

Hikers' Perceptions of Mental Toughness: A Phenomenological Study

Panagiotis Kentikelenis

MSc Candidate



Department of Physical Education & Sport Science

Master in Psychology of Sport, Exercise & Physical Education

Supervisory Committee: Goudas M., Kouthouris H., Hasandra M.

University of Thessaly

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Abstract

The present study attempted to explore hikers' perceptions of mental toughness. Eight semi-structured interviews and a phenomenological approach were used in this qualitative study. Thematic analysis was used to identify common themes in the raw data. Three main themes emerged: a. "mental toughness as conceived by hikers" b. "parameters that develop, maintain and increase mental toughness in hiking" and c. "transferability of mental toughness to new hikers and everyday life carryover". Mental toughness, according to participants of this study, is a combination of an individual's physical condition and mentality that is susceptible to volatility (external factors) and the person's mental assets. Furthermore, the carryover of mental toughness the hikers built while doing the activity, is significant in various aspects of their lives. These insights have implications for preplanned and/or on the go autoregulation of parameters associated with developing, maintaining and enhancing a hiker's mental toughness as depicted in this study.

Keywords: hiking, mental toughness, physical demands, carryover, psychological skill, qualitative, performance

Contents

| | |
|--|----|
| Introduction..... | 4 |
| Research Questions / Aim of this Study..... | 6 |
| Literature Review..... | 7 |
| Hiking..... | 7 |
| Mental Toughness..... | 8 |
| Mental Toughness in Outdoor Adventures..... | 10 |
| Synopsis and Need of the Study..... | 18 |
| Methods..... | 19 |
| Participants..... | 19 |
| Role of the Researcher..... | 20 |
| Data Collection | 20 |
| Data Analysis | 21 |
| Results..... | 22 |
| Trustworthiness..... | 39 |
| Credibility..... | 39 |
| Transferability..... | 40 |
| Conclusion of the Results..... | 41 |
| Discussion..... | 43 |
| Limitations / Applications/ Recommendations for Future Research..... | 47 |
| References..... | 48 |
| Appendix..... | 53 |

Introduction

Hiking is an outdoors activity that is commonly portrayed and subsequently promoted as a rather leisurely act. The benefits of hiking increase its appeal to the entire community as a leisure activity (Monasterio, et al., 2014; Soule, et al., 2017). Self-satisfaction and good health is one of the primary reasons people engage in hiking according to Siti Hajar, et al. (2015). The fact that hiking is not a competitive sport or even a sport per se, enhances this notion. However, there are certain elements in hiking that when distinctly present, can turn the activity from leisurely to strenuous and demanding. Additionally, the motives of hikers on wilderness trails can and will differ greatly compared to hiking visitors of national parks (Saayman & Saayman, 2009), (Kruger & Saayman, 2010).

The intensity of hiking as an activity is directly affected by a plethora of volatile parameters such as pace, terrain features, weather conditions, mileage, elevation gain, altitude, team size etc. This is when mental toughness, as a psychological skill, comes into the equation to successfully complete a task (i.e a difficult hiking route). Mykletun et al. (2021), concluded that many new adventurers struggle to overcome challenges when hiking in a demanding Nordic mountain area. The challenges and shortcomings are related to their lack of experiences in exploring and enjoying outdoors living, from childhood and onwards (Mykletun et al., 2021). Middleton et al. (2004) defined mental toughness as “an unshakeable perseverance and conviction towards some goal despite pressure or adversity”. Coping effectively with pressure and adversity so that performance remains little affected is a very similar definition of mental toughness given by Jones et al. (2002).

As stated above, hiking might not be a competitive sport with opponents by design, yet still the demands of certain projects, in terms of mental toughness, either day trips or multi-day trips, can be examined within the scope of sport psychology. Hiking is usually researched for its potential health benefits and well-being. Johannis, et al. (2021), reported that through hiking people seek to exploit the benefits of increased physical fitness, mental toughness, self-confidence and group cohesion development. Still, there seems to be a gap in current sport psychology literature, regarding hiking and its relationship with mental toughness as a psychological factor that could dictate the outcome of a potentially -highly- stressful project. It is the intention of this study to view hiking mostly from a performance perspective, such as when a route is undertaken with a more “competitive”, rather than a purely “recreational” mindset and the stakes are higher.

The competition in this case might not be anything other than competition against the self, against fears, doubts and feelings of incompetence in situations where circumstances might affect a hiker's willingness to keep pushing. According to Saayman and Viljoen (2016), this refers to a very specific niche group of hikers, as wilderness trails demand certain characteristics from hikers given that these trails meander through areas with wildlife. Molokáč's et al. (2022) findings suggest that hikers are trying to discover new places, but they are less motivated by the challenging environment. An undemanding natural environment, such as hills or plains, proves to always be more satisfactory given the physical abilities of all ages, which is also indicated by the fact that participants prefer short and steep hikes the least, and they consider wide valleys with hills to be the most attractive landscape. In this context, the physical limits of the participants restrict the choice of natural environment in which they want to carry out their hiking activities (Molokáč et al., 2022). But, it

could also be the lack of, or a not so well developed mental toughness. Moreover, Mason et al. (2013) stressed the fact that there is an underlying “misperception” amongst less experienced hikers, who tend to regard short(er) hikes as not worthy of any special preparation, which eventually leads to a considerable number of cases where emergency medical services systems had to be called upon. Mason et al. (2013) reached the conclusion that a crucial factor able to reduce mountain rescues is preparedness, with younger, unfit and inexperienced individuals at a greater risk of getting in danger when roaming outdoors. With this in mind, it can be expected that a psychological skill such as mental toughness is important for an individual intending to wander in the unknown outdoors.

Research Questions / Aim of this Study

The purpose of this study is to examine whether mental toughness is a psychological factor and skill that is associated with successfully completing physically demanding hiking routes. These hiking projects can be attempted in solo or group settings, as well as in a single day or a multi-day trip. How is mental toughness conceived by hikers? How is it developed, maintained and increased?

Are there certain, objective parameters in a mountainous environment, that have greater potential to instill mental toughness in a hiker's psyche? How do experienced hikers utilize these objective parameters to increase their overall performance? Finally, the second research question is what are the benefits of the mental toughness built and acquired through hiking for the person's everyday life? Is there significant mental toughness carryover that helps hikers face day to day challenges outside the hiking context?

Literature Review

The literature review that was conducted resulted in three topics that provide an overview of the existing research related to this study's field of interest. Hiking as an outdoors activity, mental toughness as a psychological skill and mental toughness as psychological skill specifically in outdoor adventures, are presented in this section.

Hiking

Hiking is a mode of on-foot transportation, either single-day or multi-day, where individuals, alone or as part of a group, carry all their necessary equipment and provisions in a backpack, over and across flat, hilly or mountainous terrain, often covering extreme mileage (total km) and elevation gain (total m) in order to reach their destination and successfully finish the task. It is an outdoors activity that is susceptible to adverse weather conditions, and unpredictability in general.

There are different types of hiking, such as day hiking, section hiking and thru-hiking. Day hiking refers to routes of any difficulty, that can still be completed in one day, depending on the individual's level. Section hiking is the act of hiking a long distance trail, yet not continuously. Instead, the long distance trail is completed one section at a time in different attempts. Thru-hiking refers to hiking a long-distance trail from start to finish, in a single, continuous attempt. Even though each mode of hiking presents its own, unique aspects and challenges, hiking, at its very core, necessitates a certain level of preparedness. Preparedness, in the form of competent physical capabilities, adequate equipment and sharp psychological skills are a prerequisite in order to not only safely enjoy the activity, but also deal with disadvantageous potential scenarios and push

through.

Nemeth et al. (2021) developed a conceptual model of hikers' preparedness, where preparedness is regarded as a function of equipment availability, group size, destination, etc. Still, at the core of the conceptual model's design is "who you are". All the other factors concerning preparedness are of secondary importance, or more accurately, emerge from the notion of "who you are" as an individual (hiker). Mental toughness might not be the end-all be-all of a hiker's persona, but it is expected to define "who you are", on a mountain, in a convincing way. Mountaineer adventure tourists seek to ultimately have a positive experience when engaging in outdoor activities. Yet it is almost certain that they will have to go through mixed emotions before achieving that (Swarbrooke et al., 2003). The "path of least resistance" might be a naturally occurring need and phenomenon in many hikers, especially inexperienced ones, however it is of interest to this study to explore the motives and phases of hikers that choose to take it a step beyond and continue to do so consistently.

Mental toughness is, ideally, at the core of a hiker's psychological skills arsenal, due to the nature of hiking as an activity where endurance and perseverance are regularly required. Still, it is important to review mental toughness as a standalone psychological skill, in order to then place it inside the outdoor venture context, which in this study's case is hiking.

Mental Toughness

Gerber et al. (2012) attribute mental toughness to the potential to foster mental health either directly or through the promotion of resilient adaptation. In addition, variations in physical activity level are

expected to significantly account for variations in mental toughness (Gerber et al., 2012). This coincides with the somewhat universal appreciation of hiking as an outdoors activity with mental health boosting properties, yet leaves a lot of room for potential examination of hiking, in various -physical activity- levels, as a promoter of resilient adaptation. As mental toughness is related to the ability to maintain focus, control, determination and confidence under conditions of stress and pressure (Crust, 2008), it is of interest to examine whether these aspects, once and if developed through hiking, coincide with experienced hikers' perceptions of mental toughness. Additionally, if and how mental toughness can be applied with enough carryover in other real-life situations and scenarios, outside of the physical activity (hiking) itself.

Crust (2008) concluded that the challenge that future researchers face is to be innovative in regards to research methods, and explore mental toughness in broader contexts as it is unlikely that mental toughness is only relevant in the sport domain, so attention is needed to determine how mentally tough individuals behave in other areas of their lives, such as their work environment, interpersonal relationships, etc. Still, another interesting viewpoint is not focusing exclusively on adversity as mental toughness also enables individuals to thrive in situations where there are positive effects and perceived positive pressure (Sheard, 2009). There is a twofold potential question regarding adversity as a factor, that can arise from this viewpoint though. Is there any other way to develop mental toughness through hiking other than adversity in any shape or form? If not, even if the developed mental toughness can be demonstrated successfully by individuals who flourish in cases where there are positive effects and perceived positive pressure, then one has to examine whether adversity, viewed subjectively by hikers, is negative or positive pressure.

Coping mechanisms of individuals as well as experience levels and/or leadership skills already available, could drastically alter the “coloring code” of adversity (positive/negative). In addition to that, the successful demonstration of mental toughness in situations with a clear absence of adversity does not necessarily mean that the subject (hiker) is developing and/or even maintaining his/her mental toughness while doing it. Demonstrating mental toughness could be largely different than developing mental toughness, as a process. Especially if the element of challenge is minimal or entirely absent from the equation, because of the individual's existent capacity. Rohn & Conway, (2022) concluded that the self-guided and immersive nature of thru-hiking enabled participants to manage immediate tasks while engaging in deep self-reflection about life on and off trail. Additionally, participants discovered how to integrate individual and broader group goals while also developing self-efficacy, self-confidence, and resilience when dealing with unforeseen circumstances (Rohn & Conway, 2022).

But how do mentally tough individuals function in outdoor activities? What is the main aspect of mental toughness, as a psychological skill, that can potentially deduce it as an indispensable mental characteristic of people interested in outdoor adventures? The next section discusses the function of mental toughness in outdoor activities that potentially contain the element of adventure.

Mental Toughness in Outdoor Adventures

Gordon et al. (2007) noted that one key question concerns the degree to which mental toughness is caught via environmental influences, or taught through training. In the case of hiking the fact that environmental influences transcend the usual sense of what environmental influence means for an

individual athlete (family, friends, upbringing, etc) and extend to the purest extent which is no other than the mountain and trail itself, is fascinating. Also, in hiking, environmental influence and “taught through training” tends to be the same exact thing. Hiking is an activity that cannot be replicated training-wise in a setting other than the real setting itself. The decision-making process for where hikers go, is also influenced by the state of the hiking trails (Molokáč et al., 2022). It is expected that individuals willing to take their mental toughness a step further, will decide to follow the trails of most resistance.

That said, Beedie and Hudson (2003) argued that the more planned, detailed and logistically smooth a project becomes, the less adventure one will find in the notion of adventure. Various factors determine the preference for a hiking trail, as each trail has its own unique characteristics. The motivation for hiking is based upon a dichotomy, namely the push and pull theory of motivations, where push factors represent the need to go outside and pull factors are associated with relaxation and enjoyment (Kozak, 2002). Prebensen et al. (2010) assessed this dichotomy with a body/soul division. In this case, the physical aspect (body) is viewed as pertaining to health and fitness whereas the mental (soul) aspect is linked with the need to leave city life behind and escape to nature. Mental toughness in hiking, if associated with the presence of circumstances of adversity, would in theory seem a stressful scenario, distinctly opposite to peace and relaxation. The personal need of a hiker seeking peace of mind through hardship and the overcoming of challenges cannot be ruled out though, even when examined through the dichotomy lens of Prebensen and Kozak.

Svarstad (2010) marked peace, silence, opportunity for reflection and contemplation as basic mental

attributes associated with the motives of hikers and their decision-making process when choosing a destination. Hiking in a mountainous environment can offer high sensation seeking hikers a much needed dose of stimuli that covers the body and soul poles of the aforementioned dichotomy. The function of the sympathetic and the parasympathetic nervous system is another factor that can potentially affect the lived experience of the individual hiker, depending on his/her level and whether he/she chooses to return and face the threatening stimuli again and again. The experiences of hikers gathered from the semi-structured interviews of this study will try to explore this notion.

Saayman and Viljoen (2016b) attempted to examine what the motives of wilderness hikers are, to cluster wilderness hikers based on their hiking motives and finally to define key management aspects that lead to experience a fulfilling wilderness hike. Certain motives and aspects connected to memorable wilderness hiking were identified. Four factors were indicated as motivation enhancers: a. unique and adventurous nature experience b. escape c. personal challenge and aesthetic experience and d. education and photography. Out of the four factors, “unique and adventurous nature experience” had the highest mean value and stood out as the most important reason for engaging in wilderness hiking projects. “Escape” was the second motive in the hierarchy, with “personal challenge and aesthetic experience” taking a close third place. In terms of aspects that contribute to memorable wilderness hiking experiences, six aspects were identified: a. friendly staff b. availability of food & refreshments c. value for money d. locality of base camp e. the trail experience f. trail accessibility & reservations. Clustering of wilderness hikers resulted in three groups of respondents, where “unique, adventurous experience” was at the top of all three clusters' motives. “Personal challenge and aesthetic experience” was either 2nd or 3rd in all three clusters'

motives. It is understood that “unique and adventurous nature experience”, when talking about wilderness trails, is very unlikely to not encompass the need for mental toughness in some way. The key parameter in this case, is the wilderness trail. Often times, the demands to navigate a wilderness trail are so overwhelming, that relying on your own, personal mental toughness is the least thing you can do.

Mayer and Lukács (2021) concluded that hikers that routinely complete long-distance hiking projects were mostly driven by intrinsic motives to engage in grueling mileage hikes. These motives included overcoming new challenges, pushing and exploring physical boundaries, getting out of the proverbial “comfort zone”, belonging to a special hiking community and love for nature. Experiencing and overcoming, using these motives as a baseline, resulted in a “flow experience” that pushed the hikers further through the -new- long distance trails. The intrinsic motives that are described as driving influences behind hikers' desire to pursue harder, longer routes could be mental toughness exhibited in a way that this research intends to explore it. Also, experiencing and overcoming could be at the core of hikers' mental toughness either for obtaining it or for developing it further.

Akers (2016) identified mental toughness and resilience as distinct psychological skills and constructs that can potentially make the difference between success and failure when hiking the Appalachian Trail which is known for its extreme conditions and possible risks/dangers. The study's purpose was to examine whether day hikers, section hikers and thru-hikers on the Appalachian Trail would have different levels/scores of mental toughness and resilience. Thru-hikers were expected to

score higher than both day hikers and section hikers, given their exposure on the trail (hardships, time spent in adverse conditions, etc.). Interestingly, the results indicated that day-hikers had higher confidence, constancy and total mental toughness than thru-hikers and section-hikers while there were no significant differences in resilience levels between the three categories of hikers.

Furthermore, that the ability to complete the trail or not (success/failure) could not be predicted by either the mental toughness or the resilience scores of the hikers. Expectedly, in an outdoors activity such as hiking, it is almost impossible to define a mental skill (mental toughness/resilience) as a predictor of success or failure, especially when discussing such long-distance hiking projects. Still, it is this study's aim to explore if a psychological skill such as mental toughness makes the difference when it is needed the most in the great outdoors. This is not an attempt to identify a predictor, but rather to identify the effect and the functions of mental toughness upon hikers' course of action out on the trails, possibly when the going gets tough.

Nordbø and Prebensen (2015) concluded that mental benefits and facilitation of the trail were the most important factors amongst hikers. The mental factor in their study consisted of four aspects: a. get away from duties of everyday life b. enjoy the landscape c. peace and quiet d. restore mental energy. However, the focus on this study was specifically to touristic hiking, plus the mental experience parameter was focused almost solely on well-being rather than -competitive- mental skills. Once again, the mental experience is associated with mental health in a single-sided manner, rather than being viewed as a mental edge through which the individual is able to cope and overcome. But could this be another side of mental health?

Breejen (2007) set out to provide a deeper understanding of long distance walking. Focusing on the experience, participants of the study highlighted the dynamic and emergent character of the experience per se, with evident differences between and after the completion of the long distance walk, as well as the evolution of experience during the procedure. In terms of mental stimulation, the intensity of the experience of long distance walking, in this case the West Highland Way in Scotland, seems to peak and reach a climatic high towards the end of the project for the participants, where the walkers experience a sense of great self-accomplishment and achievement. Despite the long distance aspect, which leads to a dynamic experience, walking is different than hiking in ways associated with elevation gain, environment, terrain, equipment carried, on-field behaviour etc. The climatic high might be a common element in both, at the end of a route, but the process until that point is two distinctly different worlds, even if at times they share some characteristics.

Rohn and Conway (2022) explored how outdoor adventure education (OAE) can instill educational, psychological and social gains that are associated with college students thriving. Self-guided and immersive experiences in a mountainous terrain can lead to immense traits related to college students achieving success. Thru-hiking presented participants with on-the-go challenges that had to be dealt with, alongside an all-encompassing, strong sense of self-reflection about life on and off trail. This enabled the students to merge individual with broader group goals when/where needed, thereby developing and/or enhancing self-efficacy, resilience and self-confidence when faced with unpredictable, volatile scenarios. Mental toughness and its functions in solo/group settings is at the center of this research's first research question, as well as “thriving” in real life situations with the help of mental toughness gained through hiking (2nd research question).

Wöran and Arnberger (2012) concluded that, in mountain hiking, the much desired “flow”, which is essentially the core of leisure experience”, can be linked to three restorative qualities: a. being away b. fascination c. compatibility as well as the level of the individual's expertise and skillset.

Mountainous terrain offers numerous possibilities in the form of various trails for individuals of varying levels and skillsets to experience flow. Wöran and Arnberger (2012) suggest that provided there is a restorative environment, even highly skilled mountaineers do not need highly difficult routes in order to get into the flow zone. Flow is considered a definite driving factor behind the motives of individuals who come back again and again to take part in physically demanding activities. As noted earlier in this section, Mayer and Lukács (2021) indicated the “flow experience” as a strong motive for hikers that enabled them to keep going further when on long distance routes. Personal experience of this present study's researcher, is that when faced with a series of challenges that require mental toughness and possibly other skills to “stay the course”, there is a sense of flow, a sense of getting/being in the “zone” for as long as it takes, to accomplish the task. This sense is accompanied with laser like focus (i.e. tunnel vision), a high level of awareness and determination, and possibly an adrenaline response depending on the stress stimulus.

Nemeth et al. (2021) cited prior hiking experience, hiking behaviour, risk behaviour, bad decision making, various hiking and risk perceptions related to the hiker's experience, as the elements that construct the “who you are” aspect in a conceptual model of hiking preparedness. The aforementioned elements are hypothesised to be possible “building blocks” of mental toughness as a psychological skill for hikers, and this notion will be further investigated in this qualitative, phenomenological study. Preparedness for hiking projects is a multi-dimensional undertaking, in

which physical and psychological conditioning should not be underestimated or ignored. Often times, inexperienced hikers become victims of misconception by believing that possessing the right hiking gear is “adequate enough”, whereas physical and mental preparedness should be allotted the required attention so as to harmoniously complete a trifecta together with the available gear/equipment.

Molokáč et al. (2022) examined the motives behind hikers' choice of certain trails/routes instead of other options. They found that the more challenging the environment, the less motivated the hikers were, something which was especially evident between different age groups. Components such as terrain, elevation (gain), relief, trail conditions, etc. were influential in the final decision of the the hiking destination. The researchers suggested that even though hikers seemed to be driven by discovering new places, they were hesitant to participate in challenging projects. The older the hiking individuals/group, the more likely this option seemed. Younger hikers could also be motivated by nature's beauty and easier hiking routes, but they were more likely to attempt trails that presented some form of a challenge. Even though the factor of age that seemingly affects the choice of hiking trails could be due to several other factors, such as past -overuse- injuries, diminished physical capacities, etc. , it would be of interest to examine whether the lack of mental toughness could be an influential factor as well. Or maybe older hikers could still be beginners in terms of hiking activity.

Svarstad (2010) sought to discover the meaning attached behind this outdoors activity for individuals that roam the trails. By applying a “rationality” and a “reflexivity” layer/concept in the

research context, the researcher reached a thorough understanding of the meaning behind choosing to engage in hiking. The rationality concept was divided in formal (micro) and system (macro) and represented aspects viewed as “problematic”. The reflexivity concept represented constructing hiking as individual solutions to the problematic aspects.

Three empirical categories of meaning constructions were incorporated: a. the recreation category b. the simple outdoors course category c. the belonging category. The recreation category, seen through the “reflexivity” layer, represented the hiker's ability to maintain work performance through mental and physical recreation. The belonging category seen through the “reflexivity” layer, focused on the healing effect of hiking that brings people back and close to nature and human history, and how it helps to alleviate the alienation caused by the system rationality of modern society. Mental toughness as a purposefully developed psychological skill, or even as a positive “side-effect” of consistent hiking, could add considerable “force” to these reflexivity layer solutions suggested by Svarstad (2010), both in how it can bolster performance that has carryover in the work environment but also as a barrier to the ongoing alienation of modern society.

Synopsis and Need of the Study

Through the literature review it was concluded that there is unexplored territory regarding hiking and its relationship to mental toughness. It is evident, from the reviewed studies that there are sections of available literature related to this research's objective, but there are not any studies, qualitative or quantitative, examining the relationship of hiking and mental toughness. This gap in the sport psychology literature, as noted earlier in the introduction section of this study, is

highlighted from the fact that in previous research, when mental experience is examined in relation to hiking, it is mostly through the scope of a generalized state of “well-being”, which is directly related to mental health. On the contrary, in the present study, the focus is on mental toughness's relation to hiking performance. Shifting the viewpoint from “well-being” to “effort” introduces a whole new dimension of factors and experiences that simply cannot be obtained from the first, leisurely state and approach (well-being). Of course, this does not mean that mental health and/or the attained well-being is ignored or downplayed, as a benefit, by more competitive, high sensation seeking hikers.

Methods

Participants

Eight participants were interviewed during the conduction of this research, of which four were males and four were females. The age range was 25-54 years old, more specifically, males (25-54) and females (26-50). Seven of the participants were of Greek nationality and living in Greece, while one participant was of Australian nationality and living in Australia. All eight participants had at least five years of hiking experience, either on solo/group settings or single/multi-day hiking projects. Experience level of the participants, as in years of consistent, uninterrupted engagement with the activity of hiking, ranged from five to thirty-two. Having completed at least twenty solo, single/multi-day hiking trips was a prerequisite for inclusion in the study. Six of the participants had worked at least two years or were currently professionally working as mountain leaders. All eight participants were given a form of informed consent and participated voluntarily in this study. No

participants received any sort of compensation or benefit for their participation.

Role of the Researcher

The researcher's role in qualitative research is to facilitate a thorough understanding of the research topic. Through designing and conducting the study, collecting and analyzing data, and interpreting and reporting results, the researcher's role is multifaceted. During the whole process of conducting this study, the researcher strived to establish trust and rapport with participants, while also ensuring that own, personal biases and beliefs did not affect the study's findings. The researcher's aim was to conduct the collection, analysis and interpretation of the data in a way that was rigorous, transparent and respectful of all participants. Defining the research questions, selecting the sample, collecting data, analyzing data, interpreting findings, ensuring ethical considerations as well as reflexivity, was at the forefront of the researcher's role in this qualitative, interactive study of hiking and mental toughness.

Data Collection

Phenomenological research was used in this qualitative study, to explore any common ground between the participants and their shared, personal experiences, while also describing similarities/differences in the way they experienced the phenomenon. Participants from different age groups, with different levels of experience and different backgrounds were selected after a short screening process. A comprehensive interview guide was developed, choosing a semi-structured interview format with open-ended questions. The interview guide was initially written and developed in Greek language, as seven out of eight participants were of Greek nationality. The

remaining (8th) participant was interviewed in English as the subject was of Australian nationality. For this particular interview, the interview guide, was precisely translated in English and is provided as such in a latter section of this study. Data collection was conducted through real time, semi-structured individual interviews of the participants, either in person or over the phone, using audio recording after given informed consent in a written format from each participant. The average duration of each semi-structured interview, after the open-ended questions and any emerging probes, was 30'.

Data Analysis

After finishing conducting the interviews, data analysis was done. Each participant was assigned a pseudonym (i.e. Σ1, Σ6, etc.) to identify them for organizational purposes. After the transcription of the audio recordings and repeated readings of the transcriptions, a reflexive thematic analysis was conducted to recognize patterns of responses, determine categories and assess any repeatedly recurring themes. Inductive analysis was used in this case, as a bottom-up approach starting with zero codes and creating codes on the go while analyzing the dataset. No preconceived notions of what the codes would/should be, helped allow the narrative to emerge from the phenomenological data accumulated. Coding of the semi-structured interviews in this stage of thematic analysis involved arranging these codes (words, patterns, ideas) into broader themes. This process helped give a condensed overview of the main patterns of responses that were present in the transcribed data. Reviewing of the themes ensured that they were accurate representations of the collected data, as well as being all-inclusive frameworks of the assorted codes. Seven out of eight interviews are fully transcribed in Greek language as they were originally conducted in Greek. One interview is

fully transcribed in English as it was originally conducted in English. All eight fully transcribed interviews are included in the appendix of this study. The total length of the transcribed interviews was 60 pages. All interview samples from the original Greek interviews that are included in the detailed data analysis section of this study, are translated in English. Interview samples from the original English interview are included as is in the detailed data analysis section of this study.

Results

This study attempted to explore whether mental toughness is a psychological skill that is paramount for engaging in and successfully finishing, -physically- demanding hiking projects. To gain an understanding towards this direction, it was crucial to discover what constitutes mental toughness for hikers. Then, investigate factors and parameters that affect, demand and/or instill mental toughness. In addition, another purpose of this study was to examine if and how the mental toughness the individuals built, developed and maintained through hiking, presents carryover to real, everyday life such as work environment, interpersonal relationships, etc.

This section includes an objective, condensed synopsis of the thematic analysis data that pertain to the problem statement of this study and its research questions. Interpretation and speculation regarding the findings and their relation to existing literature will be attempted in the “Discussion” section of this study, further below.

An inductive and reflexive thematic analysis of the transcribed raw data acquired from the semi-structured interviews, morphed into three main themes: a. “mental toughness as conceived by

hikers” b. “parameters that develop, maintain and increase mental toughness in hiking” and c. “transferability of mental toughness to new hikers and everyday life carryover”. Each main theme consisted of codes (re-occurring patterns/ideas/responses) which in turn lead to the emergence of certain sub themes.

The following table highlights the emerging main themes, sub themes and codes after the thematic analysis of the semi-structured interviews data.

| <u>Main Themes</u> | <u>Codes</u> |
|--|---|
| #1 Mental toughness as conceived by hikers | 1.1 weather conditions / the unfamiliar / accidents / change of plans |
| #2 Parameters that develop, maintain and increase mental toughness in hiking | 1.2 idiosyncrasy / resilience / resistance to discomfort / facing stress |
| #3 Transferability of mental toughness to new hikers and everyday life carryover | 1.3 self-confidence / goal setting / physical and mental strength |
| <hr/> <u>Sub Themes</u> | <hr/> |
| 1.1 Dealing with volatility (external factors) | 2.1 alone out there / self-reliance / maturity / mountain skills / facing fears |
| 1.2 Mental Assets | 2.2 duration / physical demands / planning |
| 1.3 Blend of physical condition & mentality | 2.3 decision making / responsibility / motivate others / accept lower level |
| <hr/> 2.1 Solo hiking | 2.4 planning harder routes / push the limits / progress |
| 2.2 Multi-day hiking projects | 2.5 interpersonal relationships / patience / acceptance of failure |
| 2.3 Leadership skills | 2.6 systematic desensitization / reaction to adversity / knowledge and skills |
| 2.4 The element of challenge | <hr/> |
| 2.5 Member of a team | 3.1 demonstrate mental toughness / set an example |
| 2.6 Experience | 3.2 advise beginners / teach mental skills |
| <hr/> 3.1 Transferability by example | 3.3 big carryover / mental resources / city problems seem mundane / everything seems easier |
| 3.2 Transferability by mentoring | |
| 3.3 Resilience | |

In main theme #1 “mental toughness as conceived by hikers”, the aim of this research was to showcase how is mental toughness conceived by hikers when up on a mountain, in the great outdoors. Through the process of coding words, ideas and patterns of the interviewees' answers to the relevant interview guide questions, three sub themes were derived. More specifically, main theme #1, consisted of these three sub themes: a. dealing with volatility (external factors) b. mental assets c. blend of physical condition and mentality.

Sub theme #1 “dealing with volatility (external factors)”, emerged through codes such as “weather conditions”, “unfamiliar”, “accidents”, “change of plans”. Participants unanimously stressed that facing the unplanned for, the unexpectable, the unfamiliar and the necessary change of plans that adverse external factors can induce, is at the core of mental toughness. Mental toughness represents the ability to face and overcome an unexpected event/situation that puts you at a disadvantage. Volatility, which means the abrupt fluctuation of conditions at any time, conditions that are beyond human intervention, is what brings about mental toughness in hikers.

Interviewee #7 (I7) pointed that “...anything unpredictable, something out of schedule, is more likely to put you into stress mode. An injury forces you into a state like that. Weather conditions are a classic unpredictable factor.”. Interviewee #8 (I8) commented that “...scenarios vary depending on the circumstances, but I'd say that we are talking about something unexpected, tough and potentially dangerous.” Interviewee #3 (I3) summed it up as

“mental toughness is defined to me as dealing with something that you didn't plan for, dealing with something that just came up that you had no

daring that it was gonna happen, it just happened. And then you need to react to that accordingly and make good decisions. That's mental toughness. The unfamiliar, the unexplored, the uncharted, the unprepared for. 'Cause you can prepare for anything but it's the unprepared that is usually the hardest to deal with. You need to have the endurance and durability, yet also the ability to react accordingly and endure through that period of duress and discomfort to then get to the good stuff after. It's the unprepared for that is going to show me whether I am mentally tough or someone else is. For me it's all about durability against conditions. So.. conditions change, things change.”

Sub theme #2 “mental assets” emerged through codes such as “idiosyncrasy”, “resilience”, “facing stress” and “resistance to discomfort”. All 8 participants pointed out that mental toughness is a psychological skill affected by the hiker's idiosyncrasy, his/her ability to face stress, the level of his/her's resilience when things aren't ideal as well as his/her resistance to discomfort, whether that is physical pain (i.e. injury) or counterproductive thoughts.

More specifically, interviewee #2 (I2) suggested that “ it has to do mostly with the person's idiosyncrasy. And his/her preparedness to engage into something. You see beginners, in their first hikes and they have the mental strength. And you see seasoned hikers that might not have it.”

Interviewee #4 (I4) gave an example of demonstrating mental toughness: “...but I had to grit my teeth, and not cry or complain so that the group didn't have to hear my moaning. So yes, I believe

that in this case I had the necessary mental toughness that helped me deal with this incident.” For interviewee #8 (I8),

“mental toughness to me means not giving up. Even when you are tired or circumstances are difficult, you maintain a steady rhythm, a steady profile, both for yourself and for other people that might be with you in the team, so that if something objectively goes the wrong way, you minimize its effect on your psyche and on other people's psyche. No matter if you lead, you accompany, or you simply follow.”

Sub theme #3 “blend of physical condition and mentality”, emerged through codes such as “self-confidence”, “goal setting” and “physical and mental strength”. Participants agreed that in order for a hiker to possess and demonstrate mental toughness, there needs to be present a mixture of physical condition and mentality. Advanced physical condition leads to higher self-confidence, higher levels of physical and mental strength (greater tolerance capacity). Increased physical condition and mental toughness can potentially affect the goal setting of hiking projects, as a physically competent hiker demonstrates more ambitious goal setting when planning new routes/projects.

Interviewee #3 (I3) gave the perspective that

“speaking as a male, I think that it's definitely fitness related. If you look good, feel good, you've been training, you build up these wins and you build up this kind of discomfort in your training, you can climb anything.

Confidence in your own physical condition, will always add that little bit of mental toughness to you.”

Interviewee #6 (I6) communicated that “good physical condition definitely enhances mental toughness because it fills the person with a feeling of strength and self-confidence. Strength, physical strength increases mental toughness. And the opposite is also true.” Interviewee #1 (I1) stated that

“ there is a connection.. now... there are two cases. Either the hiker/mountaineer doesn't have good physical condition and he/she needs to have adequate mental toughness in order to boost his/her psychology, otherwise it's going to affect him/her in a negative way. If he/she has good physical condition, sure there is a connection between them, one boosts the other, because you feel great in terms of fitness and morale, seeing that you can cope, because you ve done your training and you are physically ready. Being physically fit solves the “problem” of physical condition, so that now you can focus on enhancing the traits related to mental toughness and you handle whatever comes your way.”

In main theme #2, the aim of this research and its developed interview questions, was to pinpoint factors and “parameters that develop, maintain and increase mental toughness in hikers.” Through the process of coding words, ideas and patterns of the interviewees' answers, six sub themes were derived. More specifically: a. solo hiking b. multi-day hiking projects c. leadership skills d. the element of challenge e. member of a team f. experience.

Sub theme #1 “solo hiking” emerged from codes such as “alone out there”, “self-reliance”, “maturity”, “mountain skills”, “facing fears”. All 8 participants identified solo hiking as a means to drastically develop mental toughness due to its increased demands. It is viewed as a way to mature faster and harder as a hiker, through its intense need for self-reliance. Being alone out there is deemed as a way of facing fears and developing the necessary skills to cope with a harsh mountain.

Interviewee #3 (I3) praised solo hiking:

“Solo hiking. Nothing beats solo hiking as you know 'cause you are mostly a solo hiker as well. There is something that you get from being alone. In only having yourself to back you up, you don't have all these outside influences, you don't have all these things that can sway from the path or a partner that can perhaps push you a little further. If you don't have anyone with you and you continue striving forth, it's yourself that's pushing you forward, it's a psychological thing. And I think that the strongest I've ever felt is when I've been by myself backed against a corner and only have one way out. Nothing built my mental resilience, my mental toughness and

durability as much as putting myself in these situations and only having myself to get me out.”

Interviewee #1 (I1) shared an interesting perspective in that “...but maybe solo hiking builds other skills, or more accurately, builds the same skills, but faster and more intensely. It makes you mature faster, in terms of mountain skills.” Interviewee #5 (I5) stated that

“as a mountain leader, the fact that you have to manage not only yourself but other people as well, you have to be very strong mentally in order to succeed. And because you don't have to worry about yourself only, you need to have the whole package. Physical condition, mental toughness, experience, all together.”

Sub theme #2 “multi-day hiking projects”, emerged from codes such as “duration”, “physical demands”, “planning”. Most interviewees agreed upon the notion that on most occasions, the planning/logistics of multi-day hiking projects, along with the increased duration and physical demands, challenge and strengthen the person's mental toughness. The requirements of multi-day hiking projects are such that mental toughness needs to be top notch, or if it isn't yet, the multi-day hiking project will undoubtedly develop it. Therefore, not only planning, but the lengthened duration of a multi-day hiking project, coupled with the additional physical demands, is something that serves as a base for mental toughness to be developed, maintained and increased.

Interviewee #4 (I4) thought that “as far as mental toughness is concerned, you have more to gain but also more to prove, on a multi-day hiking project.” Interviewee #3 (I3) pointed out that “...in the

same token it's having the mental endurance and the mental toughness to back it up the next day with the same performance as you did the day before. That's when multi day hikes can be quite brutal in that respect.” Interviewee #6 (I6) concluded that

“...multi-day hiking projects are far more demanding in every aspect. In terms of logistics, experience, physical condition and mental toughness. You have to deal with much more hours of being on the trail, you need more equipment, the interaction with other members of the team is higher, so I think that if someone wants to develop mental toughness and take it to the next level, he/she has to organise and participate in more multi-day hiking projects.”

Sub theme #3 “leadership skills”, emerged from codes such as “decision making”, “responsibility”, “motivate others”, “accept lower level”. All participants suggested that in order to be and/or become a leader of a hiking expedition, a person needs to possess highly developed mental toughness. The decision making required, the need and ability to motivate other, lower level individuals, as well as simply accepting others' lower level, are surefire ways to develop, maintain and increase mental toughness. Mental toughness makes you a leader, and being a leader keeps you mentally tough according to all interviewees.

Interviewee #1 (I1) had to say about leadership skills that “in theory, for this person to have achieved this level, where he/she has worked upon his/her leadership and organisational qualities, he/she must definitely possess mental toughness. Otherwise, he/she won't be able to cope. So these

work in parallel. One feeds the other.” Along the same line was interviewee's #4 (I4) perspective by suggesting that “...it is a prerequisite to have mental toughness in order to be a good leader, especially up on a mountain. In tough times you can't act as a leader if you lack mental toughness. You can't lose your composure and be a leader.” Interviewee #8 (I8) concluded with the statement that

“...in order to reach the point where you are considered as a possible leader and then actually become and stay a leader, you can't lack mental toughness as far as mental skills are concerned. This is something that, sooner or later, the mountain is going to expose, as it offers countless chances to prove and reaffirm whether you have mental toughness or not. Even more when you have to step forward and lead.”

Sub theme #4 “the element of challenge” emerged from codes such as “planning harder routes”, “push the limits”, “progress”. 6/8 participants supported the thought that in order to build/increase/maintain mental toughness as a psychological skill, the individual has to engage in challenging hikes that raise their “ceiling” physically and mentally. The harder the routes you undertake, the more mentally tough you become. As the hiker progresses, he/she pushes the limits of his/her physical and mental toughness. More specifically, interviewee #3 (I3) had to say that

“...for example the jungle trek I mentioned... I knew it was gonna be tough, I knew it was gonna be savage and I knew that I would struggle and I would want to quit. And that's why I did it. Because I want to get to the point where I know that I'm broken but I can continue forth. That's building

mental toughness, push yourself to the edge and then continue on. I think that the reason why... and this is answering your question by going a little bit further... I think that you find out a lot more about yourself when you push yourself past your own capabilities.”

Interviewee #5 (I5) suggested that “when you've reached a level where you want to maintain but also increase your mental toughness, it's a logical result for this to happen. There are times when you view it as training, depending on your mood.” Interviewee #2 (I2) concluded that “I think this is desirable. One has to do this, as a plan, laid out, but with safety in mind. Test his/herself in a slightly harder project, even if it is for a limited time. But still do it.”

Sub theme #5 “member of a team” emerged from codes such as “interpersonal relationships”, “patience”, “acceptance of failure”. All 8 participants agreed upon the fact that being part of a team, either as a leader or as a “follower”, builds mental toughness. The interpersonal relationships are put to a test when being outdoors, having to withstand individual differences and mentalities. Patience in these cases is seen as a way to enhance mental toughness, especially when there is a possibility of change of plans, which means accepting potential failure of a hiking project.

Interviewee #1 (I1) shared that “...there have been incidents where members of the team expressed intense disdain that bordered the limits of a panic attack. Everything then becomes more difficult, because this also affects the whole team. Certainly, we want mental toughness and composure, they are basic skills that team members should have.” Interviewee #4 (I4) suggested that

“you have to be ready to accept adversity, fatigue, change of plans, the fact

that somebody might disagree with your viewpoint. You have to accept all types of personalities, to be able to coexist with them, and coexist in a harmonious way, not only “brave” them, in order to bring out your best self, so that cooperation within the group and the project flows smoothly. So all these require tremendous mental toughness, and this is something that the mountains have to offer you, they build this aspect in you. Of course you have to have it. But the mountains and hiking/mountaineering develop it as well. A lot. It's one of the gifts you receive from it.”

Interviewee #3 compared solo hiking to group hiking in an interesting way by saying that

“...when I've hiked with other people it's been a different kind of mental toughness. They've usually been the ones that have gone “no, this is too hard, this is too much”. And I've then been able to take a leadership role and say “no, let's take a breather, let's take a second, look at it from a different perspective and we'll continue”. So, having the mental toughness to get someone else through, it is a little bit different than fighting your own thoughts. So for me, I would say that both are important, but both are a different kind of mental toughness builders or resilience builders. It's still the fabric of the very same thing, just a different version of it. And both I think are pivotal.”

Sub theme #6 “experience” emerged from codes such as “systematic desensitization”, “reaction to adversity”, “knowledge and skills”. 7/8 participants expressed the viewpoint that experience

(activity level on a mountain) is a factor that affects the development and maintenance of mental toughness. By getting exposed to mountain stimuli, there comes a systematic desensitization that equips the individual with knowledge and skills (mental toughness included) to successfully react to adversity.

Interviewee #7 (I7) suggested that hiking consistently levels up the individual

“...this way creating a background of experience, either with small wins or with becoming familiar with the “field”, so experience gives them the necessary mental toughness, in the long run, to overcome certain circumstances and not feel inadequate if they have to face something they didn't plan for.”

Interviewee #3 (I3) concluded that “...the more you do something, the more you can react to adverse conditions. So the more experience you have, the better served you'll be as you continue through in this kind of pop-up events that occur that you didn't plan for. Experience is small wins that always add to that mental capacity.” In the same token, interviewee #1 (I1) pointed that

“...the more you hike, the more the mountains will give something in return. Not always, but let's say rough weather for example, will make you more resistant, more patient, to come out safe and sound and possibly with a smile on the face. And even if you have to struggle, that is where mental toughness comes into play, so that next time you have to deal with something similar, you have the background and cool head to handle it more efficiently.”

In main theme #3, the aim of this research and its developed interview questions was to explore “the transferability of mental toughness to new hikers and everyday life carryover”. Three sub themes occurred: 1. transferability by example 2. transferability by mentoring 3. resilience.

Sub theme #1 “transferability by example” emerged from codes such as “demonstrate mental toughness”, “set an example”. 5/8 interviewees suggested that mental toughness can be potentially passed over to beginning hikers through setting an example and demonstrating mental toughness when required, so that they can observe and possibly learn from more experienced, mentally tough individuals.

Interviewee #2 (I2) shared the thought that “yes, I believe it can be done, by setting an example, a personal example. You can't teach it through words. Someone has to witness it happen, by you and inspire him/her. This way I believe it can be done.” Interviewee #8 (I8) stated that “...in most cases, the norm is that you learn through observing. This doesn't mean that mental toughness is something that the other person can just mimic, it just doesn't happen.” Interviewee #3 (I3) in two different cases suggested that “I think people can be shown mental toughness” and “I think you can see it, you can't be taught it.”

Sub theme #2 “transferability by mentoring” emerged from codes such as “advise beginners”, “teach mental skills”. 3/8 participants supported that mental toughness can be instilled to beginners in hiking through advice and teaching of mental skills. By advising newcomers in hiking and teaching them mental skills (mental toughness), it is possible to instill mental toughness in less

experienced individuals.

Interviewee #5 (I5) shared the viewpoint that “what you can do is give a newbie some advice at first. Explain to him/her the benefits of having mental toughness, share your experiences and he/she'll slowly grasp it if he/she is consistent with it.” Interviewee #6 (I6) communicated that “yes it is something that can be learnt, I believe anyone can obtain it, of course it depends a lot on your personal experiences, and how open you are to new viewpoints and personal change. But certainly, somebody can motivate.” Interviewee #1 (I1) said that

“...first of all, it depends on the experienced person's will to share, his/her communication skills, his/her way to share, because he/she might have all the knowledge in the world, but still not have the necessary communication skills to pass them on. Beginners will have to believe in the person's experience and the experience person will have to communicate this. So that the beginner person and the team is willing to listen. There's also the receiver's aspect, the one that receives the knowledge. This is relative as well. First, how willing is the person, to evolve and listen to someone more experienced? Also, how easy and fast one learns, how he/she will process the info, etc.”

Sub theme #3 “resilience” emerged from codes such as “big carryover”, “mental resources”, “city problems seem mundane”, “everything seems easier”. All 8 participants unanimously concluded that mental toughness gained through hiking has great carryover in everyday life. By facing

dangers, stress, adversity in the great outdoors, almost all of city life, day to day problems seem trivial and mundane by comparison. Hiking allows them to backload in terms of mental resources in order to patiently face anything that comes their way, be it in the work environment or interpersonal relationships.

Interviewee #3 (I3) admitted that

“...you have endurance. Yet you are not going to endure something unless you love it. And I've used it in conversations at work, or at work in general. I've had bad days at work where I thought “I've been on top of a mountain, with no water 50 degree heat, snakes everywhere, lost all my food and I still had a long way to go”. This shift... I've got 3 hours left. It's nothing compared to what I've been through and done on the mountain. So... little things like that, you have that retrospect and realise you've done that 20 times over, elsewhere. Harder than this, in worse conditions, this one is easy.”

Similarly, interviewee #2 (I2) stated that

“...there's great carryover. This slowly merges into your character. How you act in your family environment, your work environment, your interpersonal relationships. Clearly, when you've been through hardship up on a mountain and you've made it, things that happen in your city life don't affect you anymore.”

Along the same lines, interviewee #4 (I4) concluded that “it helps with everything, cope with life setbacks in a cool headed way. You can handle more, you don't care about the small things, or the

mundane, at all.”

Trustworthiness

In qualitative research, there are criteria that have to be met in order to establish the trustworthiness of the study. These include, among others, credibility and transferability. These are discussed below in relation to the present study.

Credibility

In terms of credibility, the researcher's personal experience as a hiker/mountaineer, as well as his experience working as a mountain leader, acts as a first “asset”, ensuring that the collected data are credible and believable. The researcher, in the last eight years has over 10.000km of mileage and 480.000m of elevation gain in solo/group, single-day/multi-day, hiking/mountaineering projects. Specific terms and details that might have occurred during the conduction of the interviews could be instantly “validated” in terms of credibility through personal, consistent occupation with hiking. Furthermore, the participant has hiked in a mountainous terrain/environment, numerous times with seven of the participants and has a thorough understanding of their skills, level of experience, background and expertise. This is a first link of the research's findings with reality so as to establish the truth (credibility) of the research's findings. In addition to that, various strategies were used to ensure the credibility of this study:

Member Checking: Transcripts, thematic analysis summaries as well as the entire research report

when finalized, were shared with the participants. The feedback given, assured that any inaccuracies and potential discrepancies were eliminated and/or proactively avoided. The participants' viewpoint in this phase of the process, combined with the already developed relationship with the researcher, helped shed a clarifying light on the entire research process.

Peer Debriefing: Throughout the research, from the initial stage to the finalization of this study, an expert researcher supervised the process. His feedback and reviewing of the research process were crucial in terms of the accuracy and relevance of data analysis. His critical evaluation of the study's procedure helped counter weaknesses, biases and limitations, thus enhancing the quality of the research.

Transferability

The fact that the participants selected for this study had this level of mileage, expertise, skills and experience, acts as a facilitator of transferability as well as a clear and concise portrayal of mental toughness and its relationship with completing tough hiking projects.

Conclusion of the Results

Thematic analysis (inductive | reflexive) of the transcribed interviews indicated that mental toughness is a psychological factor and skill that is crucial in order to successfully complete -physically- demanding hiking projects. Mental toughness is conceived by hikers as a blend of physical condition and mentality that is affected by volatility (external factors) and the person's mental assets. External factors -can- consist of weather conditions, terrain features, accidents and unpredictable, sudden circumstances in general. Mental assets are related to the hiker's idiosyncrasy, state of mind/psyche, meaning his/her ability to deal with discomfort, stress and overwhelming fatigue. Demonstrating mental toughness amidst a hiking expedition means being able to keep going despite external and/or internal adversity. Sometimes mental toughness represents the hiker's maturity to abandon a planned route, due to unforeseen circumstances, put the ego aside and return to try another day.

There are certain parameters that instill, enhance and maintain mental toughness in hikers. These parameters, alone or in combination with each other, when present, can build, increase, challenge and sustain a hiker's mental toughness to the highest extent. Solo hiking, despite the safety concerns, is a surefire way for a person to get mentally tough, fast, due to the intensity of the skills (practical/psychological) needed when going solo. Multi-day hiking projects seem to challenge a hiker's resolve and ability to go the distance in a different, deeper way than single-day trips, even though a single-day hike can be extremely hard. Multi-day hikes require heavier load-bearing and getting into a rhythm day in and day out when in the middle of nowhere. Leadership of a hiking group forces a person to build and exhibit mental toughness, otherwise he/she will fail and will lose

the respect and trust of the other team members. Also, leadership skills are an indicator that a person is indeed mentally tough and able to handle being in charge of a hiking expedition. The element of challenge (subjective for each individual) needs to be there when planning a hiking project, so that there is a reason to develop and/or showcase mental toughness, otherwise the hiker won't be challenged enough to get mentally tougher and will essentially remain the same. Group hiking and being part of a team when undertaking a trip, presents the individual with different ways and needs to get mentally tougher, due to the complexity of the interpersonal interactions within the group. Dealing with different needs, personalities and viewpoints when the going gets tough, accepting contradicting goals and aspirations, showing patience and understanding when coexisting with other hikers in a mountainous environment, shapes the person's mental toughness in a unique, lasting way. Experience, as in each time you go outback you get the chance to become more mentally tough and familiar with the natural environment, is a factor that enhances and sustains mental toughness through making the hiker capable of multi-facetedly facing various scenarios.

Mental toughness developed through consistent engagement with hiking helps individuals cope with everyday life problems in a decisive manner without getting flooded with debilitating stress responses. They become more patient, mundane while serious problems do not elicit unwanted levels of arousal, either in their work environment, or in their interpersonal relationships. Hikers tend to compare their difficult, stressful outdoor experiences to problems/setbacks of everyday life and automatically feel confident in their abilities to persevere and endure whatever comes their way, because they've done it before, they've proven it to themselves in much more dangerous and difficult circumstances.

Discussion

This study set out to explore whether mental toughness, as a psychological factor and skill, is essential to successfully finishing -physically- challenging, solo/group and single-day/multi-day hiking projects. To achieve that, it was mandatory to investigate how is mental toughness conceived by hikers, as well as which parameters build, maintain and increase mental toughness in hiking individuals. In addition to that, it tried to discover if there is any association and carryover of the mental toughness gained from hiking to the challenges of everyday life. It is important to note that the perspective through which hiking was explored in this study, was performance oriented, with tough, challenging hiking projects in mind. Also, the results were obtained from interviewing high level, experienced hikers.

Data analysis (inductive | reflexive) of the transcribed, semi-structured interviews, identified mental toughness as being a blend of physical and psychological capabilities that affect and are affected by mental assets and external factors when roaming outdoors. Solo hiking, multi-day hiking projects, leadership skills, the element of challenge, being a member of a hiking group and experience, came up as parameters that in various way develop, sustain and enhance the mental toughness of hikers. It was also found that the mental toughness that hikers developed through this outdoors activity, has helped them immensely in times of need in their everyday lives (work environment, interpersonal relationships, setbacks, etc.)

Hall (2014), suggested that both real and perceived risks are key aspects of a complete, adventure experience. This coincides with this study's finding that external, volatile factors which contribute

towards this exact “adventurous” element of hiking are associated with mental toughness exhibited by individuals engaged in the activity. Emotional highs, along with the adrenaline rush phenomenon when things get “serious”, were highlighted by Bello (1985) as a motivational factor behind adventure seekers. Mental toughness cannot be absent if the hiker is to control his/her emotional arousal and override the adrenaline rush effectively. Facing and dealing successfully with various challenges such as snakes, soft sand, dunes, wildlife and fear of being stranded in the wilderness, may lead into emotional highs (Williams & Soutar, 2009). Also, Fluker and Turner (2000) suggested that dealing with these dramatic hardships acts as tension release therefore leading to positive emotional responses. This conclusion entails both the mental assets and external factors that the participants of this study pointed as being critically linked with the aspect of mental toughness in hikers. Gucciardi (2017) defined mental toughness as a “state-like psychological resource that purposeful, flexible and efficient in nature for the enactment and maintenance of goal-directed pursuits” (pp.17-23). This definition of mental toughness is similar to how is mental toughness conceived (blend of physical condition and mentality) by the interviewed hikers of this study.

The findings of the present study regarding the parameters that develop, increase and maintain mental toughness with hikers, fall in line with the findings of Connaughton et al. (2010). More specifically, Connaughton et al. (2010) reported that belief, focus, goal setting, involving the performer in the planning process, encouraging competitiveness, as well as having to deal with critical incidents, all contribute towards mental toughness development and maintenance. Similarly, solo hiking, multi-day hiking, leadership skills, experience, being part of a team and the element of

challenge that were highlighted by the participants of this study, reflect Connaughton et al. (2010) findings. Crum (2022) in a meta-analysis concluded that the positive effects of mental toughness are more likely to accumulate with each opportunity for use. Also, thoughts, feelings, attitudes, beliefs, behaviours consistent with mental toughness are positively correlated with sport and sport-related activities.

Jones et al. (2007) concluded that among the general and specific elements of mental toughness, lies the ability to successfully cope with the challenges of one's social and personal life while still optimally performing in their sport of choice. This interpretation relates to this present study's finding that the mental toughness earned through hiking engagement helps individuals cope with everyday life situations and problems. Gould et al. (2011), after reviewing studies on mental toughness in athletes, along with life skills development through sport involvement, argued that mental toughness can definitely be characterized a "life skill".

Even though mental toughness can be characterized as a universal psychological asset in sports, specificity is still a considerable factor and reminder. In addition to the fact that hiking is not a sport in the classical sense, since there are no set rules, no referee, no set duration, etc., the mental toughness gained from and demonstrated through hiking could be largely different than mental toughness needed/demonstrated to cope with 10 boxing rounds or a high collision rugby game for example. Thus, despite the fact that the carryover of mental toughness developed through hiking seems to be there for individuals that hike consistently, it is not expected that the results obtained in this study must pertain to competitive sports and/or other -playing- fields.

It seems that if a hiker wants to build his/her mental toughness, the outdoors provide ample opportunities for this to happen. Setbacks, unforeseen events, hard routes in terms of numbers etc. (external factors) when tackled with an ability to withstand stress and pressure, manage self-defeating thoughts and physically endure (mental assets), all represent mental toughness in a hiking setting. Purposeful, “planned” management of situations associated with building, maintaining and increasing mental toughness as shown in this study, can be a worthwhile pursuit for hikers seeking to up their game and skills arsenal. Exhibiting confidence up on a mountain is easier when a person possesses true, highly developed mental toughness.

An interesting case could be made as to whether and how the findings of this study can be applied to training courses of mountain leaders/guides throughout the world, in pursuit of a more complete, balanced approach between their technical and their psychological skills education, both in a classroom and in an on-field course. Since mental toughness is portrayed by experienced hikers as an indispensable mental asset, it would be worthwhile to explore possible ways of integrating it in the curriculum in order to enhance the students' experiential learning.

Limitations / Applications/ Recommendations for Future Research

As stated in the introduction and literature review section of this study, there is a gap in the existing literature in terms of studies regarding hiking and mental toughness. This present study attempted to fill this gap, using a qualitative, phenomenological approach. Given the fact that hiking is such a popular outdoor activity and that mental toughness is a widely researched concept of sport psychology, further research seems mandatory to gain a broad, more complete understanding of the subject. Quantitative research can provide larger samples, whereas either quantitative and/or qualitative future research from different continents/countries could provide considerably/subtly different viewpoints on the matter.

References

- Beedie, P., & Hudson, S. (2003). Emergence of mountain-based adventure tourism. *Annals of Tourism Research*, 30(3), 625–643. [https://doi.org/10.1016/s0160-7383\(03\)00043-4](https://doi.org/10.1016/s0160-7383(03)00043-4)
- Bello, D. C. (1985). *The role of novelty in the pleasure travel experience*.
<https://www.semanticscholar.org/paper/The-Role-of-Novelty-in-the-Pleasure-Travel-Bello-Etzel/6deaf18745c234f398a3e553625ee07e329a9d71>
- Breejen, L. D. (2007). The experiences of long distance walking: A case study of the West Highland Way in Scotland. *Tourism Management*, 28(6), 1417–1427.
<https://doi.org/10.1016/j.tourman.2006.12.004>
- Connaughton, D. P., Hanton, S., & Jones, G. (2010). The development and maintenance of mental toughness in the world’s best performers. *Sport Psychologist*, 24(2), 168–193.
<https://doi.org/10.1123/tsp.24.2.168>
- Crum, D. M. (2022). *Mental Toughness and Athletic Performance: A Meta-Analysis*. UNM Digital Repository. https://digitalrepository.unm.edu/educ_hess_etds/133?utm_source=digitalrepository.unm.edu%2Feduc_hess_etds%2F133&utm_medium=PDF&utm_campaign=PDFCoverPages
- Crust, L. (2008). A review and conceptual re-examination of mental toughness: Implications for future researchers. *Personality and Individual Differences*, 45(7), 576–583.
<https://doi.org/10.1016/j.paid.2008.07.005>
- Fluker, M., & Turner, L. (2000). Needs, motivations, and expectations of a commercial whitewater rafting experience. *Journal of Travel Research*, 38(4), 380–389.
<https://doi.org/10.1177/004728750003800406>

- Gerber, M., Kalak, N., Lemola, S., Clough, P., Perry, J. L., Pühse, U., Elliot, C., Holsboer-Trachsler, E., & Brand, S. (2012). Are adolescents with high mental toughness levels more resilient against stress? *Stress and Health, 29*(2), 164–171. <https://doi.org/10.1002/smi.2447>
- Gordon, S., Gucciardi, D., & Chambers, T. P. (2007). A personal construct psychology perspective on sport and exercise psychology research: The example of. . . *ResearchGate*.
https://www.researchgate.net/publication/44152230_A_personal_construct_psychology_perspective_on_sport_and_exercise_psychology_research_The_example_of_mental_toughness
- Gould, D., Griffes, K. R., & Carson, S. (2011). Mental toughness as a life skill. *ResearchGate*.
https://www.researchgate.net/publication/285732272_Mental_toughness_as_a_life_skill
- Gucciardi, D. F. (2017). Mental toughness: progress and prospects. *Current Opinion in Psychology, 16*, 17–23. <https://doi.org/10.1016/j.copsyc.2017.03.010>
- Hall, C. M. (2014). Commercial whitewater rafting in Australia. *Canterbury-nz*.
https://www.academia.edu/4132508/Commercial_Whitewater_Rafting_in_Australia
- Johannis, N. J., Yasim, M. M., & Taff, M. a. M. (2021). Development of Hiking Preparedness Model for Mountaineering activities in Malaysia: An Overview. *ResearchGate*.
https://www.researchgate.net/publication/348994506_Development_of_Hiking_Preparedness_Model_for_Mountaineering_Activities_in_Malaysia_An_Overview
- Jones, G., Hanton, S., & Connaughton, D. P. (2002). What is this thing called mental toughness? An investigation of elite sport performers. *Journal of Applied Sport Psychology, 14*(3), 205–218. <https://doi.org/10.1080/10413200290103509>
- Jones, G., Hanton, S., & Connaughton, D. P. (2007). A framework of mental toughness in the world's best performers. *Sport Psychologist, 21*(2), 243–264.

<https://doi.org/10.1123/tsp.21.2.243>

Kozak, M. (2002). Comparative analysis of tourist motivations by nationality and destinations.

Tourism Management, 23(3), 221–232. [https://doi.org/10.1016/s0261-5177\(01\)00090-5](https://doi.org/10.1016/s0261-5177(01)00090-5)

Mannell, R. C., & Iso-Ahola, S. E. (1987). Psychological nature of leisure and tourism experience.

Annals of Tourism Research, 14(3), 314–331. [https://doi.org/10.1016/0160-7383\(87\)90105-8](https://doi.org/10.1016/0160-7383(87)90105-8)

Mason, R. C., Suner, S., & Williams, K. (2013). An analysis of Hiker Preparedness: A survey of hiker habits in New Hampshire. *Wilderness & Environmental Medicine*, 24(3), 221–227.

<https://doi.org/10.1016/j.wem.2013.02.002>

Mayer, K., & Lukács, A. (2021). Motivation and mental well-being of long-distance hikers: A quantitative and qualitative approach. *Heliyon*, 7(5), e06960.

<https://doi.org/10.1016/j.heliyon.2021.e06960>

Middleton, S., Marsh, H., Martin, A., & Perry, C. (2004). Discovering Mental Toughness: A Qualitative study of mental toughness in Elite Athletes [R]. *ResearchGate*.

https://www.researchgate.net/publication/235913871_Discovering_Mental_Toughness_A_Qualitative_Study_of_Mental_Toughness_in_Elite_Athletes_R

Molokáč, M., Hlaváčová, J., Tometzová, D., & Liptáková, E. (2022). The preference Analysis for hikers' choice of hiking trail. *Sustainability*, 14(11), 6795.

<https://doi.org/10.3390/su14116795>

Monasterio, E., Alamri, Y., & Mei-Dan, O. (2014). Personality Characteristics in a Population of Mountain Climbers. *Wilderness & Environmental Medicine*, 25(2), 214–219.

<https://doi.org/10.1016/j.wem.2013.12.028>

- Mykletun, R. J., Oma, P. Ø., & Aas, Ø. (2021). When the hiking gets tough: “New adventurers” and the “extinction of experiences.” *Journal of Outdoor Recreation and Tourism*, 36, 100450. <https://doi.org/10.1016/j.jort.2021.100450>
- Nemeth, N., Adams, V. M., & Byrne, J. (2021). Factors affecting the preparedness of overnight hikers in national parks: Insights from Tasmania, Australia. *Journal of Outdoor Recreation and Tourism*, 35, 100388. <https://doi.org/10.1016/j.jort.2021.100388>
- Nordbø, I., & Prebensen, N. K. (2015). Hiking as mental and physical experience. In *Advances in Hospitality and Leisure* (pp. 169–186). <https://doi.org/10.1108/s1745-354220150000011010>
- Prebensen, N. K., Skallerud, K., & Chen, J. (2010). Tourist Motivation with Sun and Sand Destinations: Satisfaction and the Wom-Effect. *Journal of Travel & Tourism Marketing*, 27(8), 858–873. <https://doi.org/10.1080/10548408.2010.527253>
- Rohn, K. C., & Conway, P. F. (2022). Thru-hiking and thriving: Exploring college student experiences on the Appalachian Trail. *Journal of Experiential Education*, 105382592211158. <https://doi.org/10.1177/10538259221115825>
- Saayman, M., & Saayman, A. (2009). Why travel motivations and socio-demographics matter in managing a National Park. *Koedoe*, 51(1). <https://doi.org/10.4102/koedoe.v51i1.381>
- Saayman, M., & Viljoen, A. (2016a). Who are wild enough to hike a wilderness trail? *Journal of Outdoor Recreation and Tourism*, 14, 41–51. <https://doi.org/10.1016/j.jort.2016.04.004>
- Saayman, M., & Viljoen, A. (2016b). Who are wild enough to hike a wilderness trail? *Journal of Outdoor Recreation and Tourism*, 14, 41–51. <https://doi.org/10.1016/j.jort.2016.04.004>
- Scholtz, M., Kruger, M., & Saayman, M. (2013). Understanding the reasons why tourists visit the Kruger National Park during a recession. *Acta Commercii*, 13(1).

<https://doi.org/10.4102/ac.v13i1.168>

Sheard, M. H. (2009). A Cross-National analysis of mental toughness and hardiness in elite university Rugby league teams. *Perceptual and Motor Skills, 109*(1), 213–223.

<https://doi.org/10.2466/pms.109.1.213-223>

Soulé, B., Reynier, V., Lefèvre, B., & Boutroy, E. (2017). Who is at risk in the French mountains? Profiles of the accident victims in outdoor sports and mountain recreation. *Journal of Mountain Science, 14*(8), 1490–1499. <https://doi.org/10.1007/s11629-016-4146-5>

Svarstad, H. (2010). Why hiking? Rationality and reflexivity within three categories of meaning construction. *Journal of Leisure Research, 42*(1), 91–110.

<https://doi.org/10.1080/00222216.2010.11950196>

Swarbrooke, J., Beard, C., Leckie, S., & Pomfret, G. (2003). *Adventure tourism: the new frontier*.

https://openlibrary.org/books/OL28813990M/Adventure_Tourism

Taher, S. H. M., Jamal, S. A., Sumarjan, N., & Aminudin, N. (2015). Examining the structural relations among hikers' assessment of pull-factors, satisfaction and revisit intentions: The case of mountain tourism in Malaysia. *Journal of Outdoor Recreation and Tourism, 12*, 82–88. <https://doi.org/10.1016/j.jort.2015.11.012>

Williams, P., & Soutar, G. N. (2009). VALUE, SATISFACTION AND BEHAVIORAL INTENTIONS IN AN ADVENTURE TOURISM CONTEXT. *Annals of Tourism Research, 36*(3), 413–438. <https://doi.org/10.1016/j.annals.2009.02.002>

Wöran, B., & Arnberger, A. (2012). Exploring relationships between recreation specialization, restorative environments and mountain hikers' flow experience. *Leisure Sciences, 34*(2), 95–114. <https://doi.org/10.1080/01490400.2012.652502>

Appendix

Hikers' Perceptions of Mental Toughness: A Phenomenological Study

Interview Guide

- Aim of this research (Introduction)
- 1. How is mental toughness conceived by you as a hiker when up on a mountain?
- 2. Hiking and mental toughness. Interrelated? If yes, in which way?
- 3. Is there a specific element in hiking that develops and/or enhances mental toughness?
- 4. How has mental toughness helped you personally in your hiking expeditions?
- 5. Is mental toughness amongst the most important psychological skills of a hiker?
- 6. Is mental toughness as a psychological skill interrelated with the hiker's physical condition capacities?
- 7. Experience. Is it a factor that affects and/or gets affected by mental toughness as a psychological skill?
- 8. Can highly developed mental toughness, alongside physical prowess and experience, make hikers overestimate their capabilities, take risks and delve in dangers that they otherwise would avoid?
- 9. Leadership and mental toughness. Is there a relationship between them?
- 10. Is there a certain point in time when an experienced hiker plans routes specifically due to their difficulty level, in order to build/maintain mental toughness?
- 11. Solo hiking vs small group hiking. How can each develop mental toughness?

Differences between them.

- 12. Single-day vs multi-day hiking projects. Is there a difference in mental toughness demands and the rate they can develop it?
- 13. Can the lack of mental toughness in certain individual hikers be detrimental to a hiking group project?
- 14. Can mental toughness be “taught” to a beginner in hiking, as a psychological skill?
- 15. Mental toughness gained from hiking. Carryover to real life.
- (Outro)

* + Probes