Student Experiences of an Adventure Therapy Mountain Bike Program During the COVID-19 Pandemic

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Abstract

A mountain bike program was designed and adapted for the school setting with middle school-aged students during 2020, amid the COVID-19 pandemic. Two mountain bike groups were offered to facilitate training and development of mountain bike knowledge and skills: one group with integrated Adventure Therapy components to facilitate a therapeutic process and the other group without a therapeutic debriefing process. Forty-one students participated in the program after being randomly assigned to one of two groups. An exploratory qualitative analysis revealed that the pandemic negatively impacted participants' wellbeing and academics, leading to increased isolation and decreased motivation, while the mountain bike program increased their focus, competency, physical and mental wellbeing, and connection to the environment. It appears the mountain bike program served as a protective factor for participants. Implications for professionals and researchers are discussed.

Keywords: adventure therapy, early adolescence, mountain biking, qualitative, case study

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The purpose of this study was to explore middle school-aged students' perceptions of how a school-based mountain bike program influenced their adjustment to a new school environment and ability to navigate developmental transitions. Further, the investigators sought to develop a deeper understanding of how students experienced a school-based mountain bike program infused with adventure therapy (AT) concepts compared to student experiences of a non-therapeutic-focused mountain bike program. Although extant research shows AT has a positive impact on participants (Bowen et al., 2013), few studies have explored participant experiences of specific activities such as mountain biking. Furthermore, information related to middle school-aged students' perceptions of school-based mountain biking programs and their potential benefits is limited and peer-reviewed literature is non-existent. In this qualitative exploratory case study, the authors used a comparative analysis to understand students' perceived experiences of AT and non-AT mountain bike programs.

Early Adolescence

Adolescence is a time of significant development marked by numerous transitions and challenges. Social and physical transitions that impact early adolescent development perhaps first occur in middle school (Coelho et al., 2017; Rogers et al., 2017). Middle school-aged youth face many challenges, such as a new academic environment, changing peer/social groups, physiological changes, and a fluctuating self-concept, all of which can affect self-worth, self-esteem, emotional regulation, and social skills (Akos et al., 2015; Brass et al., 2019; Coelho et al., 2017; Rogers et al., 2017). Failure to navigate this transition successfully can decrease self-esteem, exacerbate depression and anxiety, increase behavioral problems, and decrease academic achievement (Akos et al., 2015; Brass et al., 2019; Coelho et al., 2017; Danielson et al., 2018; Duchesne et al., 2012; Ghandour et al., 2019; Holmes et al., 2016, Ojanen & Nostrand,

2014). Increased mental health issues have shown to negatively impact academic performance (Auger, 2011; Kelly, 2013; Vander Stoep et al., 2003) and social development (Kelly, 2013).

To identify and address these mental health needs, schools are becoming a primary care setting for children and families (Christian & Brown, 2018; CDC, 2017). While school counselors are tasked with meeting the mental health needs on their campuses (American School Counselor Association [ASCA], 2019), overwhelming mental health needs and ever-increasing case-loads make this an impossible task for them to complete on their own (ASCA, n.d.; Christian & Brown, 2018) As schools position themselves to provide the necessary mental health services, they have increased efforts to collaborate with licensed mental health professionals to provide therapeutic services in schools (Christian & Brown, 2018). Despite this increased collaboration, most services addressing student needs continue to be provided by teachers (Sanchez, et al., 2018), as a result of the limitations of school-based mental health services (Kolbert et al., 2017; Lambie et al., 2019). Therefore, schools and service providers continue to seek out comprehensive modalities that can efficiently provide preventative and responsive interventions to students beyond individual and school counseling services. Adventure therapy (AT) is a promising approach that mental health professionals in schools can use to foster mental health in students (Bowen et al., 2016; Christian et al., 2021b; Gibbons et al., 2018; Widmer et al., 2014).

Adventure Therapy

Adventure therapy (AT) is "the prescriptive use of adventure experiences provided by mental health professionals, often conducted in natural settings that kinesthetically engage clients" (Gass et al., 2020, p. 1) in a parallel process focusing on therapeutic goals related to the cognitive, behavioral, affective, physical, and spiritual facets of themselves. While the role of nature is an integral factor to the therapeutic process and essential 'co-facilitator' of change, it is often overlooked (Bowler et al., 2010; Harper et al., 2021; Reese et al., 2019; Reese & Gosling, 2020; Taylor et al., 2010). EcoWellness, which considers "one's sense of appreciation, respect for, and awe of nature resulting in feelings of connectedness and perceptions of wellbeing,"

provides a model to intentionally integrate nature in AT (Reese, 2018, p. 290). Martin (2004) reported students who participated in an outdoor education program were intentionally introduced to concepts of human relationship with nature and able to reflect on their relationship, thereby increasing their own understanding of relatedness to nature and their values. The integration of EcoWellness into AT provides a framework for practitioners to engage the group process and facilitate the human-nature connection across settings, thereby bringing about positive outcomes (Reese, 2018; Reese et al., 2019; Reese & Gosling, 2020).

AT includes key concepts such as the full value contract (FVC), challenge-by-choice (CBC), risk, and natural consequences. Like group norms, the FVC is an agreement to certain personal and group values that acknowledge one's ideas and the ideas of others without discounting other opinions and maintaining accountability. CBC empowers participants by allowing them to choose their level of participation and practice healthy decision making while engaging in AT activities. With these concepts in mind, practitioners challenge participants to navigate group dynamics and assess potential risks, set goals, and make decisions to successfully achieve group therapeutic outcomes using the integrated AW-ELC model as described by Christian et al. (2021a). This model integrates the adventure wave (Schoel & Maizel, 2002) with Kolb's (1984) experiential learning cycle (see Figure 1). The adventure wave consists of briefing the activity, doing the activity, and debriefing the activity. The experiential learning cycle merges with the adventure wave during the "doing the activity" and facilitates various depths of the process to include recreational, educational, and transformational debriefs. Simply, the recreational debrief explores with participants what happened or what was observed during the activity. The educational debrief explores what participants learned because of what happened during the activity. Finally, the transformational debrief explores what participants will transfer from their learning into other contexts of life outside of the activity. Christian et al. (2019; 2021b) provides a further in-depth description of AT concepts.

Participation in adventure activities is associated with improved well-being through increased psychological and social competence, self-efficacy, academic achievement, sense of peer support and friendships, and development of initiative and self-determination (Bowen et al., 2016; Powrie et al., 2015, Widmer et al., 2014; Wood et al., 2017). Tucker and Norton (2013) identified AT activities to include a variety of kinesthetic activities ranging from cooperative and problem-solving games, trust activities, challenge courses, nature walks, hiking, paddle sports, and wilderness programs including backpacking and camping expeditions. AT literature suggests it is an appropriate prevention and intervention for use with diverse populations across various settings to address mental health (Bidell, 2010; McIver et al., 2018; Swank & Daire, 2010). Several studies have specifically looked at the effect of activities such as rock climbing (Eckstein & Rüth, 2015; Kleinstäuber et al., 2017; Luttenberger et al., 2015; Sutherland & Stroot, 2010), white water rafting and backpacking (Widmer et al., 2014), and hiking (Eckstein & Ruth, 2015). Rock climbing (indoor and outdoor) and hiking or walking are among the most researched and appear to reduce symptoms of depression and increase group dynamics of engagement and cohesiveness (Kleinstäuber et al., 2017; Luttenberger et al., 2015; Sutherland & Stroot, 2010). Although some literature includes mountain biking as part of AT initiatives (Widmer et al., 2014), no peer-reviewed literature to date focuses solely on the impact of mountain biking on client outcomes from an AT perspective.

Mountain Biking

While there is a dearth of research related to AT using mountain biking, there is recreational and leisure studies literature related to mountain biking programs showing positive outcomes. For example, Wood et al. (2017) developed a mountain bike program for at-risk youth and found that mountain biking appears to improve learning outcomes, interpersonal skills, confidence, and life skills (i.e. decision making, risk awareness, risk assessment, and risk management). Additionally, they found that the mountain biking program positively impacted school performance (i.e.. reduced truancy, less disruptive behavior, and greater academic

engagement). Chapple et al. (2018) developed a similar mountain bike program for at-risk youth focused on developing pro-social skills and encouraging recreational activity. Their pilot program found that mountain biking enhanced leadership and mentoring skills, teamwork, critical thinking, resilience, risk assessment and management, community involvement and belonging, and self-esteem (Chapple et al., 2018). Walker and Shafer (2011) found that participants experienced increased ability to focus as a result of attending to obstacles in the environment while mountain biking. Further, Roberts et al. (2018) looked at mountain bikers characteristics linked to mental health and found that mountain biking serves as a prominent coping strategy for improving mood and self-esteem and decreasing stress and worrisome feelings. As a result, Roberts et al. (2018) suggested the use of mountain biking to address mental health. Gerow (2019a, 2019b) wrote about the mental health benefits of mountain biking and how individuals have equated mountain biking as a form of therapy, with specific focus towards riders who experience depression and anxiety. Gerow's (2019b) article explored the integration of mountain biking into mental health treatment plans developed by Scottish researchers in an attempt to find support for trail-based therapy. Whalen (2018) highlighted her experiences of emotional breakthroughs, processing trauma, and relationship struggles while undergoing therapy and learning to ride a mountain bike, reporting that "as we conquered the trails, and made emotional breakthroughs, I also gained a sense of bonus strength from attacking and overcoming rocky obstacles…this was his [therapist] plan all along. 'Being challenged with the terrain eases the idea of being vulnerable'" (para. 23). While mountain bike research and application continue to develop, these programs demonstrate positive outcomes among participants similar to those of AT (Bowen et al., 2013; Christian et al., 2021b). However, the aforementioned mountain bike programs lack key AT concepts (i.e. CBC, FVC, integrated process model) intended to maximize therapeutic potential of adventure activities.

Study Objectives/Aims/Research Goals

In this study, researchers sought to answer the following research question using a qualitative comparative analysis: How did students' perceived experiences of an AT mountain bike program compare to students' experiences of a non-AT mountain bike program?. This research can provide valuable information to school counselors, mental health professionals, teachers, school administrators, and future researchers. Qualitative research is well suited for exploring issues and concerns which do not lend themselves to quantitative examination (Hunt, 2011). The dearth of research related to this topic necessitates an exploratory research approach that may yield data capable of increasing the understanding of the impact of AT programs on middle school-aged children participating in a mountain bike program and inform future research.

A social constructive paradigm was used to understand the participants' subjective experience. An assumption of this paradigm is that social interactions form reality (Boyce, 1996), whether those interactions be written or verbal (Fairclough, 2003). Importantly, both the researcher and participant co-construct meaning. This co-created meaning, according to social constructivism, is different than the meaning that would have otherwise been created by a single participant or researcher. How participants constructed meaning at the conclusion of each group meeting is a key point of difference between the AT and non-AT groups. In the AT group, the facilitators used the integrated AW-ELC model (described above) to guide the construction of meaning; whereas in the non-AT group, participants are in charge of the process in which meaning is constructed.

Materials & Methods

To answer the research question, researchers employed a qualitative exploratory case study with a longitudinal comparative research design. This design allowed the team to develop an in-depth understanding of naturally occurring phenomena within real-life contexts (Yin, 2004) and how the absence or presence of the phenomena may vary between groups over time (Lindsay, 2019; Ritchie et al., 2014). In such a study, according to Creswell and Poth (2018),

researchers seek to explore how cases bounded to time and setting impact participants' perceived outcomes "over time, through detailed, in-depth data collection involving multiple sources of information" (p. 97). According to Yin (2018), an exploratory case study is appropriate when asking "how" and "what" questions and are especially useful in gathering in-depth descriptions of social phenomenon. Introducing a comparison group in qualitative research can help illuminate "key ingredients of an intervention that are making a difference" (Lindsay, 2019, p. 463). Further, Kolb (1991) highlighted that case studies are effective for evaluating experiential programs.

Researcher Description

The primary researcher had sole contact with the participant groups. The primary researcher and a local school instructor, both experienced mountain bikers with specialized training in teaching mountain biking, co-facilitated the groups. The primary researcher is a licensed professional counselor with 4 years experience as a school-based mental health counselor. The primary researcher observed and participated in the non-therapeutic mountain bike group co-led primarily by the school instructor. The primary researcher co-facilitated with the school instructor and participated in the AT mountain bike group. Throughout the duration of the program, this researcher engaged the participants in processing the session activity and exploring participant dynamics using the integrated AW-ELC model suggested by Christian et al. (2021a).

Recruitment Procedures

Purposive snowball sampling methods were used to identify and recruit participants who were middle –school-aged and had limited mountain biking experience in a charter school in the Southern region of the United States. After receiving Institutional Review Board (IRB) approval, the school counselor notified eligible students (i.e., 6th and 7th grade students with limited mountain biking experience) during March and April 2020 of the upcoming program in August 2020 through e-mail, posted flyers, and direct communication. Students were informed

that this course could help them learn and develop mountain bike skills while becoming familiar with local trail systems within walking or riding distance to the school. An initial sample of 126 students self-selected to participate in the program and were provided parental consent and assent forms. Of the initial sample, 86 of students completed the required paperwork and were randomly selected to participate in the study.

Participants

Students were selected to participate if they met the following criteria: have limited-to-no mountain biking experience and either transitioning into 7th grade or enrolled in 8th grade. Due to class and program restrictions, a sample of 86 students were randomized to participate in the initial three groups of the program: 20 in each of the two mountain bike groups and 46 in a control waitlist group. Due to the COVID-19 pandemic, students shifted to online or remote schooling, this resulted in a final sample of 41 students and removal of the control waitlist group. Of the final selected sample, students were randomly assigned into a non-AT mountain bike program (n=20) and an AT mountain bike program (n=21); all students continued to receive traditional-school services until the mountain bike program was offered and again upon conclusion of the current programs. Students were selected to participate if they met the following criteria: have limited-to-no mountain biking experience and either transitioning into 7th grade or enrolled in 8th grade.

Of the 41 students, 25 (60.97%) are male, 14 (34.15%) are female, and 2 (4.88%) are non-binary. Based on the State's Special Nutrition Program's (ASNP; 2020) definition of being eligible for free or reduced lunch or another form of public assistance, 7 (17.07%) were identified as economically disadvantaged. Twenty-eight (68.29%) students identified as white (non-Hispanic), 5 (12.20%) identified as Latinx, 1 (2.44%) identified as Asian, and 7 (17.07%) identified as bi-/multiracial; 5 (12.20%) identified English as a second language. Eleven (26.83%) students were identified as having academic accommodations according to their

individualized education plan. The average age among the 41 students was 12.61 years, with ages ranging between 11 and 14 years.

Program Description

The research team developed a 9-week mountain bike program adapted from a community mountain bike partner aimed at supporting middle school aged student transitions. The school offered two course programs over the 9-week period meeting twice a week for 90 minutes, for a total of 14 sessions beginning on September 1, 2020 and lasting until November 17, 2020. One group incorporated AT key concepts as part of the program, the other followed the adapted community-partner program without AT concepts infused (see Appendix A). Throughout the study the primary researcher maintained a journal of session notes to document any deviations or processing procedures followed. Due to the COVID-19 pandemic, the school closed from September 25th to October 20th. The program resumed on Friday, October 23rd until it ended on November 17th.

Figure 2 provides an overview of the program timeline. The initial seven sessions consisted of participants learning and demonstrating mountain bike skills (i.e., balance, braking, turning, changing gears, etc.) on school grounds or a local-paved pathway. This period spans the time between data-collection points one and two along with a three-week period the school shutdown due to the pandemic. During this time, students were instructed to participate in a physical activity at home (some students did not have access to bikes). The final seven sessions consisted of students applying their newly acquired knowledge of mountain bike skills from the first seven sessions on a local dirt trail system. This period spans the time between data collection points two and three. The school instructor used a local bike park which consists of multiple small all-weather trails of varying difficulties for the students to ride during the post-program duration (i.e., the time between data collection points three and four).

Data Collection

All participants completed a program questionnaire that consisted of seven open-ended questions at four time points (see Appendix B); prior to the first day of the program, during the 5th week of the program upon returning from the pandemic closure three weeks later, after the last day (9th week) of the program, and a one-month follow-up, which assessed how they experienced the program. All students were assigned a confidential ID. The questionnaires were provided via Qualtrics and administered by the school counselor. Students completed the questionnaires in a secluded room next to the school counselor's office. In addition to the questionnaires, the primary researcher collected field notes based upon observations and kept a written record of participant quotes during the debrief or AT processing. The primary researcher used the integrated AW-ELC model suggested by Christian et al. (2021a) to explore AT mountain biking participant experiences (see Figure 1).

Data Analysis

We followed the data-analysis procedures recommended by Creswell and Poth (2018) for qualitative research and Yin (2018) and Lindsay (2019) for conducting comparative case-study research. We synthesized the procedural information suggested in these articles in the following analysis. The researchers chose a time-series comparative analysis to analyze the participant information due to the nature of the program and timeline. See figure 3 for a visual representation of the data-analysis process. Two researchers individually reviewed participant statements and transcripts from both groups. While performing open coding, researchers were blind to which group participants belonged to and they independently grouped statements of meaning together to create broad thematic domains. Each researcher independently developed matrices of contrasting categories and displayed meaningful statements in chronological order by phase creating visual displays for data of within case-theme and cross case-theme analysis. During the second phase the researchers analyzed initial themes using inductive and deductive approaches to create Axial Codes. The researchers then compared and synthesized codes, themes, and matrices. During the fourth phase (external audit) an external auditor

knowledgeable in qualitative research was consulted to review statements and themes and provide feedback. External auditor feedback consisted of recommendations, modifications, and confirmation of themes presented and synthesizing themes to reduce overall number of thematic labels. Any discrepancies in thematic labels were discussed over the course of several meetings until themes and associated participant quotes were agreed upon. Feedback from the external auditor was utilized to create a cross-case synthesis and develop assertions and transferability. For the final phase (comparative analysis) the researchers used the matrices of organized themes to systematically compare similarities and differences within and between groups (Lindsay, 2019).

Methodological Integrity

We followed Lincoln and Guba (1985) and Creswell and Poth's (2018) advice to increase our study's rigor by attending to four facets of trustworthiness: credibility, transferability, dependability, and confirmability. The research team utilized bracketing methods suggested by Tufford and Newman (2012) including weekly supervision and consultation while facilitating the groups with the 4th author who is a licensed school counselor, licensed professional counselor and supervisor, widely published in AT literature and has extensive experience mountain biking with youth. The first author also had regular meetings with an outside auditor who provided feedback and suggestions regarding the steps and processes of coding and he maintained a weekly reflexivity journal on sessions that described assumptions regarding the study, its participants, and their subjective experiences. Specifically, the researchers utilized periodic debriefing and consultation with an external auditor, negative case analysis, reflexivity memos, field notes, and research memos to establish an audit trail and triangulate the data. Documents were stored digitally in encrypted files to allow an external auditor to assess the research findings. Participants provided thorough responses over the course of several months, these steps fulfilled the requirement of prolonged and persistent engagement. Researchers agreed that saturation was reached as themes present in interviews mid program, post program,

and at follow up became consistent and no additional themes emerged during the post and follow up interviews.

Results

After completing the data analysis and consulting with the external auditor, the researchers uncovered overall themes and sub-themes from several data sources (see Table 1). The research question (i.e., how did students' perceived experiences of an AT mountain bike program compare to students' experiences of a non-AT mountain bike program?) was answered by the following emergent themes: focus, physical wellbeing, mental wellbeing, connectedness, competency, fun and play, risk and concerns, and no perceived benefits. Results indicate eight primary themes and eight subthemes across groups over time with an additional sub-theme related only to the AT group. The following results provide textual descriptions for each emergent theme. Table 2 provides the percentage of participants whose statements aligned with emergent themes for each group over time and overall. Table 3 provides a comparison of participant statements aligned with emergent themes between groups over time.

Focus

When students were asked about the perceived benefits and experiences of the program, participants described an increased sense of 'focus' and 'attention'. Participants described focus in two emergent sub-themes from pre- to follow-up, academic (16.21 – 37.04%) and non-academic (18.92 – 29.63%) with the highest percentage of participants reporting at post-program (see Table 2). Student perception of academic focus was captured by statements such as, "this program has led to better focus in [and] after classes or even before" and "it has helped me to be more attentive in class". Participants described a connection between the program and academic engagement through an increased focus on class assignments, tasks, productivity, and behavior. Student perception of non-academic focus was highlighted by statements such as, "to me it helps focus, when you ride you have to pay attention to where you are…", describing a more general sense of focus to the non-academic environment. Participants described an

increased awareness and attention to the 'here-and-now', physical environment, physiological response, and group members (see Table 3). Interestingly, this sub-theme of focus connects to other themes such as, physical wellbeing, mental wellbeing, and connectedness.

Considering the differences between groups, students in both groups described the phenomena of focus. However, at post-program, more AT group participants described a sense of non-academic focus (41.67%) compared to those in the non-AT group (20%). Whereas more participants in non-AT group described a sense of academic focus (40%) compared to the AT group (33.33%) at post-program. At one month follow-up, more participants in the AT program (31.25%) reported academic focus compared to the non-AT group (25%). This decrease in reported academic focus for the non-AT group from post- to follow-up presents an interesting result regarding sustainability of program effects that will be discussed below.

Physical Wellbeing

Students described physical health, exercise, and physiological benefits as a result of participating in the program, which developed the phenomena of physical wellbeing. Physical wellbeing appeared to be a more prominent theme across participants from pre- to follow-up (46.43 – 66.67%), with the highest number of participants reporting physical wellbeing at post-program and the lowest amount at follow-up (see Table 2). Student perception of physical wellbeing was captured by statements such as, "It's helped me get in shape and become physically stronger and continue to exercise", "…keeping my body in shape", and further described by increased strength, endurance, stamina, and weight loss (see Table 3). As mentioned, participants described a connection between physical wellbeing and other themes such as focus and mental wellbeing.

Considering the differences between groups, students in both groups described the phenomena of physical wellbeing. However, it appears most participants reported physical wellbeing in the AT group from mid-, post- and follow-up compared to non-AT participants at respective time points. Interestingly, non-AT participants had higher perceptions of anticipated

physical wellbeing at pre-program (64.70%) compared to AT participants (35%), but the non-AT group dipped at mid-program whereas the AT group increased and relatively maintained. This finding may speak to the program design which will be further discussed below.

Mental Wellbeing

Students described interpersonal states as a result of the program through a cluster of sub-themes to comprise the phenomena of mental wellbeing. Participants described mental wellbeing in three emergent sub-themes from pre- to follow-up: general (21.62 - 33.33%), confidence/courage (13.79 - 48.15%), and motivation (5.4 - 39.29%). Similar to the previous themes, a higher percentage of participants reported general mental wellbeing and confidence/courage at post-program than any other time point. However, participants describing a perceived sense of motivation increased over the duration of the program and continued to follow-up with the highest percentage at one month follow-up (see Table 2). Student perception of general mental wellbeing was captured by statements related to mood, stress, anxiety, mental clarity, and perceived sense of calm and relief, such as, “It’s reduced my anxiety and adrenaline and given me an excuse to get out of the house”, “It has allowed me to clear my mind while overwhelmed from schoolwork, which lets me think clearer”, “[It is] stress relief for hard days”, and “I normally get really tense and don’t stop working, and [mountain biking] could serve as a stress reliever”. Confidence/courage was captured by explicit participant statements reporting increased comfort, perceived self-efficacy and belief in ability or self-confidence, and sense of courage to address real and perceived risks. Participants described confidence/courage in the following statements, “The knowledge that I will apply from this class in the future is just to go for it, I have learned that I have the skill to do things and I just need to get over the mental block”, “I have become more comfortable at riding the trails which has given me more confidence and courage to take on challenges”, “[mountain biking] can help me with confidence and discipline”. Lastly, participants described a sense of motivation as captured by statements, “This has helped me regain more focus afterwards, and motivates me to push myself

to the limits, in many subjects" and "It gives me something to look forward to and helps me stay motivated in school and helps get my work done". Several themes such as academic focus, physical wellbeing and competency are tied to participant's mental wellbeing (see Table 3).

Considering the differences between groups, all students described the phenomena of mental wellbeing from pre- to follow-up. Interestingly, more participants in the non-AT group described an impact on general mental wellbeing from pre- to post-program, with post- being the highest (46.67%) amount of group members compared to their AT counterparts. However, this appears to shift as more AT participants (37.5%) described general mental wellbeing benefits compared to non-AT (25%) at follow-up. Further, more students in the AT group described confidence/courage at mid-, post-, and follow-up compared to non-AT participants at respective time-points with post-program being the highest. Interestingly, a similar trend and report is found with motivation, where more students in the AT groups described a sense of motivation compared to non-AT students from mid- to follow-up with a higher percentage being 43.75% for AT participants and 33.33% for non-AT participants at follow-up. The trends across reported sub-themes over the course of the program between groups presents interesting take-aways to be discussed further below.

Connectedness

When asked about the benefits and experiences of participating in the program, students described a perceived sense of connectedness through acknowledging and interacting with the environment. This included noticing and mentioning nature, being outside, developing new friendships, and strengthening family relationships. These descriptions were unique to developing emergent sub-themes from pre- to follow-up: environment connectedness (17.24% - 74.07%) and social connectedness (24.14 – 42.86%), with the highest percentage of participants reporting at post-program for environment and follow-up for social (see Table 2). Student perception of environment connectedness was captured by statements such as, "It heightens my other senses, when I'm outside", "just being able to go outside and be in nature has helped

because I'm not stuck inside the school all day", and "I see this class helping me regain focus and connection with the outside and with other people". Participants described increased engagement with nature, time outside, and sensory awareness (see Table 3). Students noticed a difference between their environments and how much time they spent on screens evidenced by this statement, "Now I am spending more time outside than inside on my phone". Social connectedness was characterized by students' perceived ability to develop new friendships and engage more with family members. Student perception of social connectedness was captured by statements such as, "I'm meeting new people and talking to more people, along with getting to ride the bike", "I have been able to connect with family through this new hobby", "…go riding with my dad more often", and "…I can bike with my sister" (see Table 3).

Considering the differences between groups, students in both groups described the phenomena of connectedness as characterized by environment and social from pre-program to follow-up. Both groups presented a high percentage at post-program for environment connectedness, 91.67% of AT participants compared to 60% of non-AT participants. Interestingly, the number of AT participants describing environment connectedness dropped at follow-up (6.25%) compared to their non-AT counterparts (41.67%). Social connectedness appears to have a similar trend between groups, however more AT members consistently described a perceived sense of social connectedness from pre- to follow-up compared to non-AT participants at respective time points (see Table 2). Like motivation, social connectedness is one of the few themes to have higher representation at one month follow-up compared to previous time points when considering all participants.

Competency

When students were asked about what they believed they've learned or gained as a result of the program experiences, participants described an increase sense of knowledge, understanding, and skill enhancement which developed the phenomena of competency. Participants described focus in two emergent sub-themes from pre- to follow-up: mountain bike

knowledge and skills (59.26 – 75.68%) and AT concepts (0 – 25%), with the highest number of participants describing knowledge and skills at pre-program and follow-up for AT concepts (see Table 2). Student perception of mountain bike knowledge and skills was captured by statements such as, “I now know the parts of a mountain bike and what to check before riding. I know how to re-attach a chain and how to put air in the tires” and “I have learned biking mechanics, like how to change a mountain bike tire, how to fix a chain, how to signal. I have also learned how to use gears, how to find my cadence when I’m biking, and when to use my active stance”, which describe technical knowledge and skills. Student perception of AT concepts was highlighted by statements such as, “I have learned how to properly inspect a bike, change bike tires, and how to challenge myself to get out of my comfort zone”, “I have learned a lot more than I used to know and about my comfort zones and way to ride and gain control over the bike”, and “I have learned the three comfort zones of resting, stretch, and panic. I have also learned new values, like ‘be here.’ I have learned level pedals, how to stop, when to shift gears, and the ready position”, which go beyond the technical skills and provide evidence of internalized language taught in AT programs (e.g., full value contract, challenge by choice, etc.) covered above. These emergent themes connect with previous themes; as participants became more knowledgeable and improved skills, they described themes related to physical wellbeing, mental wellbeing, and focus (see Table 3).

Considering the differences between groups, students in both groups described the phenomena of mountain bike knowledge and skills but did not describe AT concepts. Mountain bike knowledge and skills was a primary theme for both groups from pre- to follow-up, with a majority of members describing anticipated knowledge and skill development at pre-program. Interestingly, the percentages of participants describing these learned experiences decreased over the course of the program but remained relatively high compared to other themes. The emergence of this sub-theme highlights the instructional component of the program focused on teaching students how to mountain bike safely. Only members in the AT group described

competency related to AT that involved comfort zones, values, and communication skills compared to the non-AT participants. Therefore, it appears the AT participants picked up on the use of therapeutic language to describe their experiences in addition to general mountain bike knowledge and skills. The facilitation of AT appeared to increase the amount of AT participants describing their experience using AT language at post-program (50%) and follow-up (43.75%). Competency was the only theme where sub-themes appeared to clearly distinguish the two groups.

Fun and Play

In general, an overall theme related to mountain biking, students described was having a perceived sense of fun, play, excitement and enjoyment. This theme was most prevalent at post-program (55.56%) after students had engaged in the learning modules of the program and went through the application sessions (see Table 2). This theme was captured by statements such as, "Everything [about this class excites me]. I just like to learn about the things that I love to do" and "…It lets me have fun while also participating in school". Considering the differences between groups, students in both groups described the phenomena of fun and play. Although, 75% of AT students reported a perceived sense of fun and play at post-program compared to 40% of non-AT students whereas other time points were relatively similar. This captures a unique finding to be discussed further.

Risk and Concerns

In general, an overall theme related to mountain biking, students described was having a perceived sense of concerns and risk. This related to student's perceived sense of physical and/or emotional safety and risk of injury or embarrassment. This theme was most prevalent among participants at mid-program (48.28%) after completing the learning modules (see Table 2). This theme was captured by participant statements such as, "I am nervous about running into people in front of me and causing them to wreck and my wheel slipping and getting thrown down a cliff side" and "I'm most nervous about crashing or being judged for being slow". This

emerged theme was anticipated as mountain biking involves both real and perceived risks that are inherent to the activity which can invoke fear and nervousness around injury. Notably, this theme decreased over the course of the program with no participants reporting perceived sense of risk or concern at follow-up. The trend of this theme over time between groups is worth exploring as potentially having an inverse relationship to other themes (i.e. as competency and mental wellbeing increase, perceived risk and concerns decrease).

No Perceived Benefits

Our final theme of 'no perceived benefits' is the result of some participants who consistently chose to either not respond or responded with "I don't know". This theme was most prevalent at the beginning of the program (43.24%), indicating participants did not know what to expect or anticipate as a result of the program (see Table 2). It is worth noting, fewer AT participants described no perceived benefits compared to the non-AT group. However, there were several meaningful statements that captured this theme, "This program hasn't been of much help to me in other activities. That said, it hasn't been an impediment either", and "I haven't learned much since moving to online". Many participant statements appeared to highlight the influence of the Covid-19 pandemic as it forced some students to shift to online and miss out on program sessions. The impact of the Covid-19 pandemic is further discussed in the limitations.

Journal and Field Notes

In addition to the above descriptions, a review of observations made within the journal and field notes collected over the course of the program revealed several themes (see Table 4). The journal and field notes contained statements observed and recorded by the researcher after each session. In general, participants in the AT mountain bike group reported feeling encouraged and supported by other members during their debrief process, which helped facilitate stronger connections between group members: "It was helpful to hear others cheering

me on, I felt supported"; "I felt encouraged by my partners who were riding with me"; "I think we could ask for help from others when we are struggling in class".

Discussion

Participants described themes related to focus, physical and mental wellbeing, connectedness, competency, fun and play, and risk and concern as a result of the program. Although most participant statements aligned with the themes presented, some participants stated that they felt the program had not benefited them or perceived no benefits. Existing research related to AT programs suggests similar findings regarding academic focus, physical health, psychological factors, and pro-social behaviors (Chapple et al., 2018; Mackenzie et al., 2018; Powrie et al., 2015; Walker & Shafer, 2011; Widmer et al., 2014; Wood et al., 2017).

These themes illuminated key findings to provide consideration for the similarities and differences between groups and the influence of time on student perceptions. As mentioned, the mountain bike program served to be both educational and therapeutic with only one group processing the therapeutic benefits from an AT perspective. It appears both groups shared most themes regardless of the intervention. However, the number of participants reporting emergent themes differs between groups across time points, identifying several key concepts from the results: the impact of program structure, group participation is a dynamic process, and importance of facilitated fun.

Impact of Program Structure

Structural components of AT programming are important to the process of facilitating and achieving group outcomes regardless of the activity or intensity (Tucker & Norton, 2013). Activity sequencing is imperative to the group change process and ultimately the sustainability of outcomes (Schoel & Maizell, 2002). The current program was developed to teach students mountain biking knowledge (i.e., bike components, safety, gear, etc.) and skills (i.e., balancing, turning, braking, changing gears, etc.) and facilitate skill application (see Figure 1). While both groups received the same knowledge and skill instruction, the AT program also incorporated

specific concepts and a unique processing model to help students transfer newfound knowledge, skills, and insights to situations outside of the group setting while engaged in activities beyond mountain biking.

Results support the use of these AT concepts based on participant perceptions. While both groups appeared to experience increased mountain biking knowledge and skills, AT group members reported specific benefits related to the incorporation of AT concepts._ For example, AT participants highlighted the use of FVC (be here, be safe, care for self and others) and identified comfort zones (stretch zone, panic zone) to assess their level of comfort and engagement in the group and activities. These AT concepts emphasize a sense of active awareness and attentiveness to self and the environment, challenging participants to remain engaged in the growth process or stretch zone (Christian et al., 2019; Gass et al., 2020; Schoel & Maizell, 2002). This level of awareness and engagement potentially led to the sustainability of AT participants making statements regarding focus at follow-up compared to their non-AT counterparts. Previous AT findings suggest participants in similar programs demonstrated retention of associated program outcomes (i.e., conduct and behavior, pro-social skills, knowledge, self-esteem) after the program ended (Widmer et al., 2014). As noted by a participant, “being able to go outside and be in nature has helped because I’m not stuck inside the school all day,” emphasizes using nature intentionally to engage students to impact their perceived sense of focus. The intentional use of nature appeared to be highlighted by the increase of members stating a sense of developed individuation and exploration of environmental connectedness with almost all AT group members reporting this emergent theme. Existing literature emphasizes the role of nature beyond being a setting or backdrop and being a ‘co-facilitator’ to bring about positive outcomes and therefore must be intentionally considered in program structure (Bidell, 2010; Harper, et al., 2021; Reese, 2018; Reese et al., 2019; Reese & Gosling, 2020; Taylor et al., 2010). The AT program structure serves not only as a

guide for the implementation of group but as a vessel for the unfolding and development of dynamic group processes among members within a safe, challenging, and fun environment.

Group Participation is A Dynamic Process

The objective of both groups was to facilitate change to help participants adjust to a new school environment and navigate developmental transitions through a school-based mountain bike program. Tuckman (1965) outlined a model of developmental change which research suggest AT groups typically follow (Christian et al., 2019). Participants engage in a change process that requires an initial awareness of disequilibrium or discomfort and reflection of existing strengths and acquired skills. This described dynamic highlights the level of engagement and avoidance exhibited by group members as they progress towards creating group cohesion. Cohesion is defined by higher levels of engagement and low levels of avoidance as a response to attending to group tasks (Christian et al., 2019). As members become more cohesive, they exhibit higher levels of motivation to commit and accomplish group tasks which enhances group performance (Forsyth, 2021). As an emergent theme, motivation was not initially perceived as a program benefit, but reportedly increased among group members as the program progressed. This theme supports existing literature further highlighting the interconnection of motivation to other emerged themes. As participants committed to group tasks gaining knowledge and skills (competency) and worked together to develop cohesion (social connectedness), they experienced increases in motivation (Forsyth, 2021). As motivation increased along with other themes related to cohesion, group members reported a decrease of risk and concerns, highlighting lower levels of avoidance. Therefore, obtaining a foundation of knowledge and skill through learning and experience was important among group members to engage in group tasks by perceiving connection, a sense of physical and mental wellness, and focus to influence their perceived sense of risk and concerns over the course of group. Interestingly, while both groups made statements pertaining to all primary themes, more AT group members consistently made theme related statements at follow-up compared to non-AT

members. Notably, nearly twice as many AT participants made statements regarding the theme of fun and play, suggesting the importance of facilitated fun.

Importance of Facilitated Fun

While fun might be inherent to mountain biking, more participants in the AT group reported experiencing a perceived sense of fun, excitement, and enjoyment of the program which might potentially have informed their perceptions of other themes. This reported perceived difference highlights additional contrast between AT and recreational programs. Researchers have indicated a link between facilitated fun and the intentional structure of the program and group process. Dickson and Dolnicar (2004) highlighted the influential role risk and risk management play in facilitating fun in adventure. The objective is not necessarily to reduce or remove risk, but to manage safely as to enhance the experience through a perceived challenge. Therefore, establishing norms or boundaries around how risk is managed rather than removed to establish a safe environment enhances the enjoyment of the activity. Through this established sense of safety, group members can identify how to challenge themselves and explore their perceived sense of risk and how it compares to real risk (Gass et al., 2020). As participants increase their awareness of risk and ability to navigate risk safety while remaining challenged, they experience higher levels of enjoyment and fun. This facilitation of fun through the program structure and group process allows participants to feel safe and explore their physical, emotional, and social environment to better understand their relationship to nature and others increasing one's EcoWellness (Martin, 2004; Reese, 2018; Reese et al., 2019; Reese & Gosling, 2020). Navigating risk safely allows participants to develop a sense of individuation through the group process and exploration of nature.

Facilitators use fun and connection to establish trusting relationships in group which support participants as they move into their stretch zone in the face of real and perceived risks (Collard, 2014). Fun works in tandem with connection and, moreover, can even help build connection. To that end, Collard (2014) wrote "Fun is the carrot I dangle in front of people to

encourage them to step outside of their Comfort Zones" (p. 25). Fun therefore is the answer to the "why" of stepping outside our comfort zone. Collard (2014) suggested that fun changes the way we perceive tasks: with fun, suddenly the obstacles that seemed impossible begin to seem possible. Based on results, more participants in the AT program made thematic statements of fun than non-AT participants. This appears to be consistent with previous literature because the primary facilitator integrated specific AT concepts intended to establish connections, build trusting relationships, and create a supportive environment.

Limitations

There were various limitations necessary to address. First, this study was conducted during August to December of 2020, when COVID-19 safety guidelines were particularly disruptive to the educational environment. For instance, mandatory quarantining and positive COVID-19 tests significantly impacted attendance of both the AT and Non-AT groups. Some students in quarantine participated in group virtually and went on a bike ride on their own. Also, on more than one occasion, school closing required the researchers to cancel group and attempt to make it up the following week which complicated scheduling and sequencing of activities. The researchers responded by being flexible with activity sequencing and making necessary changes to the group timeline to ensure participants received the treatment protocol in its entirety. While most participants provided thorough survey responses there were three participants in the non-AT group which appeared resistant to providing thorough responses as evidenced by consistently brief or identical responses thorough all survey responses or consistent reporting of no perceived benefits. For example, one participant stated "nothing" to many survey items, and some participants provided one-word responses.

Implications

The participants described numerous ways in which they benefited from the program academically and non-academically. In general, the program appeared to support several factors pertinent to academic and non-academic functioning and may have buffered the effects of

COVID-19. Due to the ongoing nature of COVID-19, outdoor activities like mountain biking, which appear to support academic and socio-emotional welling being per participant report, continue to be appropriate tools for counselors, school counselors, and school officials. Participant statements indicated a difference between AT and non-AT groups. Therefore, AT components may have increased the therapeutic effect of the intervention.

Practice

It is important to acknowledge that implications from qualitative research should be discussed with caution. Most participants described a number of ways they benefited from the mountain biking program. Broadly these included both academic and nonacademic benefits. This finding is consistent with prior research and provides support for the use of outdoor activities such as a mountain biking to support the social-emotional development of adolescents. The use of such programs has several benefits for clinicians (e.g., cost, time, number of participants) and may be more appealing than other programs to many adolescents. From the participants' statements, it appeared that the incorporation of AT concepts impacted the effects of the mountain biking program. Thus, clinicians utilizing outdoor activities may benefit from incorporating AT concepts into their programming.

Future Research

Qualitatively driven comparison groups that explore differences between a group who received an intervention to those who did not is limited (Lindsay, 2019). Ritchie et al. (2014) suggested comparative qualitative research can help explore how groups vary on the absence or presence of a phenomena. Researchers may consider using this approach to explore the impact of an intervention between groups which can highlight key concepts that are making a difference and help facilitate theory development by capturing the unique experiences of participants (Lindsay, 2019).

While the present study utilized a qualitative comparative case design, future research could explore the impact of AT mountain biking programs using various quantitative and other

qualitative research designs. Researchers could explore this topic with participants outside of the school setting, and sample older or younger participants. Because COVID-19 greatly impacted the implementation of the program, future research could examine the topic absent of the barriers created by the pandemic. Future research should continue to explore the effects of additional outdoor activity groups (i.e., climbing, paddle sports) in different settings and locations with diverse populations to explore the impact on other therapeutic and academic factors. This study highlighted prominent themes that can inform future research to explore and assess outcomes related to the findings, such as resiliency, self-efficacy, physical and mental health, self-concept, EcoWellness and nature connectedness, and social-emotional development. Further, this program provides an example of how to engage in interprofessional collaboration (i.e., school teacher, school counselor, and school-base mental health counselor) to implement mental health programs in schools as suggested by Christian and Brown (2018).

Conclusion

The present study explored middle-school students' perceived experiences of participating in a mountain bike program as a therapeutic intervention at a charter school in the southern region of the United States. Selected participants were randomly assigned to an adventure therapy group with a therapeutic debrief or to a recreational comparison group with no therapeutic debrief as an addition to their traditional school services. Participant statements collected throughout the program and at a one-month follow-up were compared using a qualitative comparative analysis. Participants described themes related to focus, physical and mental wellbeing, connectedness, competency, fun and play, and risk and concern as a result of the program. Based on participant statements and the comparative results, it appears that while participating in a mountain bike program yielded similar results, a higher percentage of participants participating in the adventure therapy group reported abovementioned themes. This difference in reported themes highlights the uniqueness of AT programs being intentionally structured to engage participants in a dynamic group process to facilitate learning and fun.

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Table 1

Thematic Labels

Primary Themes	Sub-Themes
1. Focus	a. Academic b. Non-Academic
2. Physical Wellbeing	
3. Mental Wellbeing	a. General b. Confidence, Courage c. Motivation
4. Connectedness	a. Environment b. Social (Friends & Family)
5. Competency	a. MTB Knowledge and Skills b. AT Concepts
6. Fun & Play	
7. Risks & Concerns	
8. No Perceived Benefits	

Table 2

Overview of Comparative Results

	AT MTB				Non-AT MTB				Total			
THEMES	Pre	Mid	Post	Follow-Up	Pre	Mid	Post	Follow-Up	Pre	Mid	Post	Follow-Up
Focus												
Academic	10%	21.43%	33.33%	31.25%	23.52%	13.33%	40%	25%	16.21%	17.24%	37.04%	28.57%
Non-Academic	25%	21.43%	41.67%	18.75%	11.76%	26.67%	20%	16.67%	18.92%	24.14%	29.63%	17.86%
Physical Wellbeing												
Physical Health/Exercise	35%	71.43%	75%	62.25%	64.70%	46.67%	60%	25%	48.65%	58.62%	66.67%	46.43%
Mental Wellbeing												
General	20%	21.43%	16.67%	37.5%	23.52%	40%	46.67%	25%	21.62%	31.03%	33.33%	32.14%
Confidence, Courage	15%	14.29%	58.33%	43.75%	29.41%	13.33%	40%	33.33%	21.62%	13.79%	48.15%	39.29%
Motivation	0%	21.43%	25%	43.75%	11.76%	20%	20%	33.33%	5.4%	20.69%	22.22%	39.29%
Connectedness												
Environment	20%	14.29%	91.67%	6.25%	35.29%	20%	60%	41.67%	27.03%	17.24%	74.07%	21.43%
Social	35%	28.57%	41.67%	50%	29.41%	20%	26.67%	33.33%	32.43%	24.14%	33.33%	42.86%
Competency												
MTB Knowledge and Skills	80%	71.43%	66.67%	68.75%	70.58%	60%	53.33%	66.67%	75.68%	65.52%	59.26%	67.86%
AT Concepts	0%	21.43%	50%	43.75%	0%	0%	0%	0%	0%	10.35%	22.22%	25%
Fun/Play	25%	21.43%	75%	37.5%	23.52%	26.67%	40%	25%	24.32%	24.14%	55.56%	32.14%
Risks/Concerns	40%	64.29%	33.33%	0%	29.41%	33.33%	13.33%	0%	35.14%	48.28%	22.22%	0%
None	45%	7.14%	16.67%	25%	41.17%	33.33%	40%	33.33%	43.24%	20.69%	29.63%	28.57%

Table 3

Overview of Comparative Statements

	AT MTB	**Non-AT MTB**
Focus		
Academic		
Pre	*"It helps me have a little brain break from all my work so I can focus better after I am done biking."*	*"Hopefully to strengthen my mind so I can sic (concentrate) better in other classes."*
Mid	*"It has helped me to focus and be more attentive in my other classes with something to look forward to at the end of the day."*	*"This program has led to better focus in after classes or before even. It helps raise my awareness of my surroundings, and in a way is a break for my brain, so when I get back, I feel like I'm able to follow tasks easier."*
Post	*"It [has helped me in school], it [gets] my mind off school for a little bit so I can come back refreshed."*	*"It has allowed me to clear my mind while overwhelmed from school work, which lets me think clearer."*
Follow-Up	*"With more exercise, I can better focus to get my work done with being less fidgety."; "I feel calmer after biking class because it gets my energy out so I can focus on my work"*	*"This has helped me regain more focus afterwards, and motivates me to push myself to the limits, in many subjects."*
Non-Academic		
Pre	*"To me it helps focus, when you ride you have to pay attention to where you are, if you're on the road you got to look out for cars, on the trail, other bike riders."*	*"I think it will help me with focusing and getting better air control for band."*
Mid	*"Getting exercise helps me to focus. So, after this class I can focus better."*	*"It helps raise my awareness of my surroundings, and in a way is a break for my brain, so when I get back, I feel like I'm able to follow tasks easier."*
Post	*"With more exercise, I have been more healthy and better able to focus. I now have an outdoor hobby."*	*"I've become more physically active, and more aware of my surroundings. I feel more focused afterwards, after I've cooled off."*
Follow-Up	*"It's helped me stay more focused."; "I believe it makes my brain smarter."*	*"It helps me to focus after a ride."*
Physical Wellbeing		
Physical Health/Exercise		
Pre	*"Making my riding easier and improving my health."*	*"I'm hoping mountain biking will help me exercise more and help me focus in classes."*
Mid	*"This program has helped me get a good night's sleep and be energized for the day ahead."*	*"I feel like I have become more [comfortable] riding longer, I am out everyday now riding the bike and I can go faster and way longer and I can now go up hills no problem. So now I feel like I can do this easier since I am gaining strength."*
Post	*"It's helped me get in shape and become physically stronger and continue to exercise."*	*"I'm physically stronger, and I feel like it improves my air intake, stamina, and focus for when I'm in my classes [after]."*
Follow-Up	*"Now I have a new hobby I thoroughly enjoy and I now enjoy getting the proper exercise I need."*	*"This has helped me with my physical strengths, and endurances. I've become more experienced in biking, and especially with riding trails."*
Mental Wellbeing		
General		
Pre	*"I have really bad anxiety, especially around people I don't know and I over think a lot of things and mountain biking gives me a chance to clear my head."*	*"Gym and I calms my anxiety since, I have really bad anxiety, especially around people I don't know and I over think a lot of things and mountain biking gives my a chance to clear my head."*

Mid	*"It's reduced my anxiety and adrenaline and given me an excuse to get out of the house."; "It makes me happier to be in school."*	*"I'm in a good mood when I come home because I've just had a great time."*
Post	*"It has allowed me to clear my mind while overwhelmed from schoolwork, which lets me think clearer."*	*"I've also gained [overcome] physical and mental challenges, especially with sharing experiences or developing stamina on the trails."*
Follow-Up	*"It has helped me catch my breath when I am overwhelmed with all of my assignments."; "Balance would be a good thing so maybe I could have balance in life."*	*"[It is] stress relief for hard days."; "Its helped me relieve stress at school."*
Confidence, Courage		
Pre	*"I want to get more confidence in my riding and myself."*	*"Confidence to ride trails I have been not sure about."*
Mid	*"I have more courage and a little bit of body strength."*	*"What has excited me most during this class are being outside and challenging myself."*
Post	*"I've been able to get more comfortable on my bike and ride my bike more."*	*"The challenge and being able to ride on trails of different types. Like said earlier, the level of my classmates varies, and most of them are more 'experienced.' In order to keep up, I'm being challenged in multiple strengths."*
Follow-Up	*"The knowledge that I will apply from this class in the future is just to go for it, I have learned that I have the skill so do things and I just need to get over the mental block."*	*"I'm much more comfortable riding a mountain bike."*
Motivation		
Pre	*N/A*	*"I see it making me become less lazy and more motivated."*
Mid	*"It's reduced my anxiety and adrenaline and given me an excuse to get out of the house."*	*"I've had a great time, it's the part of the day I look forward to."*
Post	*"It's helped me have a reason to take a break when needed without getting in trouble."; "It gives me something to look forward to in the school week instead of just going home. It lets me have fun while also participating in school."*	*"I can look forward to this and therefore do well in other activities."*
Follow-Up	*"This has helped me regain more focus afterwards, and motivates me to push myself to the limits, in many subjects."*	*"This program gives me something to look forward to in school. It really helps me stay active in school when it's hard to do so."*
Connectedness		
Environment		
Pre	*"The experience of seeing nature and the architecture that can be found during the biking and mountain biking experience."*	*"What excites me most is the sense of adventure outside and the connection I might have with others and just with nature in general."*
Mid	*"It's given me time to go outside and take a break."*	*"Now I am spending more time outside then inside on my phone."*
Post	"*I love being able to get outside, exercise, and spend time in nature."; "It helps me focus more on nature"*	*"Trails and Nature"; "Just being able to go outside and be in nature has helped because I'm not stuck inside the school all day."*
Follow-Up	*"It's made it so much easier to just ride my bike somewhere and get some fresh air."; "It has given me time to explore my neighborhood and trails around me."*	*"I guess I know some of the roads better and I know how to get to a few more places."; "The program has given me a hobby that I can do outside and enjoy."*
Social		

Pre	*"My parents are hoping that it will help me socialize. This is a note from my mom: [student] has expressive speech disorder that makes it extremely difficult for him to communicate his feelings either verbally nor written. He answers everything with an "I don't know", "Okay", or "I don't care." He does care but has to be forced into situations or he would just stay home forever and only work with people through tech. He can socialize over familiar topics but the unknown is uncomfortable and he often finds it difficult but after the fact he usually is glad we pushed him into something."*	*"It will help me become more physically active, and more motivated to go on bike rides with my family."*
Mid	*"Meeting new people and talking to more people, along with getting to ride the bike."*	*"I have gained a couple of friends and bike skills."; "How to ride better and kind of communication"*
Post	*"I have been able to connect with family through this new hobby."*	*"I've been making new friends."*
Follow-Up	*"I've been able to go on rides with my sister and make new friends to ride with outside of school."*	*"When I'm out biking with family or friends, I will remember how to fix certain things. I'll become more familiar with my surroundings, maybe, and be able to help another biker if they don't know how to find an issue. The knowledge I have will also help me take better care of my own bikes."*
Competency		
MTB Knowledge and Skills		
Pre	*"The skills to become comfortable in mountain biking."*	*"I signed up for this class because I would like to get better at mountain biking and be less afraid of the trails."*
Mid	*"I've gotten much better at turning and at going down/uphill, along with riding on mountain bike trails. I've also learned more about how to ride with other people, and how to go slowly and stay balanced."*	*"I now know the parts of a mountain bike and what to check before riding. I know how to re-attach a chain and how to put air in the tires."*
Post	*"Knowledge of bike parts, and how to properly ride."*	*"I've gained more experience and knowledge on what the names of the parts of the bikes."*
Follow-Up	*"I've gained a better understanding of bike mechanics. Before, I've always struggled with things such as changing tires, parts of the bike, and other such things. I've never had the best instruction and although this isn't all that different, it's still given me a bit more detail."*	*"I have learned biking mechanics, like how to change a mountain bike tire, how to fix a chain, how to signal. I have also learned how to use gears, how to find my cadence when I'm biking, and when to use my active stance."*
AT Concepts		
Pre	*N/A*	*N/A*
Mid	*"I have gained some endurance on a bike, level pedals and going downhill safely, and the knowledge of the comfort zone, stretch zone and panic zone."*	*N/A*
Post	*"I have gained numerous terms about biking, and I have learned about comfort levels."*	*N/A*
Follow-Up	*"I now can do some bike repairs and can now apply my knowledge of completing*	*N/A*

	and setting goals along with getting out of my comfort zone." *"I have gotten my comfort zone up by just riding behind a more skilled rider the days that we ride."* *"I have learned the three comfort zones of resting, stretch, and panic. I have also learned the values, but I can only recall "be here". I have learned level pedals, how to stop, when to shift gears, and the ready position."* *"I sure have learned a lot more than I used to know and about my comfort zones and way to ride and gain control over the bike and enjoy."*	
Fun/Play		
Pre	*"Because it involves biking and biking is fun"*	*"I thought it would be fun because I like to bike"*
Mid	*"Everything [about this class excites me]. I just like to learn about the things that I love to do."*	*"Getting to go outside and do fun things."*
Post	*"Getting to go on and experience new trails has been really exciting."*	*"It gives me something to look forward to in the school week instead of just going home. It lets me have fun while also participating in school."*
Follow-Up	*"There isn't any fun [in school] doing stuff that is interactive"*	*"I needed something fun to do in my spare time."*
Risks/Concerns		
Pre	*"What makes me nervous is going up hills. I am not very good at going uphill for a long time."*	*"I'm most nervous about crashing or being judged for being slow."*
Mid	*"I am nervous about running into people in front of me and causing them to wreck and my wheel slipping and getting thrown down a cliff side."*	*"I am not very experienced with trails, so those are what make me nervous."*
Post	*"How fast I go when going on certain mountain bike courses, I'm scared of going super-fast and then crashing. I have gotten better about it, but I still get nervous."*	*"The threat of crashing scares me."*
Follow-Up	*N/A*	*N/A*
No Benefits		
Pre	*"Nothing really."*	*"I don't know"*
Mid	*"Most of this class has been a review of what I've learned on the Mountain Biking Team. I don't believe there's been anything I've gained as of yet."*	*"Not a lot because I am virtual."*
Post	*"It does nothing for me in school."*	*"Nothing...Really."*
Follow-Up	*"This program hasn't been of much help to me in other activities. That said, it hasn't been an impediment either."*	*"I haven't learned much due to being online."*

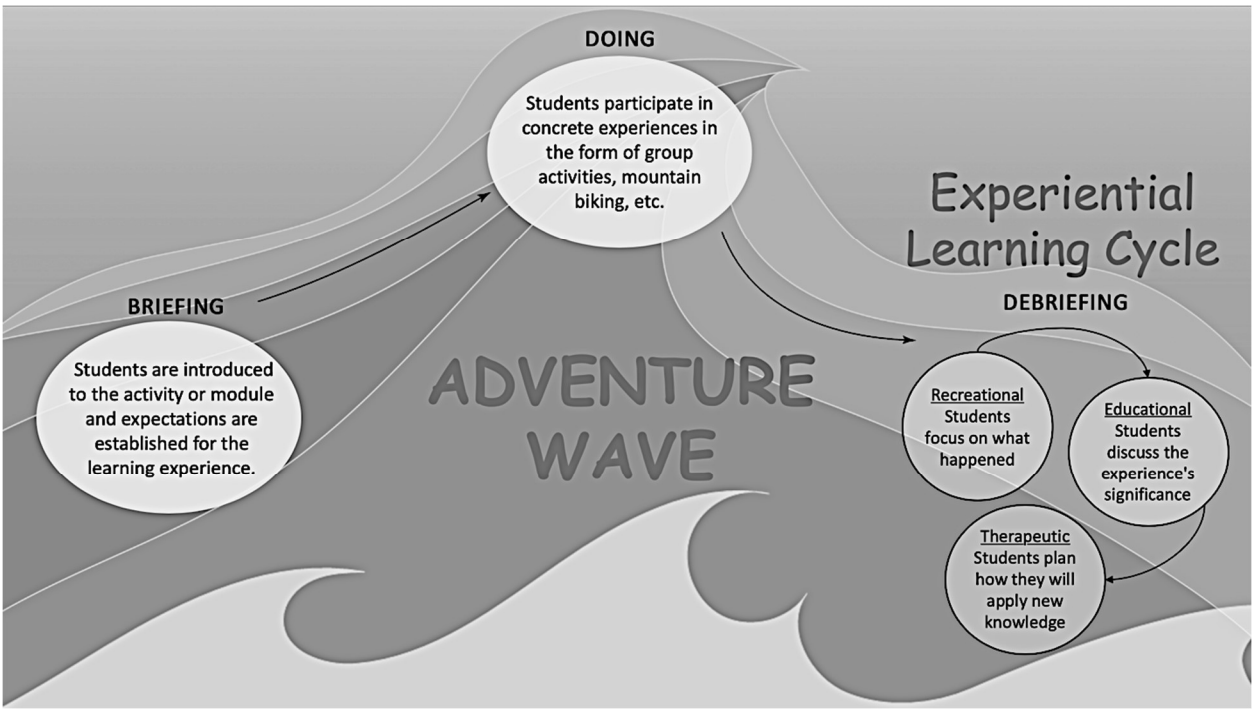
Table 4

Journal and Field Notes Data

THEME	STATEMENT
1.Increased Academic Focus (a) Non-Academic	*"I look forward to riding and really helps me outside of school, like during, because I get energy and can be more focused on work."* (a) *"It's kind of hard to think about all the things at once, because we have to focus on one thing and also do another, it's hard, but it really challenges me to be present and focused."*
2. Increased Mental Wellbeing (a) Confidence, Courage (b) Motivation	*Students in treatment group reflected that when they take things slower in school or at home they can be more in control of their emotions and thoughts, however when they get excited or anxious, they end up getting in trouble because they're out of control.* (a) *"I'm going to try it because I believe in myself"; "If you don't try and fail, then you won't learn and I want to get better".* (b) *"I kept pushing myself even though it was hard because I knew I could get over the hill and it would be fun to go down the other side where it's really fast."*
3. Increased Connectedness to Environment (a) Social (Friends & Family)	*"I like being outdoors during school, I could feel the air being really cool on my skin...."* (a) *"It was nice to be partnered with someone who has better skills and could help me out when I had trouble."*

Figure 1

Christian et al. (2021a) Integrated AT Processing Model



Note: The non-therapeutic mountain bike group did not move through ELC debriefing phases

Figure 2

Program Timeline Overview

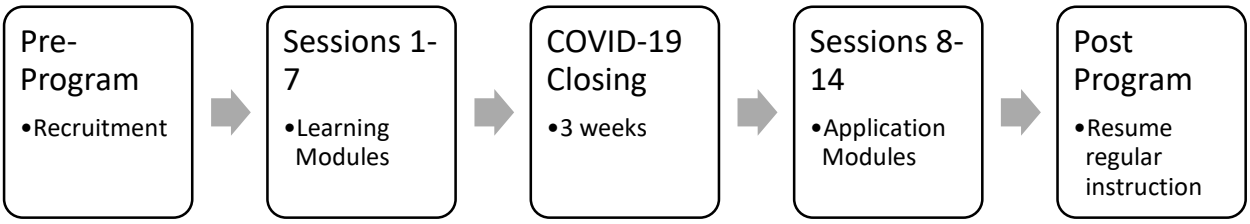
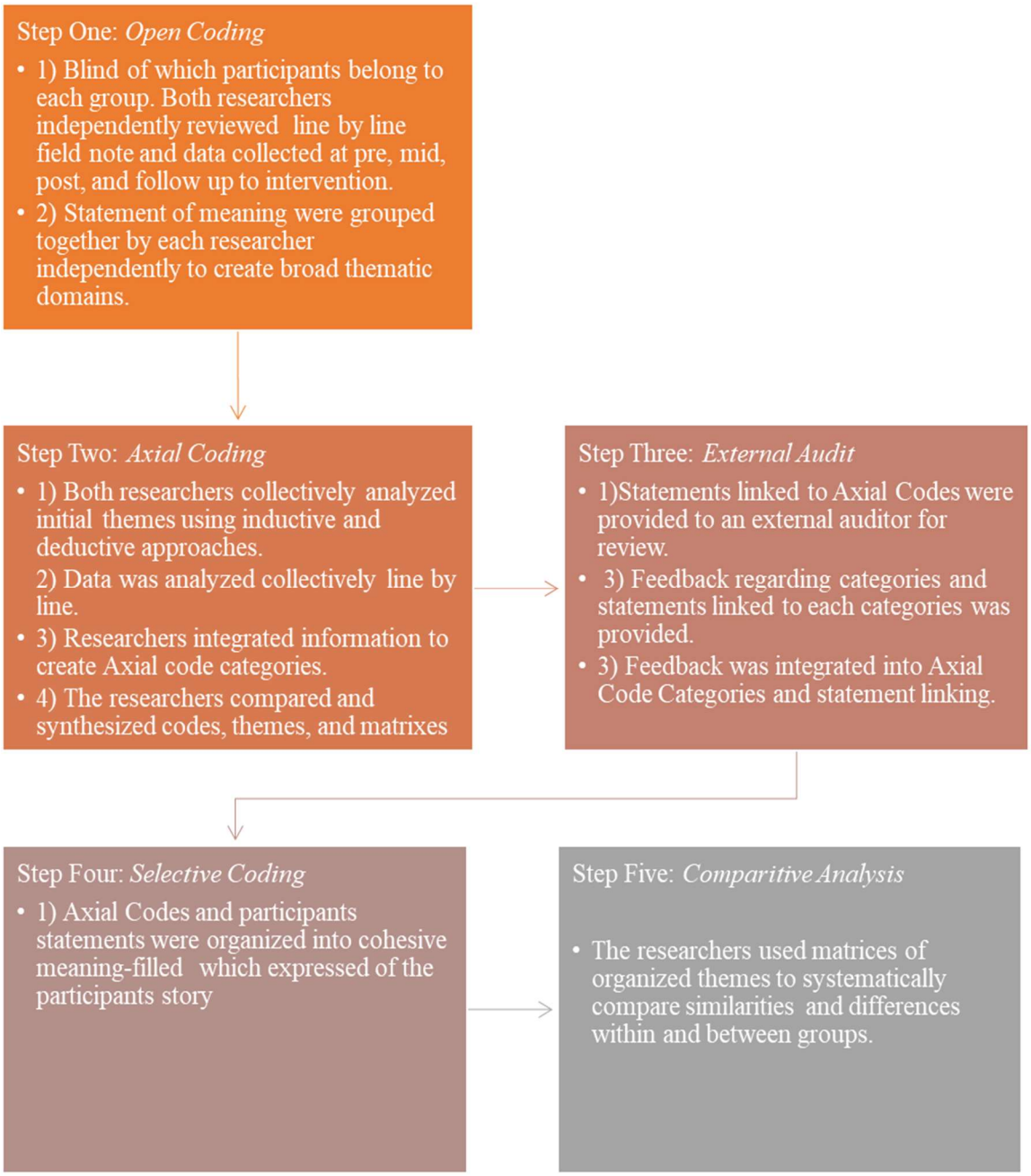


Figure 3

Data Analysis Process



Appendix A

Session: 1 **EcoWellness Factors:** Physical & Sensory Access **Tuckman's Group Stage:** Forming **Activity:** Equipment Check & Pre-ride Inspection	
Goals	**Debrief**
Establish group norms: FVC, CBC	**Recreational:** What did you notice during the ride? **Educational:** When did you feel out of your comfort zone/in your stretch zone? Panic zone? So what did you do to return back to your comfort zone? **Therapeutic:** When/where else do you feel challenged and pushed outside your comfort zone?
Session: 2 **EcoWellness Factors:** Physical & Sensory Access **Tuckman's Group Stage:** Forming **Activity:** Pre-ride inspection, rider assessment	
Revisist FVC & CBC; "Pit Stop" Rider Assessment; FVC: Be Here, Be Safe, Be Honest, Care for Self & Others	**Recreational:** What value stuck out to you? What did you notice about yourself, others, surroundings during the ride? **Educational:** So what about this value stood out? So what did you learn about yourself, others, and surroundings when you became aware of them? **Therapeutic:** No what are you taking away from today before we meet next session/week? What do you see yourself applying from today this week? How will you try to apply this value?
Session: 3 **EcoWellness Factors:** Physical & Sensory Access, Protection **Tuckman's Group Stage:** Forming, Storming **Activity:** Start & Stop, Balance & Control, Snail Race	
Safety, Bicycle Care; CBC; FVC: Be Here, Be Safe, Be Honest	**Recreational:** What role did you play in your group? What did you find supportive from your group? How did you support your group? **Educational:** So what helped your team move faster/slower? So what helped you remember the components of the bicycle? **Therapeutic:** How can you work together this week outside of group? How can you be supportive of someone else this week? What can you do to get support from others this week?
Session: 4 **EcoWellness Factors:** Physical & Sensory Access, Protection **Tuckman's Group Stage:** Storming **Activity:** Balance & Control, Weaving & Turning	

Safety, Protection, Bicycle Care, FVC: Set Goals	**Recreational:** What was the goal for today? **Educational:** So what goal did you set for yourself? How did your goal change? How did you take care for self and others? **Therapeutic:** Now what goals did you have set for yourself this week? How might you change your goals? Is there something you would like to take more slowly and controlled? More quickly?
Session: 5 **EcoWellness Factors:** Physical & Sensory Access, Protection, Preservation **Tuckman's Group Stage:** Storming **Activity:** Follow the leader, Road etiquette, Shifting gears	
FVC: Set goals, care for self and others; brake control	**Recreational:** What did you learn about shifting? What happened if you shifted improperly? If you were in the wrong gear? **Educational:** So what does shifting allow us to do? **Therapeutic:** How might you need to shift gears this week outside of group?
Session: 6 **EcoWellness Factors:** Physical & Sensory Access, Protection, Preservation **Tuckman's Group Stage:** Norming **Activity:** Group ride	
Braking control; gear shifting; FVC: Set goals, care for self and others	**Recreational:** What did you learn about shifting? What happened if you shifted improperly? If you were in the wrong gear? **Educational:** So what does shifting allow us to do? **Therapeutic:** How might you need to shift gears this week outside of group?
Session: 7 **EcoWellness Factors:** Physical & Sensory Access, Protection, Preservation **Tuckman's Group Stage:** Norming **Activity:** Group ride	
Gear shifting; FVC: Let go and move on	**Recreational:** What sounds, sites, smells did you notice during the ride? What part(s) of the bike were easiest/hardest to recall? What did you notice about your bike as we rode? **Educational:** So what helped you remember components of the bike? So what about the sensory did you notice? **Therapeutic:** Now what about this process will you take away into the weekend? How can this help you before we meet next?
Session: 8 **EcoWellness Factors:** Physical & Sensory Access, Protection, Preservation **Tuckman's Group Stage:** Performing **Activity:** Bike maintenance, Obstacle avoidance	
Shifting focus, Awareness/Foresight, Anticipation, FVC: Let go and move on	**Recreational:** What did you learn about potential obstacles? What happened if you noticed a potential hazard? **Educational:** So what does foresight allow us to do? **Therapeutic:** How might you need to scan and be aware of potential challenges or obstacles in the week ahead?

Session: 9 **EcoWellness Factors:** Physical & Sensory Access, Protection, Preservation, Connection **Tuckman's Group Stage:** Performing **Activity:** Group ride	
Avoidance, Protection, Finding Balance Identifying Support; FVC: Set Goals, Be Safe, Care for Self & Others	**Recreational:** What was difficult about balancing? What was easy about balancing? Avoiding obstacles? **Educational:** So what would allow you to be more balanced? So what helps you avoid obstacles? **Therapeutic:** What obstacles or challenges are you currently facing outside of group? What would help you create or feel more balanced this week?
Session: 10 **EcoWellness Factors:** Physical & Sensory Access, Protection, Preservation, Connection **Tuckman's Group Stage:** Storming **Activity:** Group ride	
Planning, Preparedness, Cooperative & Supportive Peer Interactions; FVC: Be Here, Set Goals, Be Safe, Care for Self & Others, Let Go Move On,	**Recreational:** What did you notice about yourself, others, surroundings? What did you discover by doing? **Educational:** So what did your advisor say and what did you listen to? So what risks did you take? **Therapeutic:** Now what could your advisor tell you that is helpful/unhelpful? Now what can you challenge your discoverer to do this week?
Session: 11 **EcoWellness Factors:** Physical & Sensory Access, Protection, Preservation, Connection **Tuckman's Group Stage:** Norming **Activity:** Scan & Signal, Musical Bicycles, Group ride	
Communication, Problem Solving, Awareness, FVC: Be Here, Be Safe, Be Honest, Set Goals, Let Go & Move On, Care for Self & Others	**Recreational:** What happened when someone called out scan? **Educational:** So what made it challenging to identify the signal? What would have made it easier? Harder? **Therapeutic:** When might you need to signal? What signals have you been giving your friends, family? How might you be more attentive this week outside of group?
Session: 12 **EcoWellness Factors:** Physical & Sensory Access, Protection, Preservation, Connection **Tuckman's Group Stage:** Performing **Activity:** Bike maintenance, Group ride	
Communication, Problem Solving, Awareness, FVC: Be Here, Be Safe, Be Honest, Set Goals, Let Go & Move On, Care for Self & Others	**Recreational:** What did you notice about the bikes you were responsible for? **Educational:** So what procedures did you follow to maintain the bike mechanics? How might maintaining the bike affect its performance? **Therapeutic:** When might you need to maintain school, relationship, or home life? What are you responsible for this week?

Session: 13 **EcoWellness Factors:** Physical & Sensory Access, Protection, Preservation, Connection, Community Connectedness **Tuckman's Group Stage:** Performing, Adjourning **Activity:** Group ride	
Communication, Problem Solving, Awareness, FVC: Be Here, Be Safe, Be Honest, Set Goals, Let Go & Move On, Care for Self & Others	**Recreational:** What was the objective of today's trail ride? What happened during the ride? **Educational:** So what made it easier/difficult to ride? To maintain your pace? So what made you want to go faster/slower? **Therapeutic:** Now what can help you maintain a steady pace this week?
Session: 14 **EcoWellness Factors:** Physical & Sensory Access, Protection, Preservation, Connection, Community Connectedness **Tuckman's Group Stage:** Adjourning **Activity:** Group ride	
Communication, Problem Solving, Awareness, FVC: Be Here, Be Safe, Be Honest, Set Goals, Let Go & Move On, Care for Self & Others, Have fun	**Recreational:** What happened during the program? When did you feel most comfortable? Nervous? **Educational:** So what helped you be successful? So what helped you stay cool, calm, and collected? So what made you decide when to participate and how much? **Therapeutic:** Now what will you do outside this program to help you when you feel anxious or nervous? Now what types of risks will you take outside the program to be successful?

Appendix B

Phase	Sample Questions
Pre	What makes you most nervous about this class? Why did you sign up to take this class? What makes you most excited about this class? What are you hoping to gain from this class? How do you see the Intro to Mountain Biking class helping you in other classes? How do you see the Intro to Mountain Biking class helping you outside of school?
Mid	What have you gained so far from this class? What has made you most nervous during this class? What has excited you the most during this class? How has this program helped you with other activities in school? How has this program helped you with other activities outside of school?
Post	What has made you most nervous during this class? What has excited you the most during this class? How has this program helped you with other activities in school? How has this program helped you with other activities outside of school? What have you gained from taking this class?
Follo w up	What have you learned overall as a result of this class? What knowledge will you apply from this class in the future? How has this program helped you with other activities in school? How has this program helped you with other activities outside of school?