11). The results of the regression indicated that the relationship between instructional modality and school belonging explained less than 1% of the variance ($R = .03$, $R^2 = .001$, $F(1, 203) = .24$, $p = .63$). It was found that for this sample, instructional modality does not significantly predict school belonging. To examine the relationship between school belonging (PSSM) and indicators of well-being, simple mediation using unstandardized regression coefficients (*b* path) was conducted.

School Belonging on Life Satisfaction (SLSS). School belonging positively predicted life satisfaction (SLSS), $b = \beta = .32$, $t = 7.13$, $p < .001$, 95% *CI* [.23, .41], (see Table 11). The results of the regression indicated that the relationship between school belonging and life satisfaction explained 20.14% of the variance ($R = .45$, $R^2 = .20$, $F(1, 202) = 25.47$, $p < .001$). It was found that for this sample, school belonging significantly predicts life satisfaction. The direct effect of instructional modality on life satisfaction, absent the mediator (*c'* path, see Figure 7) was calculated and was not significant ($c' = \beta = .16$, $t = .13$, $p = .90$, 95% *CI* [-2.16, 2.47]). The indirect effect of instructional modality on life satisfaction through school belonging was calculated ($\beta = .29$, $SE = .59$, 95% *Bootstrap CI* [-.88, 1.42]). Since the confidence intervals did not straddle zero, the relationship is not significant. As reported above, school belonging did have a significant relationship with life satisfaction but did not have a significant relationship with instructional modality, and therefore the conditions for mediation were not satisfied.

Figure 7

Simple Mediation Analyses with School Belonging (PSSM) Mediating Life Satisfaction (SLSS)

**Table 11**

Regression Coefficients, Standard Errors and Model Summary Information for Simple Mediation with School Belonging (PSSM) and Life Satisfaction (SLSS) as Outcome

		Consequent						
		M (PSSM)			Y (SLSS)			
Antecedent		Coeff.	SE	p	Coeff.	SE	p	
X (MOD)	<i>a</i>	.89	1.83	.63	<i>c'</i>	.16	1.17	.90
M (PSSM)		-	-	-	<i>b</i>	.32	.05	< .001
Constant	<i>i_M</i>	59.62	1.55	< .001	<i>i_Y</i>	8.16	2.87	.005
		$R^2 = .001$			$R^2 = .201$			
		$F(1, 203) = .24, p = .63$			$F(1, 202) = 25.47, p < .001$			

School Belonging on Positive Affect (PANAS-P). School belonging positively predicted positive affect (PANAS-P), $b = \beta = .32$, $t = 10.84$, $p < .001$, 95% CI [.26, .37], (see Table 12).

The results of the regression indicated that the relationship between school belonging and positive affect explained 37.15% of the variance ($R = .61$, $R^2 = .37$, $F(1, 202) = 59.70$, $p < .001$).

It was found that for this sample, school belonging significantly predicts positive affect. The direct effect of instructional modality on positive affect, absent the mediator (c' path, see Figure 8) was calculated and not significant ($c' = \beta = .75$, $t = .99$, $p = .32$, 95% CI [-.74, 2.25]). The indirect effect of instructional modality on positive affect through school belonging was calculated ($\beta = .28$, $SE = .58$, 95% Bootstrap CI [-.94, 1.39]). Since the confidence intervals lie on both sides of zero, the relationship is not significant. While school belonging had a significant relationship with positive affect, no significant relationship with instructional modality was observed so the conditions for mediation were not satisfied.

Figure 8

Simple Mediation Analyses with School Belonging (PSSM) Mediating Positive Affect (PANAS-P)

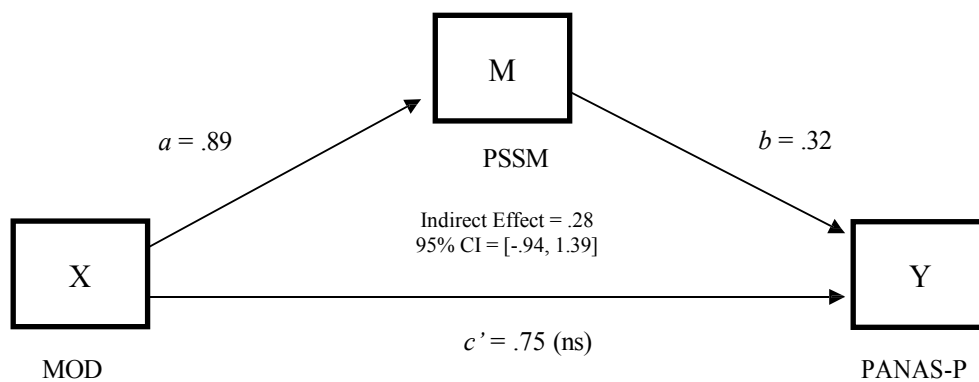


Table 12

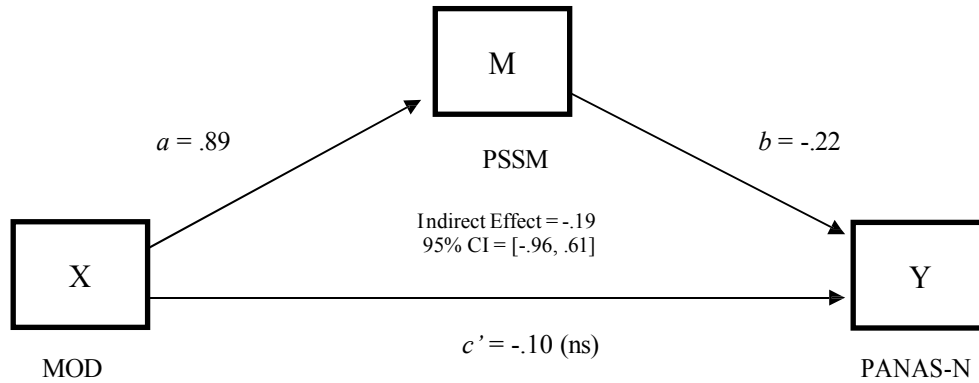
Regression Coefficients, Standard Error and Model Summary Information for Simple Mediation with School Belonging (PSSM) and Positive Affect (PANAS-P) as Outcome

		Consequent						
		M (PSSM)			Y (PANAS-P)			
Antecedent		Coeff.	SE	p	Coeff.	SE	p	
X (MOD)	<i>a</i>	.89	1.83	.63	<i>c'</i>	.75	.76	.32
M (PSSM)		-	-	-	<i>b</i>	.32	.03	< .001
Constant	<i>i_M</i>	59.62	1.55	< .001	<i>i_Y</i>	-1.76	1.85	.34
		$R^2 = .001$			$R^2 = .37$			
		$F(1, 203) = .24, p = .63$			$F(1, 202) = 59.70, p < .001$			

School Belonging on Negative Affect (PANAS-N). School belonging significantly and negatively predicted negative affect (PANAS-N), $b = \beta = -.22, t = -7.44, p < .001, 95\% CI [-.27, -.16]$ (see Table 13). The results of the regression indicated that the relationship between school belonging and negative affect explained 21.56% of the variance ($R = .46, R^2 = .22, F(1, 202) = 27.76, p < .001$). It was found that for this sample, lower school belonging scores significantly predicted negative affect. The direct effect of instructional modality on negative affect, absent the mediator (c' path, see Figure 9) was calculated ($c' = \beta = -.10, t = -.13, p = .895, 95\% CI [-1.58, 1.38]$) and was not significant. The indirect effect of instructional modality and life satisfaction through school connectedness was calculated ($\beta = -.19, SE = .39, 95\% Bootstrap CI [-.96, .61]$). Since the confidence intervals pass through zero, the relationship is not significant. School belonging did not have a significant relationship with both instructional modality and negative affect, so the conditions for mediation were not satisfied.

Figure 9

Simple Mediation Analyses with School Belonging (PSSM) Mediating Negative Affect (PANAS-N)

**Table 13**

Regression Coefficients, Standard Errors and Model Summary Information for Simple Mediation with Negative Affect (PANAS-N) as Outcome

Consequent								
		M (PSSM)			Y (PANAS-P)			
Antecedent		Coeff.	SE	p		Coeff.	SE	p
X (MOD)	<i>a</i>	.89	1.83	.63	<i>c'</i>	-.09	.75	.90
M (PSSM)		-	-	-	<i>b</i>	-.22	.03	< .001
Constant	<i>i_M</i>	59.62	1.55	< .001	<i>i_Y</i>	23.91	1.84	< .001
<i>R</i> ² = .001					<i>R</i> ² = .22			
<i>F</i> (1, 203) = .24 , <i>p</i> = .63					<i>F</i> (1, 202) = 27.76 , <i>p</i> < .001			

Parallel Mediation

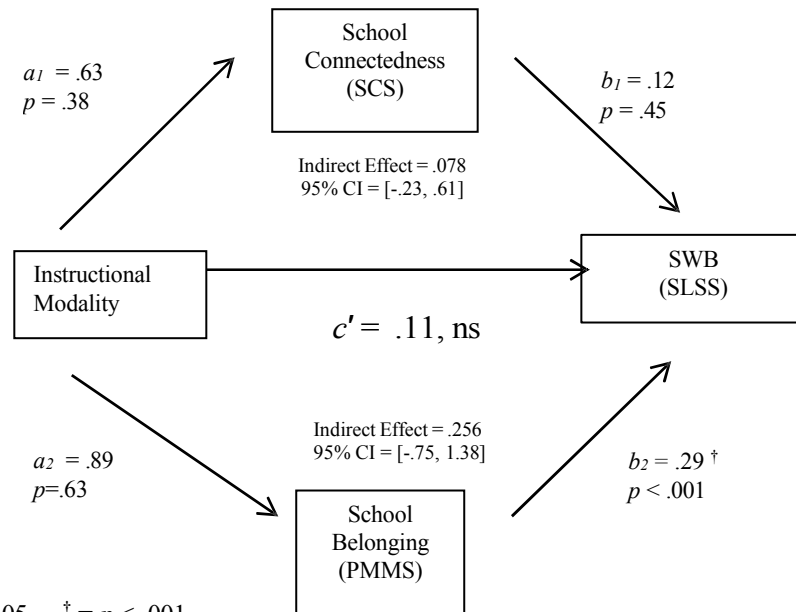
Conditional process analysis using the mediating effects of both school connectedness and school belonging on the relationship between instructional modality and each of the well-being indicators was conducted. The direct effect in parallel mediation is the effect of the predictor on the outcome absent one mediator. The direct effect (c' path) indicated that instructional modality was not a significant predictor of life satisfaction (Figure 10), $c' = .11$, $SE = 1.18$, $p = .93$, 95% *Bootstrap CI* [-2.21, 2.43], positive affect (Figure 11), $c' = .66$, $SE = .75$, $p = .38$, 95% *Bootstrap CI* [-.82, 2.13] or negative affect (Figure 12) $c' = -.04$, $SE = .75$, $p = .96$, 95% *Bootstrap CI* [-1.51, 1.44]. Direct effects were not statistically significant.

Life Satisfaction (SLSS) Mediation Outcomes. An analysis of the partial unstandardized regression coefficients was conducted, which partials out the effects of X and M₂ for b_1 and the effects of X and M₁ for b_2 . In the first parallel mediation model, life satisfaction was not significantly affected by school connectedness $b = \beta = .12$, $t = .77$, $p = .45$, 95% *CI* [-20, .44], but was significantly affected by school belonging $b = \beta = .29$, $t = 4.52$, $p < .001$, 95% *CI* [.16, .41] (see Table 14). As hypothesized, the results of the regression indicated a significant positive relationship between school connectedness and school belonging on life satisfaction and explained 20.37% of the variance ($R = .45$, $R^2 = .20$, $F(1, 201) = 17.14$, $p < .001$). It was found that for this sample, school connectedness and school belonging significantly predict life satisfaction. The direct effect of instructional modality on life satisfaction (c' path, see Figure 10), absent the mediator was calculated ($c' = \beta = .11$, $t = .09$, $p = .93$, 95% *CI* [-2.21, 2.43] and was not significant. The total indirect effect of instructional modality on life satisfaction through school connectedness and school belonging was calculated ($\beta = .33$, $SE = .59$, 95% *Bootstrap CI* [-.80, 1.55]) and was not significant. For parallel mediation to take place, mediators must have a

significant relationship with both the predictor and outcomes. As reported above, school connectedness and school belonging had a significant relationship with life satisfaction but did not have a significant relationship with instructional modality. Total effects were not statistically significant and therefore the conditions for parallel mediation were not satisfied.

Figure 10

Parallel Multiple Mediation Analyses with Life Satisfaction (SLSS) as Outcome



Note: * = $p < .05$, $^\dagger = p < .001$

Table 14

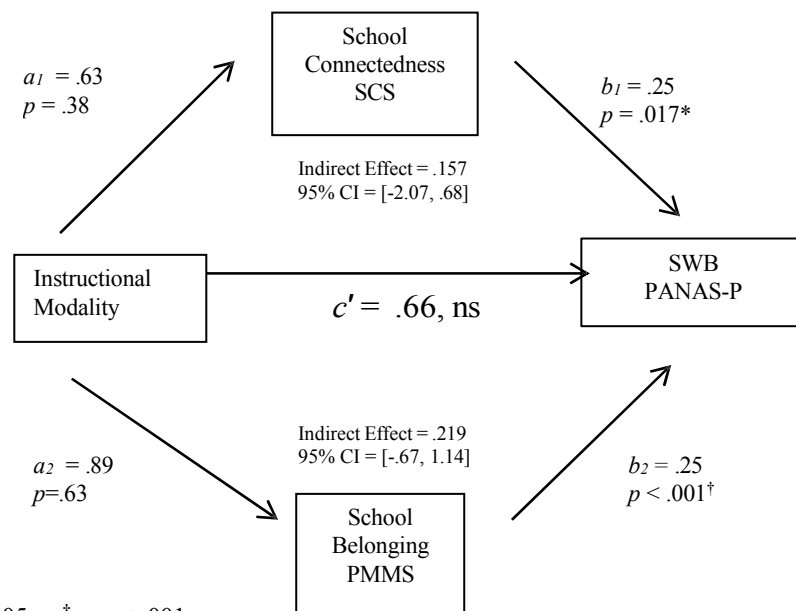
Regression Coefficients, Standard Errors and Model Summary Information for Parallel Mediation with Life Satisfaction (SLSS) as Outcome

		Consequent										
		M (SCS)			M (PSSM)			Y (SLSS)				
Antecedent		Coeff.	SE	p		Coeff.	SE	p		Coeff.	SE	p
X (MOD)	a_1	.63	.72	.38	a_2	.89	1.83	.63	c'	.11	1.18	.93
M (SCS)		-	-	-		-	-	-	b_1	.12	.16	.45
W (PSSM)		-	-	-		-	-	-	b_2	.29	.06	< .001
Constant	i_{M1}	18.36	.72	.38	i_{M2}	59.62	1.83	.63	i_Y	7.93	2.89	.007
		$R^2 = .004$			$R^2 = .001$			$R^2 = .204$				
		$F(1, 203) = .77, p = .38$			$F(1, 203) = .24, p = .63$			$F(1, 201) = 17.14, p < .001$				

Positive Affect (PANAS-P) Mediation Effects. Results of the multiple mediation model indicate school connectedness and school belonging positively and significantly impact scores of positive affect (b_1 path, b_2 path, Figure 11). As hypothesized, school connectedness ($b = .25$, $SE = .10$, $p = .02$, 95% $CI [.05, .45]$) and school belonging ($b = .25$, $SE = .04$, $p < .001$, 95% $CI [.17, .33]$) had a significant positive impact on the positive affect scores and explained 38.92% of the variance ($R = .62$, $R^2 = .39$, $F(1, 201) = 42.70$, $p < .001$). The direct effect of instructional modality on life satisfaction (c' path, see Figure 11), absent the mediator was calculated ($c' = \beta = .66$, $t = .88$, $p = .38$, 95% $CI [-.82, 2.13]$) and was not significant. Total indirect effects of instructional modality on positive affect through school connectedness and school belonging ($\beta = .38$, $SE = .59$, 95% *Bootstrap CI* $[-.81, 1.51]$) were statistically insignificant (see Table 15) but total effects were not statistically significant. Therefore, the conditions for parallel mediation were not satisfied.

Figure 11

Parallel Multiple Mediation Analyses with Positive Affect (PANAS-P) as Outcome



Note: * = $p < .05$, † = $p < .001$

Table 15

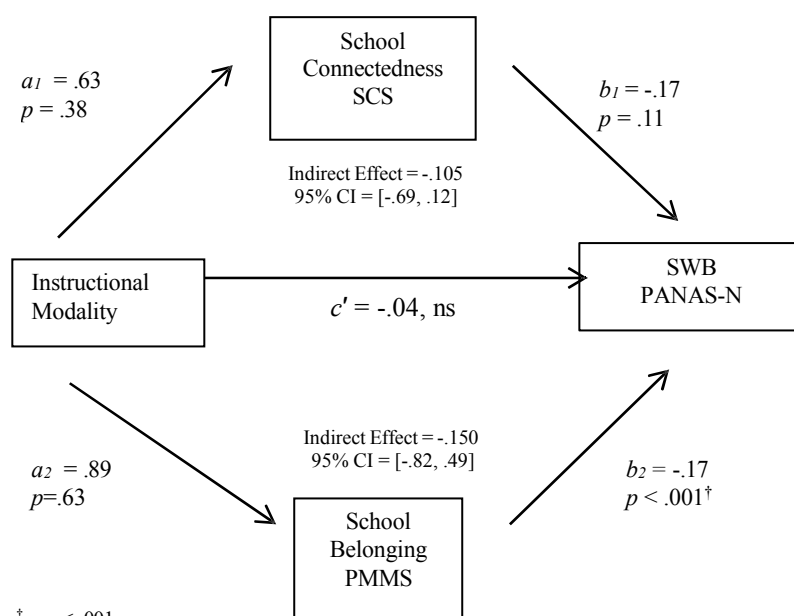
Regression Coefficients, Standard Errors and Model Summary Information for Parallel Mediation with Positive Affect (PANAS-P) as Outcome

Antecedent	Consequent											
	M (SCS)				M (PSSM)				Y (PANAS-P)			
		Coeff.	SE	p		Coeff.	SE	p		Coeff.	SE	p
X (MOD)	a_1	.63	.72	.38	a_2	.89	1.83	.63	c'	.66	.75	.38
M (SCS)		-	-	-		-	-	-	b_1	.25	.10	.02
W (PSSM)		-	-	-		-	-	-	b_2	.25	.04	< .001
Constant	i_{M1}	18.36	.72	.38	i_{M2}	59.62	1.83	.63	i_Y	-2.22	1.84	.23
		$R^2 = .004$				$R^2 = .001$				$R^2 = .39$		
		$F(1, 203) = .77, p = .38$				$F(1, 203) = .24, p = .62$				$F(1, 201) = 42.70, p < .001$		

Negative Affect (PANAS-N) Parallel Median Effects. Results of the multiple mediation model indicate school connectedness and school belonging have a negative association (decreased scores of SWB) on negative affect (b_1 path, b_2 path, Figure 12). Negative affect was not significantly affected by school connectedness $b = -.17$, $SE = .10$, $p = .11$, 95% *CI* $[-.37, .04]$ but was significantly affected by school belonging $b = -.17$, $SE = .04$, $p < .001$, 95% *Bootstrap CI* $[-.25, -.09]$. The results of the regression indicated a significant negative relationship between school connectedness and school belonging on negative affect and explained 22.56% of the variance ($R = .48$, $R^2 = .23$, $F(1, 201) = 19.52$, $p < .001$). The direct effect of instructional modality on NA (c' path, see Figure 12), absent the mediator was calculated ($c' = \beta = -.04$, $t = -.05$, $p = .96$, 95% *CI* $[-1.51, 1.44]$) and was not significant. Total indirect effects of instructional modality on negative affect through the mediators of school connectedness and school belonging ($\beta = -.26$, $SE = .42$, 95% *Bootstrap CI* $[-1.12, .54]$) were statistically insignificant (see Table 16). Total effects were not statistically significant and therefore the conditions for mediation were not satisfied. Based on the data analyzed, school connectedness and school belonging did not mediate the relationship between instructional delivery and SWB therefore our hypothesis that was not supported.

Figure 12

Parallel Multiple Mediation Analyses with Negative Affect (PANAS-N) as Outcome



Note; * = $p < .05$, $^\dagger = p < .001$

Table 16

Regression Coefficients, Standard Errors and Model Summary Information for Parallel Mediation with Negative Affect (PANAS-N) as Outcome

Antecedent		Consequent										
		M (SCS)			M (PSSM)			Y (PANAS-N)				
		Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p		
X (MOD)	a_1	.63	.72	.38	a_2	.89	1.83	.63	c'	-.04	.75	.96
M (SCS)		-	-	-		-	-	-	b_1	-.17	.10	.11
W (PSSM)		-	-	-		-	-	-	b_2	-.17	.04	< .001
Constant	i_{M1}	18.36	.72	.38	i_{M2}	59.62	1.83	.63	i_Y	24.21	1.84	< .001
		$R^2 = .004$			$R^2 = .001$			$R^2 = .23$				
		$F(1, 203) = .77, p = .38$			$F(1, 203) = .24, p = .62$			$F(1, 201) = 19.52, p < .001$				

Hypothesis 4

School connectedness and school belonging will have a different indirect mediating effect through its relationship between instructional modality and indicators of SWB. The indirect pathway is the effect of instructional modality on indicators of SWB through the mediators. Specific indirect effects from the same sample are scaled in terms of the predictor and outcome variables, which enables two specific indirect effects of the same antecedent on the same consequent to be compared even when the mediator variables are measured using different scales (Hayes, 2013). To determine if school connectedness and school belonging have different indirect effects, bootstrap confidence intervals were generated using Hayes Model 4. In a pairwise comparison of the indirect effects in our three multiple mediation models, contrasts were calculated from the indirect effect through school connectedness minus the indirect effect of school belonging ($CI = a_1b_1 - a_2b_2$). Point estimates of the indirect effects were calculated for life satisfaction $CI = .08 - .26 = -.18$, 95% *Bootstrap CI* [-1.41, .77] see Table 17; positive affect $CI = .16 - .22 = -.06$, 95% *Bootstrap CI* [-.93, .69] see Table 18; and negative affect $CI = -.10 - .15 = .05$, 95% *Bootstrap CI* [-.60, .76], see Table 19. Since all three confidence intervals straddled zero, the indirect effects are not significantly different from one another. Based on the data analyzed, the indirect effect of instructional modality on indicators of SWB through school connectedness is no different than the indirect effect through school belonging. Therefore, our hypothesis that school connectedness and school belonging will have a different indirect mediating effect through its relationship between instructional modality and indicators of SWB was not supported.

Table 17*Summary of Indirect Effects for Parallel Multiple Mediation with Life Satisfaction (SLSS) as Outcome*

Type	β	SE	95% Bootstrap Confidence Interval	
			LL	UL
Indirect Effect (SCS)	.08	.20	-.23	.61
Indirect Effect (PSSM)	.26	.53	-.75	1.38
Total Indirect Effect	.33	.59	-.80	1.55
Direct Effect (c') on SLSS	.11	1.12	.93	-2.21
Total Effect (c) on SLSS	.44	1.31	-2.14	3.02
Contrast (C1)	-.18	.53	-1.41	.77

Note: Total Effects = Total Indirect Effects (a_1b_1 (SCS) + a_2b_2 (PSSM)) + Direct Effect (c');Contrast ($CI = a_1b_1$ (SCS) + a_2b_2 (PSSM))**Table 18***Summary of Indirect Effects for Parallel Multiple Mediation with Positive Affect (PANAS-P) as Outcome*

Type	β	SE	95% Bootstrap Confidence Interval	
			LL	UL
Indirect Effect (SCS)	.16	.22	-.21	.68
Indirect Effect (PSSM)	.22	.45	-.67	1.14
Total Indirect Effect	.38	.59	-.81	1.51
Direct Effect (c') on PANAS-P	.66	.75	-.82	2.13
Total Effect (c) on PANAS-P	1.03	.95	-.84	2.90
Contrast (C1)	-.06	.40	-.93	.69

Note: Total Effects = Total Indirect Effects (a_1b_1 (SCS) + a_2b_2 (PSSM)) + Direct Effect (c').Contrast ($CI = a_1b_1$ (SCS) + a_2b_2 (PSSM)).

Table 19*Summary of Indirect Effects for Parallel Multiple Mediation with Negative Affect (PANAS-N) as Outcome*

Type	β	SE	95% Bootstrap Confidence Interval	
			LL	UL
Indirect Effect (SCS)	-.10	.20	-.69	.12
Indirect Effect (PSSM)	-.15	.32	-.82	.49
Total Indirect Effect	-.26	.42	-1.12	.54
Direct Effect (c') on PANAS-P	-.04	.75	-1.51	1.44
Total Effect (c) on PANAS-P	-.29	.85	-1.96	1.38
Contrast (CI)	.05	.34	-.60	.76

Note: Total Effects = Total Indirect Effects (a_1b_1 (SCS) + a_2b_2 (PSSM)) + Direct Effect (c').

Contrast (CI) = a_1b_1 (SCS) + a_2b_2 (PSSM)

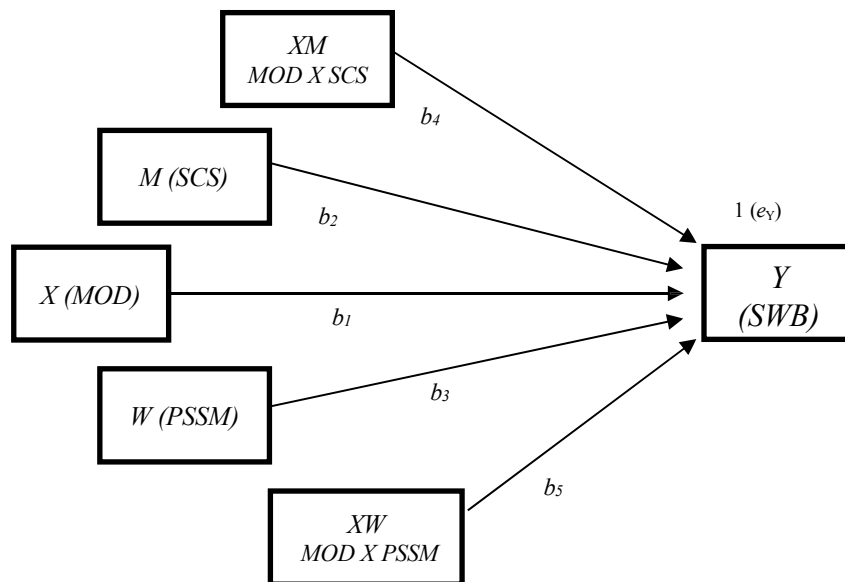
Exploratory Analysis

This research study was based on a hypothetical causal chain theory that school connectedness and school belonging would mediate the relationship between instructional modality and SWB. Mediators describe the how or why of a relationship and often describe the process through which an effect occurs. While our research supported the effects between school connectedness and school belonging on SWB, our results did not support the causal chain from instructional modality through connectedness and belonging to SWB. Alternatively, moderation analysis tests for the influence of one variable on the relationship between two other variables. Rather than testing a causal link between these other variables, moderation tests for when or under what conditions an effect occurs and can strengthen, weaken, or reverse the nature of a relationship. Since no statistical significance for school connectedness and school belonging as

mediators was evident in our results, the data perhaps favors an alternative hypothesis. Although not predicted, it is possible that school connectedness and school belonging might function as moderators of the relationships identified above. Consequently, school connectedness and school belonging were examined as moderators of the relationship between instructional modality and indicators of SWB using Hayes' (2012) Additive Moderation Model 2 (see Figure 13). Instructional modality was the predictor in all three models. In the first model, life satisfaction was the outcome variable, in the second model it was positive affect, and in the third model the outcome variable was negative affect.

Figure 13

Additive Moderation Model: School Connectedness (SCS) and School Belonging (PSSM) Moderating the Relationship between Instructional Modality and Indicators of SWB



Moderation on Life Satisfaction (SLSS)

Life satisfaction was regressed on instructional modality along with two interactions involving the cross products of modality and school connectedness, and the cross products of modality and school belonging (see Figure 13). The results of that five-predictor multiple regression analysis are presented in Table 20. The overall model with all 5 predictors had a significant amount of variance over zero predicting life satisfaction: $F(5, 199) = 10.54, p < .001, R^2 = .21$, with 20.94% of the variance in life satisfaction contributed to our predictors. The interaction terms of modality and school connectedness ($\Delta R^2 = .003, F(5, 199) = .06, p = .80$) and the interaction terms of modality and school belonging ($\Delta R^2 = .004, F(5, 199) = 1.03, p = .31$) did not explain a statistically significant increase in variance in life satisfaction. Therefore, school connectedness and school belonging were not significant moderators of the relationship between instructional modality and life satisfaction.

Table 20

Moderating Effects of School Connectedness (SCS) and School Belonging (PSSM) on the Relationship between Instructional Modality and Life Satisfaction (SLSS)

<i>Predictor</i>	<i>b</i>	<i>p</i>	<i>95% CI</i>	
Intercept	24.55			
Instructional Modality (MOD)	-6.73	.28	-18.99	5.52
School Connectedness (SCS) [†]	.19	.55	-.43	.80
MOD X SCS	-.09	.80	-.81	.62
School Belonging (PSSM) ^{††}	.19	.12	-.05	.42
MOD X PSSM	.14	.31	-.13	.42

[†] ΔR^2 change due to interaction effect $< .001, F(1, 199) = .06, p = .80$

^{††} ΔR^2 change due to interaction effect = .004, $F(1, 199) = 1.03, p = .31$

Moderation on Positive Affect (PANAS-P)

Positive affect was regressed on instructional modality along with two interactions involving the cross products of modality and school connectedness and the cross products of modality and school belonging (see Figure 13). The results of that five-predictor multiple regression analysis are presented in Table 21. The overall model with all 5 predictors has a significant amount of variance over zero predicting life satisfaction: $F(5, 199) = 25.75, p < .001$, $R^2 = .39$, with 39.28% of the variance in positive affect contributed to our predictors. The interaction terms of modality and school connectedness ($\Delta R^2 < .001, F(5, 199) = .27, p = .61$) and the interaction terms of modality and school belonging ($\Delta R^2 = .003, F(5, 199) = 1.08, p = .30$) did not explain a statistically significant increase in variance in positive affect. Therefore, school connectedness and school belonging were not significant moderators of the relationship between instructional modality and positive affect.

Table 21

Moderating Effects of School Connectedness (SCS) and School Belonging (PSSM) on the Relationship between Instructional Modality and Positive Affect (PANAS-P)

<i>Predictor</i>	<i>b</i>	<i>p</i>	<i>95% CI</i>	
Intercept	.17			
Instructional Modality (MOD)	-2.69	.50	-10.50	5.11
School Connectedness (SCS) [†]	.33	.09	-.06	.72
MOD X SCS	-.12	.61	-.58	.34
School Belonging (PSSM) ^{††}	.18	.02	.03	.33
MOD X PSSM	.14	.31	-.13	.42

[†] ΔR^2 change due to interaction effect $< .001, F(1, 199) = .27, p = .61$

^{††} ΔR^2 change due to interaction effect = .003, $F(1, 199) = 1.08, p = .30$

Moderation on Negative Affect (PANAS-N)

Negative Affect was regressed on modality along with two interactions involving the cross products of modality and school connectedness and the cross products of modality and school belonging (see Figure 13). The results of that five-predictor multiple regression analysis are presented in Table 22. The overall model with all 5 predictors has a significant amount of variance over zero predicting negative affect ($F(5, 199) = 14.02, p < .001$), $R^2 = .26$, with 26.05% of the variance in negative affect contributed to our predictors. The effect of instructional modality on the PANAS-N was negative, not significant ($b = -.36, t(199) = -.09, p = .927$) and does not predict overall negative SWB conditional on the school connectedness and school belonging remaining constant. The effect of school connectedness was negative and significant ($b = -.67, t(199) = -3.45, p < .001$) in predicting overall negative affect conditional on school belonging remaining constant. The effect of school belonging was negative, not significant ($b = -.21, t(199) = -.27, p = .79$) and does not predict overall negative SWB. The addition of Interaction 1 (Mod x SCS) was statistically significant ($\Delta R^2 = .034, F(1, 199) = 9.26, p = .003$) in our model indicating that school connectedness was a significant moderator of the effect of modality on negative SWB. The R-square change by the addition of the interaction effect accounted for 3.4% added variation in negative SWB. Interaction 2 (Mod X PSSM) was also statistically significant ($\Delta R^2 = .021, F(1, 199) = 5.65, p = .018$) indicating that school belonging moderates the effect of modality on negative SWB. The R-square change by the addition of the interaction indicates the addition of the interaction effect explained a statistically significant increase in variance and accounted for 2.1% of the added variation in negative SWB. Therefore, school belonging, and school connectedness are significant moderators in the relationship between instructional modality and negative SWB as measured by the PANAS-N.

Table 22

Moderating Effects of School Connectedness (SCS) and School Belonging (PSSM) on the Relationship between Instructional Modality and Negative Affect (PANAS-N)

<i>Predictor</i>	<i>b</i>	<i>p</i>	<i>95% CI</i>	
Intercept	24.55			
Instructional Modality (MOD)	-.36	.93	-8.02	7.31
School Connectedness (SCS) [†]	-.67	.001	-1.05	-.29
Modality X SCS	.69	.003	.24	1.14
School Belonging (PSSM) ^{††}	-.02	.79	-.17	.13
Modality X PSSM	-.21	.02	-.38	-.04

[†] ΔR^2 change due to interaction effect = .03, $F(1, 199)=9.26$, $p=.003$

^{††} ΔR^2 change due to interaction effect = .021, $F(1, 199)=5.65$, $p=.018$

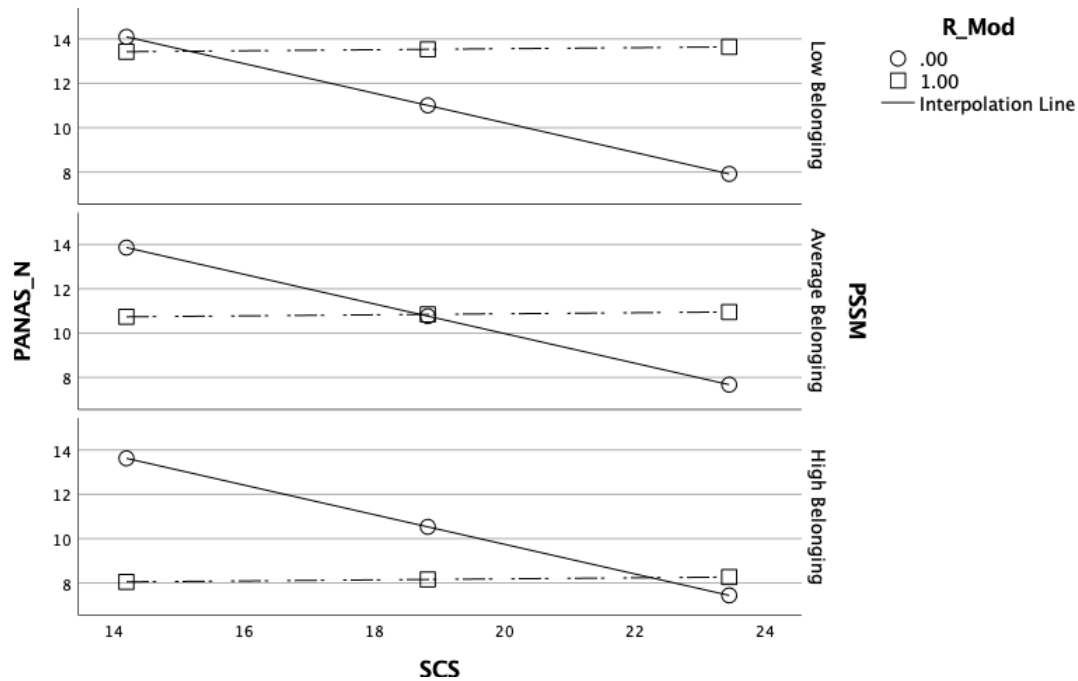
To evaluate the pattern of moderation of school connectedness and school belonging on the relationship between instructional modality and negative affect, conditional effects were examined using simple slope tests one *SD* below, at the mean, and one *SD* above the value of the moderator (see Table 23). A visual representation of this model can be found in Figure 14, generated with the help of the estimated values of instructional modality for various combinations of negative affect, school connectedness and school belonging. Produced with plot options in PROCESS (Hayes, 2013) as school connectedness and school belonging scores increased, the value of negative SWB (PANAS-N) decreased indicating an attenuation of the relationship between instructional modality and negative affect. The effect of school connectedness and belonging on negative affect is consistently negative for students receiving online instruction as compared to students receiving in-person instruction. The interaction between the negative affect and instructional modality accounts for 3.24% of the variance in negative SWB and when represented visually, is clearly detectable by eye.

Table 23*Conditional Effects of Instructional Modality on PANAS-N at Values of SAS and PSSM*

SCS*	PSSM*	<i>b</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>
14.19	48.51	-.67	.531	-2.78	1.44
14.19	60.26	-3.12	.013	-5.59	-.65
14.19	72.01	-5.57	.006	-9.58	-1.57
18.81	48.51	2.53	.048	-1.38	1.53
18.81	60.26	.08	.916	-1.38	1.53
18.81	72.01	-2.37	.061	-4.86	.11
23.44	48.51	5.73	.006	1.63	9.83
23.44	60.26	3.28	.014	.68	5.88
23.44	72.01	.83	.465	-1.40	3.05

Note: LLCI, ULCI = Lower & upper limits of 95% CI.

*Values of moderator at the mean and plus/minus from mean.

Figure 14*Data for Visualizing the Conditioned Effect of Instructional Modality on Negative Affect (PANAS-N)*

CHAPTER 4

DISCUSSION

To decrease the spread of COVID-19, extraordinary prevention measures were undertaken in U.S. High schools to stop the spread of the virus. Teaching students online was one such measure. Although attention has been paid to the effectiveness of this strategy with respect to reduction of virus transmission (Staguhn et al., 2021), it was not until recently that the mental health and social-emotional implications of this approach for at-risk high school students has been considered (Vaillancourt et al., 2021). In this study, we were interested in examining how teaching at-risk adolescents online as compared to in-person during the pandemic affected their SWB and how school connectedness and school belonging mediated that relationship.

This study focuses on constructs of increasing concern to educators, mental health professional and researchers during COVID. This social emotional outlook can be viewed as a shift from learner outcomes to learner experiences and well-being (Beck et al., 2013; Beck et al., 2014; Fernandez-Gutierrez et al., 2016, Johnston et al., 2014, Rice & Carter, 2015). While the terms connectedness and belonging are often used interchangeably in the literature (Libbey, 2004; Resnick et al, 1997), for purposes of this study we considered them to be separate and distinct constructs. We clarify by defining school connectedness as the subjective awareness of being in a relationship with the school environment whereas school belonging refers to an innate human drive to be in that relationship. The distinction of one construct over another cannot be determined by current research. Both measures take into consideration the student within the school environment, and both were positively associated with high student SWB. Furthermore, the high and significant correlation between school connectedness and school belonging ($r(203)$

= .70, $p < .001$) as well as the lack of statistical difference observed between the two analogous constructs in this study merits further investigation into the relationship between these variables.

Of interest in our study was whether at-risk high school students participating in online learning would have lower levels of school connectedness and belonging than students receiving in-person academic instruction. Students receiving in-person instruction scored slightly higher than those receiving online instruction, but contrary to expectations, there were no significant differences in the scores between school connectedness and school belonging for those receiving online instruction as compared to students receiving in-person instruction. The fact that no significant differences emerged between the constructs can be viewed as evidence that the online classroom is not quite so different from the traditional classroom and can be adapted as easily as brick-and-mortar classrooms in fostering a sense of school connection and belonging for at-risk students. Alternatively, all students in our sample received in-person instruction prior to the initial pandemic shutdown. For students choosing online instruction after schools re-opened, a foundation of connection and belonging may have been established and solidified long before the changes in instructional circumstances.

Previous research suggests that face-to-face instruction does not favor all students and that online instruction for alternative school programs may appeal to some at-risk students who have struggled in traditional school settings (Lehr et al., 2009; Picciano et al., 2010). Although teacher and students are physically separated in an online classroom, educators can use different methods to interact and connect. A supportive and interactive online setting can create opportunities for at-risk students to build confidence, connectedness and belonging, by focusing on student ideas rather than their behaviors (Tonks, 2019). Additionally, online instruction may help at-risk students prone to avoidance and anxiety, reduce their stress and actually participate

in school, which may further support positive outcomes of SWB. Previous studies report that online students experienced more autonomy, felt safer, less judged and for day students with a long commute, appreciated being able to sleep longer (Beck et al., 2013). Literature reveals that educators in brick-and-mortar settings have concerns about lack of connection online (Beck et al, 2014; RHIM et al, 2008). But in a study by Beck et al. (2014), online students report being more pleased overall with their online experiences than education and mental health stakeholders anticipated.

Although there were no significant differences in school connectedness and school belonging when comparing at-risk students receiving in-person instruction as opposed to on-line instruction, we hypothesized that school connectedness and school belonging would predict levels of SWB. As mentioned previously, SWB arises from life satisfaction, the presence of positive affect and the absence of negative affect. Conceptualizing SWB in three dimensions will enable educators and clinicians to benefit from a nuanced assessment of each of the three facets of SWB and more effectively identify evidence-based interventions designed to affect one or more of these dimensions relevant to a student's goals. Our research question posited that at-risk high school online learners with lower levels of school connectedness and school belonging have lower levels of SWB inferring that student indicators of SWB would be negatively impacted by not being taught face-to-face during the pandemic. Results did not support this theory. SWB appears to be based on a foundation of reciprocal, caring, and responsive relationships that at-risk adolescents participate in either online or in-person (Jose et al., 2012). Satisfying the need to belong and to be connected at school seems to provide adolescents with the basis for feeling positive about themselves.

We previously reported that the relative size of the associations between indicators of school connectedness and school belonging for at-risk adolescents participating in online instruction were similar on all indicators of SWB as compared to students receiving in-person instruction. The association of school connectedness and school belonging with SWB in at-risk adolescents based on instructional modality is not significant for this sample. However, current results indicate strong, separate and significant relationships between school connectedness, school belonging and scores on all three indicators of SWB. School connectedness alone was responsible for 12.28% of the variance in life satisfaction, 27.63% of the variance in positive affect and 15.85% of the variance in negative affect. Alternatively, school belonging on its own was responsible for 20.14% of the variance in life satisfaction, 37.15% of the variance in positive affect and 21.56% of the variance in negative affect. Therefore, at-risk adolescents with high levels of school connectedness or school belonging were likely to have higher levels of SWB. Conversely, those with lower school connectedness and school belonging scores had lower scores on of SWB. These findings confirm that a significant association exists between measures of connectedness, belonging and SWB in at-risk adolescents concurrently. Current findings regarding the positive association between connectedness and SWB have been reported by several other authors (Anderman, 2002; Gillison et al., 2008; Rose, 2019; You et al., 2008). It was also reported that school belonging was a significant predictors of SWB (Goodenow, 1993; Korpershoek et al., 2020; Sebokova, 2018). However, the present study is one of the few investigations incorporating indicators of both school connectedness and school belonging and SWB at the same time.

Gender differences were also explored in relation to SWB dimensions. Male and female at-risk adolescents differed in all three indicators of SWB. Females reported significantly lower

levels of SWB than males for life satisfaction ($SLSS = t(184) = 3.24, p = .003$), positive affect ($PANAS-P = t(184) = 2.86, p = .0090$) and higher levels of negative affect ($PANAS-N = t(184) = -3.25, p = .008$). Overall, females experienced lower levels of SWB than males. This finding is in accordance with studies that report lower overall SWB for females when compared to males (Lampropoulou 2018; Kaye-Tzadok et al., 2017). With regard to the effect of gender on instructional modality, no significant difference or interaction effect was found between males and females receiving in-person or online instruction. SWB was also explored in relation to sexual orientation. Findings indicate that students identifying as LGBTQ+ differed in all three indicators of SWB as compared to those who identify as heterosexual. Those identifying as LGBTQ+ reported significantly lower levels of SWB for life satisfaction ($SLSS = t(203) = -3.29, p = .001$), positive affect ($PANAS-P = t(203) = -2.34, p = .021$) and higher levels of negative affect ($PANAS-N = t(184) = 4.66, p < .001$). Overall, heterosexuals experienced higher levels of SWB than those identifying as LGBTQ+ in this sample. This finding upholds previous studies that found that the SWB of gay, lesbian and bisexual individuals is significantly worse than that of heterosexual individuals (Batram, 2021) and these differences are most apparent during adolescence and early adulthood (Perales, 2015). Given the limitations of the statistical analysis software used to analyze data in this study, demographic comparisons of age and sexual orientation were restricted to dichotomous variables (ie: male or female, heterosexual or not). Given that close to 50% of the current sample identified as LGBTQ+, and individuals identifying as other than male or female was slightly over 10%, enhancements in statistical analysis would be welcome to parse out any distinct outcomes for these often under-represented and overlooked populations.

The main aim of this study was to explore the direct and indirect effects through school connectedness and school belonging, from instructional modality to various indicators of well-being among at-risk adolescents during COVID. We tested whether school connectedness and school belonging mediated the relationship between instructional modality and well-being indicators individually and concurrently. While instructional modality was not a significant predictor of school connectedness and school belonging, neither did it significantly predict indicators of SWB after school connectedness and school belonging were entered into the models. The direct effects of instructional modality and indicators of SWB were not significant. These results suggested that students receiving online instruction report no significant difference in indicators of SWB than students receiving in-person instruction. Findings from both the parallel mediation and the separate mediation of single mediating variables tested in the current research produced near identical results. These outcomes conclude that school connectedness and school belonging does not mediate the relationship between instructional modality and indicators of SWB in this sample. Based on the contrasting pairs of specific indirect effects, the sizes of mediating effects of school connectedness and school belonging were not found to statistically differ from each other in relation to instructional modality and SWB in each of the tested models. On the other hand, separate single mediations of school connectedness and school belonging were found to be stronger than their parallel mediations together. For mediation to take place, school connectedness and school belonging must have a significant relationship with both instructional modality and SWB. In all six mediation models, school connectedness and school belonging had a significant relationships with SWB but did not have a relationship with instructional modality. The conditions for mediation were not satisfied and the null hypothesis was accepted.

Based on results from the current study that school connectedness and school belonging do not mediate the relationship between instructional modality and indicators of SWB, we initiated an exploratory analysis to consider the possibility that these constructs would moderate the relationship in question. While mediation tests the casual link between variables, moderation tests the influence of one variable on the relationship between two other variables. Preliminary findings suggested that school connectedness and school belonging significantly moderate the relationship between instructional modality and negative affect only. There was no significant moderation detected between school connectedness, school belonging and life satisfaction or positive affect. These initial findings could yield constructive guidance to educators and clinicians, namely that the effects of school connectedness' and school belonging appear to be particularly crucial at the low end of the well-being spectrum. Such results suggested that schools and counselors should pay attention to students reporting higher levels of negative affect which could be included in universal screenings.

Implications

Current findings demonstrate that there are significant relationships between school connectedness, school belonging and indicators of SWB but there is no relationship demonstrated between instructional modality and SWB. Contrary to expectations, instructional modality did not influence school connectedness, school belonging or adolescent SWB. Implications of these findings include the suggestion that online instruction has the potential to benefit at-risk adolescents at least as much as students receiving in-person instruction and can promote feelings of school connectedness and school belonging that translate to increased SWB. Therefore, rather than focusing on the differences or deficits between instructional modality, schools should focus on increasing school connectedness and belonging. From that perspective,

assessments, interventions, and counseling along with academics can and should be delivered both online or face-to-face with the expectation of similar results.

The theory that SWB is a product of both the modifiable perceptions of school connectedness and the innate factor of belongingness is consistent with the biopsychosocial model (Engel, 1980) commonly recognized by mental health professionals. Due to the deleterious effects of COVID-19 on youth mental health, there is growing attention and appreciation given to the biopsychosocial model by educators and school administrators. The growing acknowledgement that mental health is as important as academic success, suggests that counselors can be influential in the promotion of SWB through a variety of means and approaches. Additionally, research on how teachers can improve school connectedness and belonging may yield important findings. Taken together, findings may generate practical guidance for educators, counselors, policymakers, and researchers working in the field. Through a variety of both online and off-line approaches, counselors may be able to identify and help individuals by providing experiences and activities that support school connectedness and belonging as part of the school's mental health services, regardless of the delivery type.

The results of this study reaffirm that school connectedness and school belonging play a significant role in improving SWB. Therefore, school counselors and mental health professionals working with adolescents who have perceived low levels of SWB may support these students by encouraging them to participate in activities that develop school connectedness and school belonging which in turn contributes to improved SWB. Interventions aimed at increasing at-risk adolescent sense of school connectedness and school belonging can be focused on both the individual and organizational level. Individually, training in social skills may be especially useful in cases where at-risk students perceived low level of membership is the result of their

inability to get along with others or to participate with others in a constructive and socially appropriate way. More importantly, targeting females, non-conforming genders and individuals who identify as LGBTQ+ to increase supportive contact with staff and faculty and for special efforts to increase inclusion in activities and groups may be more useful. Further, school counselors and mental health professionals working with adolescents who have perceived low levels of SWB may support these students by encouraging them to participate in online or face-to-face activities that develop or enhance school connectedness and school belonging. Rather than focusing on the modality by which connection and belonging is cultivated, educators and counselors should look to identify students who might benefit from strategies to bolster their sense of school connectedness and school belonging and implement interventions as early as possible, which would increase successful outcomes.

The above-mentioned results have important implications for interventions targeting specifically for at-risk adolescents. Many at-risk youth struggle with challenges at both the community level, including low-resourced neighborhoods and schools, exposure to violence and poverty (Robbins et al., 2012; Finkelhor et al., 2013) as well as personal challenges which include family dysfunction, social skill deficits, erratic temperament, substance use and psychopathology. Many of these factors characterized our sample of youth. Despite these challenges, at-risk students continue with their schooling and seek to earn a diploma despite the challenges they have faced in traditional school settings (Johnson & Taliaferro, 2012), suggesting that they are familiar with intervention as a course of action. The implication of our findings is that SWB indicators including life satisfaction, positive and negative affect may be improved for at-risk students by fostering connectedness and belonging within the school on both a personal and school-wide basis. Previous research suggests that school-based

connectedness and belonging has the potential to protect against an array of emotional and behavioral problems even in at-risk youth populations with significant personal and systemic problems (Merritt & Snyder, 2015). Future research should determine the extent to which strengthening school connectedness and school belonging for at-risk adolescents would translate into positive longitudinal outcomes in SWB in the near and long term.

Our results reveal the importance of building school connectedness and school belonging in both the online and in person school milieu to support the development of increased SWB for at-risk students. The results from this study were collected from four alternate education public high schools that worked earnestly to bridge the social and emotional distance that may exist between in-person and online instruction. The virtue of working in a special acts school complete with at-risk students is the understanding that social and emotional needs are as important as performance along with awareness of the clear link between behavior management and well-being. The school's administration was dedicated to helping build strong positive social relationships with students by embedding behavioral activities and mental health supports into the school online climate. As mentioned earlier, an online social presence is unlikely without thoughtful planning and promotion (Murphy and Rodríguez-Manzanares, 2008). Through creative use of technology, these schools methodically instituted virtual programs and activities that helped increase socialization including positive behavioral intervention and supports, culinary and fine arts programs along with wellness and mindfulness initiatives.

Based on the research, schools should look to develop best practice prevention and intervention programs designed to build and strengthen school connectedness and school belonging, specifically designed to improve SWB for at-risk students. Our research suggests that through a variety of mediums, educators and mental health professionals can instill well-being

into the fabric of the school by providing experiences and activities that support school connectedness and school belonging as part of the school's daily curriculum. Keeping teachers and staff informed about the strong positive correlation between school connectedness school belonging and SWB can help to validate the relevance of the at-risk student's needs and clarify the importance of the school's role in supporting these constructs.

Findings from our exploratory analysis regarding the moderation between instructional modality and negative may be significant for counselors and mental health professions working in high schools with online learners struggling with negative affect or low SWB. Interventions to specifically target ways to increase school connection and school belonging in an effort to reduce negative affect for students receiving online instruction would be useful. Counselors and mental health professionals may also look to screen at-risk adolescents for positive and negative affect and initiate prevention programs that seek to strengthen school connectedness and school belonging to cope with these negative experiences and enhance subjective well-being.

Through universal screenings, counselors may be able to help students build social resources and coping strategies that may be diminished by online learning delivery for online learners scoring higher in negative affect. Our findings suggest the utility of early identification of lower levels of SWB to identify students who may be better suited to in-person instruction or are prioritized to participate in interventions that augment school connectedness and school belonging. In addition, daily safety check-ins might be considered for at-risk student scoring notably or consistently high in negative affect.

Based on our results regarding the strikingly lower levels of SWB reported by at-risk females, non-conforming genders and the LGBTQ+ population, special acts school districts are encouraged to screen for demographics with the aim of creating targeted school sponsored peer-

to-peer groups that promote school connectedness and school belonging. Research suggest that these findings will be useful for other schools that serve at-risk populations that wish to improve their own capacity to support at risk students.

Given the effects of SWB in mental health (e.g. Diener & Chan 2011; Dost, 2005; Keyes 2006; Park 2004), school connectedness and school belonging may also contribute indirectly to the mental health of individuals. In summary, administrators, educators, school counselors and mental health professionals may promote school connectedness and school belonging as psychosocial resources based on findings from the current study, contributing to youths' subjective well-being. The study presented provides evidence on the usefulness of school connectedness and school belonging to predict SWB and supports the case for inclusion as part of universal screening procedures.

Limitations

To our knowledge, this is one of the first studies to examine the effects of instructional modality on both school connectedness and school belonging and its implications for at-risk students during COVID-19. A primary strength of this research was explicit attention to ethnically diverse at-risk adolescents, a significantly understudied group. Prior research has focused on more typical students. Given the demographic diversity of our sample (age, gender, ethnicity, sexual orientation, and placement type), the above-mentioned findings are broadly applicable to at-risk adolescents attending special acts schools. These study strengths should be evaluated in the context of some limitations

First, the experience of the COVID-19 pandemic thus far has been dependent upon the location and timeframe in which data is collected. For the present study, data was collected shortly after the beginning of phased re-openings and thus represents only a snapshot in time.

Because all students were required to attend school online at the start of the pandemic, there is the potential for recall and time interval bias. Second, participants in the current research were chosen through convenience sampling since it was not possible or legal to assign an eligible student to a particular delivery mode of instruction. Following the initial closing of school buildings due to COVID-19, students or their legal guardians had the right to select their own condition. In a few instances, students were unable to return to in-person instruction due to transportation complications. As a result, selection bias can occur in which case the observed effects might have been due to similarities or differences in participants who select in-person or online instruction rather than the actual conditions themselves.

Third, although the validity of adolescents' self-report measures has been demonstrated in prior research (Dew & Huebner, 1994; Gilligan & Huebner, 2002), data was collected from at-risk high school students with emotional and learning disabilities who may have had difficulty parsing out responses on the surveys. Using multiple data collection methods would build confidence in the validity of the findings. In addition, the research design is cross-sectional which does not rule out the possibility of reciprocal associations (Stiglbauer, 2013). For instance, the relationship between school connectedness and school belonging and perceived SWB could be bi-directional rather than unidirectional. It is recommended that future studies be completed with a longitudinal design in order to examine more powerful cause and effect relationships between variables. Finally, this study focused on the mediating role of instructional modality in the relationship between school connectedness, school belonging and perceived SWB. In future studies, attachment style as well as social resources including family belonging, and community culture should be examined.

Despite these limitations, the current study adds to the literature regarding online learning and its effects on school connectedness, school belonging and SWB for at-risk adolescents attending alternate education high schools during COVID-19. In contrast to our prediction, the results from the current study support the proposition that the promotion of school connectedness and school belonging to increase students' SWB is an important intervention target for both online and in-person learners. Knowing how instructional modality affects at-risk high school students is important because online learning is certain to stay after the pandemic. Our study added to previous cross-sectional studies on the strong associations between school connectedness, school belonging and SWB. These findings enrich the research field about the influencing factors and mechanisms underlying the SWB of at-risk adolescents. These findings are directly relevant to the development and implementation of prevention and intervention services for at-risk youth. This study has important theoretical implications by expanding research about the relationship between instructional modality and SWB among at-risk adolescents during COVID.

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APPENDIX A: Demographic Questionnaire

1. ID#:
2. What school do you attend?
3. What is your age?
 - A. 13
 - B. 14
 - C. 15
 - D. 16
 - E. 17
 - F. 18
 - G. 19
 - H. 20
 - I. 21
4. What is your current grade in school:
 - A. Freshman
 - B. Sophomore
 - C. Junior
 - D. Senior
5. What gender do you identify as?
 - A. Male
 - B. Female
 - C. Transgender male
 - D. Transgender female
 - E. Other
6. Please specify your ethnicity.
 - A. American Indian or Alaska Native
 - B. Asian
 - C. Black or African American
 - D. Native Hawaiian or Other Pacific islander
 - E. Hispanic or Latino
 - F. White
7. Do you consider yourself to be:
 - A. Heterosexual or straight
 - B. Gay or lesbian
 - C. Bisexual
 - D. Different identity (please state):
8. Which best describes your school placement:
 - A. Day student
 - B. Residential student
9. Over the last semester, how did you attend school?
 - a. In-Person: on campus classes only
 - b. Online Classes, delivered via the internet and no meetings on camp

APPENDIX B: School Connectedness Scale (SCS)

How strongly do you agree or disagree with the following statements about your school?

Please select one answer for each question.

Questions	1	2	3	4	5
I feel close to people at this school.	strongly disagree	disagree	neither disagree nor agree	agree	strongly agree
I am happy to be at this school.	strongly disagree	disagree	neither disagree nor agree	agree	strongly agree
I feel like I am part of this school.	strongly disagree	disagree	neither disagree nor agree	agree	strongly agree
The teachers at this school treat students fairly.	strongly disagree	disagree	neither disagree nor agree	agree	strongly agree
I feel safe in my school.	strongly disagree	disagree	neither disagree nor agree	agree	strongly agree

APPENDIX C: Psychological Sense of School Membership Scale (PSSM)

Psychological Sense of School Membership Scale

Circle the answer for each statement that is most true for you.

1) I feel like a part of my school.	Not at all true 1	2	3	4	Completely true 5
2) People at my school notice when I am good at something.	Not at all true 1	2	3	4	Completely true 5
3) It is hard for people like me to be accepted at my school.	Not at all true 1	2	3	4	Completely true 5
4) Other students in my school take my opinions seriously.	Not at all true 1	2	3	4	Completely true 5
5) Most teachers at my school are interested in me.	Not at all true 1	2	3	4	Completely true 5
6) Sometimes I feel as if I don't belong in my school.	Not at all true 1	2	3	4	Completely true 5
7) There is at least one teacher or adult I can talk to in my school if I have a problem.	Not at all true 1	2	3	4	Completely true 5
8) People at my school are friendly to me.	Not at all true 1	2	3	4	Completely true 5
9) Teachers here are not interested in people like me.	Not at all true 1	2	3	4	Completely true 5
10) I am included in lots of activities at my school.	Not at all true 1	2	3	4	Completely true 5
11) I am treated with as much respect as other students in my school.	Not at all true 1	2	3	4	Completely true 5
12) I feel very different from most other students at my school.	Not at all true 1	2	3	4	Completely true 5
13) I can really be myself at my school.	Not at all true 1	2	3	4	Completely true 5
14) Teachers at my school respect me.	Not at all true 1	2	3	4	Completely true 5
15) People at my school know that I can do good work.	Not at all true 1	2	3	4	Completely true 5
16) I wish I were in a different school.	Not at all true 1	2	3	4	Completely true 5
17) I feel proud to belong to my school.	Not at all true 1	2	3	4	Completely true 5
18) Other students at my school like me the way that I am.	Not at all true 1	2	3	4	Completely true 5

Goodenow, C., 1993

APPENDIX D: Student's Life Satisfaction Scale (SLSS)

Students' Life Satisfaction Scale (Huebner, 1991)

Directions: We would like to know what thoughts about life you have had during the past several weeks. Think about how you spend each day and night and then think about how your life has been during most of this time. Here are some questions that ask you to indicate your satisfaction with your overall life. Circle the words next to each statement that indicate the extent to which you agree or disagree with each statement. For example, if you Strongly Agree with the statement "Life is great," you would circle those words on the following sample item;

Life is great.

Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
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It is important to know what you REALLY think, so please answer the questions the way you really think, not how you should think. This is NOT a test. There are NO right or wrong answers.

1. My life is going well.					
Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
2. My life is just right.					
Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
3. I would like to change many things in my life.					
Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
4. I wish I had a different kind of life.					
Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
5. I have a good life.					
Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
6. I have what I want in life.					
Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
7. My life is better than most kids.					
Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree

Huebner, E. S. (1991). Initial development of the Students' Life Satisfaction Scale. *School Psychology International*, 12, 231-243.

APPENDIX E: Positive and Negative Affect Schedule – Child Short Form (PANAS C-SF)

Instruction: Please read each item and gauge how you have felt this way during the past few weeks (or general, you generally feel this way on average). Please select only one answer.

Cheerful	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Lively	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Happy	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Joyful	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Proud	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Miserable	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Mad	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Afraid	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Scared	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Sad	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

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