

A mixed-methods investigation into elite alpine skiers' coping strategies during competition

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In elite sport, athletes often encounter potentially stressful events, leading them to engage in various coping strategies. To date, these coping strategies have yet to be explored among elite skiers. Thus, this study investigated: (1) elite skiers' coping strategy usage, and whether it differed based on sex, nationality, and competitive level, and (2) the links between coping strategy usage and trait stress appraisals, perceived performance, and psychological well-being. Following a mixed-method design, 44 elite skiers (21 female; $M_{age} = 22$ years, $SD = 4$) completed an online survey assessing coping strategies, trait stress appraisals, performance, and wellbeing. Semi-structured interviews were also undertaken with seven skiers ($M_{age} = 25$ years, $SD = 7$). Results found differences based on sex, competitive level, and nationality, and highlighted some novel coping strategies (e.g., focus on inspiring others). Task-oriented coping, alongside momentary distraction-oriented coping, were associated with challenge appraisals and better performance and well-being among the elite skiers.

KEY WORDS: Coping with adversity; Elite skiin; Performance; Stress; Thriving; Well-being.

Introduction

In elite sport, athletes are frequently exposed to potentially stressful competition (Nicholls et al., 2007). The stressful nature of sporting competition stems from stressors such as injury concerns, inadequate preparation, and high expectations (Arnold & Fletcher; 2021). Competitive stressors, those linked directly to sporting endeavours, can arise both before and during events (Hanton et al., 2005). Filaire, et al. (2001, p.263) explain stress as “a complex psychophysiological process often resulting in emotional, cognitive, and physiological changes to the internal milieu of the sports person”.

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More simply, stress is understood as a feeling stemming from a perceived imbalance between the demands of the situation and athletes' available coping resources (Jones et al., 2009). In sport, Mesagno et al. (2009) suggest that athletes' stress responses can assure success or lead to poor performance. A dramatic unravelling of performance in competition is known as 'choking under pressure' (Roberts et al., 2019). Thus, the ability to cope with competitive stress is crucial for athletic success (Cosma et al., 2020). Indeed, coping is defined as the cognitive and behavioural efforts to manage internal or external demands that are appraised as taxing or exceeding the resources of the person (Lazarus & Folkman, 1984). Notably, in a study by Christensen and Smith (2018), golfers' coping strategies were significant predictors of performance, even when statistically controlling for physical and technical skill. Coping efforts can also influence psychological well-being (e.g., Pérez-García et al., 2014), with more adaptive coping strategies (i.e., task-focused) associated with better well-being.

Before athletes use coping strategies, they must first appraise the situation. According to Jones et al.'s Theory of Challenge and Threat States in Athletes (TCTSA; 2009), and transactional cognitive appraisal theory (Lazarus & Folkman, 1984), athletes appraise competition as a threat or challenge based on their evaluation of situational demands and personal coping resources. If coping resources meet or exceed situational demands, the event is appraised as a challenge, whereas if demands exceed coping resources, the event is appraised as a threat (Seery, 2011). Although labelled distinctly, Blascovich's biopsychosocial model of challenge and threat states (BPSM; 2008) shows challenge and threat appraisals form the extremities of a single bipolar continuum, suggesting that athletes can be relatively more challenged or threatened (Seery, 2011). The TCTSA allows for a clearer understanding of emotional responses (e.g., threat appraisals are linked with more negative emotions such as anxiety; McGreary et al., 2020), and outlines the determinants of challenge and threat appraisals, with higher self-efficacy, greater perceived control, and a focus on approach (vs. avoidance) goals leading to challenge appraisals (Jones et al., 2009). Challenge and threat appraisals result in unique cognitive, affective, and physiological responses (Blascovich, 2008). For instance, challenge appraisals have been linked with less state anxiety (e.g., Moore et al., 2013), superior performance (e.g., Hase et al., 2019), and better wellbeing (e.g., Brown et al., 2021). Importantly, while situation-specific, challenge and threat appraisals also have a trait-like component, with athletes having a general tendency to appraise all stressful situations as more of a challenge or threat (Hase et al., 2019). However, to date, relatively little research has examined how trait challenge and threat appraisals are related to important outcomes in athletes (e.g., well-being).

According to prominent stress theories (e.g., Lazarus & Folkman, 1984), how an athlete appraises a stressful situation influences the coping strategies they use, which then determines key outcomes (e.g., performance). To have beneficial and optimal effects for athletes during competition, coping strategies must be rehearsed and embedded into athletes' practice (Cosma et al., 2020). Hurst et al. (2011) distinguish between 10 coping strategies in their Dispositional Coping Inventory for Competitive Sport (DCICS), a modified version of the original measure by Gaudreau and Blondin (2002). Following the proposed hierarchical organization by Skinner et al. (2003), these strategies are categorized as task-, distraction-, or disengagement-oriented. Task-oriented coping are efforts to alter or overcome the stressors in a competitive situation (e.g., relaxation; Hurst et al., 2011). Distraction-oriented coping are efforts to momentarily direct attention away from competitive stressors to unrelated factors (e.g., distancing; Gaudreau & Blondin, 2002). Finally, disengagement-oriented coping are efforts to disengage from stressors and goal attainment (e.g., resignation; Skinner et al., 2003).

Research has hinted at sex differences in coping (e.g., Swettenham et al., 2020), for instance, female athletes may seek more social support than males (Tamminen, 2021). Additionally, cross-cultural differences in coping have been tentatively suggested, with Anshel et al. (1997) finding that US athletes made greater use of approach-related coping than Australian athletes. In line with theory noted above, previous research suggests the choice of coping strategies is partly determined by stress appraisals (e.g., Anshel et al., 2003; Gan & Anshel, 2006), with challenge appraisals linked with more task-oriented coping and threat appraisals associated with more disengagement-oriented coping. However, not all studies have found clear links between challenge and threat appraisals and coping (e.g., McCreary et al., 2020). Moreover, the appraisal process and choice of coping strategy is thought to effect performance (e.g., Didymus & Fletcher, 2017), whereby the challenge appraisal-performance relationship is mediated by task-oriented coping, and the threat appraisal-performance relationship is mediated by disengagement-oriented coping (e.g., Doron & Martinent, 2017). Finally, coping strategies have been related to well-being, such that task-oriented coping has been associated with better well-being and disengagement-oriented coping poorer well-being (e.g., Nicholls et al., 2016). Nevertheless, previous work has rarely explored differences in coping strategy usage based on sex, competitive level, and nationality in a single study, nor how athletes' (e.g., elite alpine skiers) coping strategies are linked to trait stress appraisals, perceived performance, and psychological well-being. The findings of such work will have important ramifications for theory (e.g., BPSM, TCTSA).

Little research has studied coping among elite alpine skiers, which is surprising as it is an Olympic sport, and the International Skiing Federation (FIS) boasts an impressive World Cup circuit, Junior International Championships, and European Cup tour. Before and during these events, skiers face a multitude of competitive stressors (e.g., intense physical effort, pressure to perform; Gaudreau & Blondin, 2004). In addition, Kiemle-Gabbay and Lavallee (2017, p.340) established that uncontrollable properties (e.g., weather conditions, rutted ski course) cause skiers to engage more with preparatory coping strategies to “control the uncontrollable”. Alpine ski races also have the distinctive quality of being made up of two legs between 50 to 70 seconds-long, which are separated by over an hour gap to set the new course, and where both leg times are added to make up the race time. Their investigation is therefore required as these elements may lead to the use of unique coping strategies. Despite some research exploring coping in response to injury among elite alpine skiers (e.g., Bianco, 2001), generally, literature on this unique population is limited. Knittel and Guskowska (2016) found that task-focused coping was linked with superior performance (i.e., class of result) than emotion-focused and avoidance coping. Moreover, Magelssen (2012) found that a range of training, team, and personal factors (e.g., technical slumps, teammate support) influenced elite skiers’ ability to cope. Nevertheless, to date, no previous study of elite alpine skiers’ coping strategies has been undertaken using mixed methods. Such a methodology allows for the strengths of one method to offset the weaknesses of the other (Guest et al., 2012), and allows for a more in-depth and context-specific exploration that is sensitive to the unique properties that makes competitive elite alpine skiing potentially stressful (e.g., race format of two legs with rapidly deteriorating terrain).

Thus, to extend past research and inform the support offered by applied practitioners (e.g., coaches, sport psychologists), this study examined whether the coping strategies used by elite alpine skiers’ during competition differed based on sex, nationality, and competitive level (aim 1), and how these coping strategies related to trait challenge and threat appraisals, perceived performance, and psychological well-being (aim 2). Given the findings of previous research (e.g., Knittel & Guskowska, 2016), skiers were expected to use more task- and distraction-oriented coping than disengagement-oriented coping. Moreover, female skiers were expected to seek more support than their male counterparts, who were expected to vent unpleasant emotions more (e.g., anger). Additionally, greater task-orientated coping was expected at higher competitive levels (e.g., international vs. national). Furthermore, greater task-oriented coping was predicted to be associated with challenge appraisals, better performance, and higher well-being, whereas

greater distraction- and disengagement-oriented coping were expected to be associated with threat appraisals, poorer performance, and lower well-being. Finally, the aim of the qualitative component was to explore the coping strategies used by a subset of the elite alpine skiers to see if any novel strategies emerged given the unique high-pressure nature of the sport (aim 3), and to better understand how the strategies they used might link to appraisals and outcomes (e.g., well-being).

Methods

RESEARCH DESIGN

This study was underpinned by methodological pluralism, enabling the strengths of both quantitative and qualitative methods to emerge while reducing their weaknesses (Johnson & Onwuegbuzie, 2004). By emphasizing the abductive, intersubjective, and transferable aspects of the research (Morgan, 2007), a pragmatic approach allows researchers to make sense of data in a dynamic environment through adaptation and incorporation of new knowledge (Duemer & Zebidi, 2009). Pragmatism seeks to solve problems within their social context by applying methods most fit (Duemer & Zebidi, 2009). In line with this paradigm, this study employed a mixed-method explanatory sequential design, whereby the qualitative phase helped us interpret and contextualize the results from the quantitative phase (Guest et al., 2012). This research design facilitates a more robust analysis of statistical data by further exploring participants' experiences in a specific context (Ivankova et al., 2006).

QUANTITATIVE PHASE

Participants. The sample was acquired through volunteer sampling, by advertising the study via email and social media to contacts in the lead researchers' network (e.g., skiers, coaches, FIS staff). Forty-four elite alpine skiers (23 male, 21 female; 26 French, 14 British, one Swiss, one Finnish, one Norwegian, and one Swedish) were recruited aged 18 to 34 ($M_{\text{age}} = 21.5$ years, $SD = 3.83$). The sample size was limited due to resource constraints (e.g., time, athlete availability and access), although the lead researcher and colleagues evaluated the data remained well-calibrated and worthwhile (Lakens, 2022). Consistent with Swann et al. (2015), skiers were considered elite as they competed nationally or internationally. Indeed, nine participants competed on the World Cup circuit, 18 on the European Cup circuit, and 17 on the FIS circuit (i.e., highest national-level circuit by the International Skiing Federation). The decision to differentiate these circuits in this study, although all elite, was due to the length of time it can take skiers to reach the World Cup circuit (e.g., sometimes over 5 years), and the difference in intensity of the characteristics faced (e.g., sponsorship deals, media coverage, technical racecourses, number of skiers on the course). The sample's competitive skiing careers averaged ~ 11 years ($SD = 4$), and they trained an average of six times per week ($SD = 2$).

Procedure. Data was collected mid-season (January to March 2021) after institutional ethical approval (EP 19/20 097). Participants provided informed consent before completing a questionnaire created via JISC online surveys (<https://www.onlinesurveys.ac.uk>), which was

presented in French or English. The questionnaire took ~15 minutes to complete and consisted of the following measures.

Measures

Coping strategies. Participants' coping strategy usage was assessed via the DCICS (Hurst et al., 2011). DCICS measures three higher-order dimensions: (1) task-oriented coping, represented by six strategies (i.e., mental imagery, effort expenditure, thought control, seeking support, relaxation, logical analysis), (2) distraction-oriented coping, comprised of two strategies (i.e., distancing, mental distraction), and (3) disengagement-oriented coping, represented by two strategies (i.e., venting of unpleasant emotions, disengagement/resignation). Using a 5-point Likert scale ranging from 1 = *'not at all'* to 5 = *'very strongly'*, participants indicated the extent each of the 39 statements corresponded to how they typically behave in competition. Twenty-three items pertained to task-oriented coping (e.g., "I mentally rehearse the execution of my movements"), eight were associated with distraction-oriented coping (e.g., "I entertain myself in order not to think about the competition"), and eight were linked with disengagement-oriented coping (e.g., "I let myself feel hopeless and discouraged"). Mean scores for the 10 lower-order coping strategies were determined before mean scores for each higher-order dimension were calculated (range = 1 to 5), with higher scores reflecting greater usage. The DCICS is valid and reliable (Hurst et al., 2011), and showed good internal consistency ($\alpha = .75$ for task-, $.77$ for disengagement, and $.64$ for distraction-oriented coping).

Trait challenge and threat appraisals. Trait challenge and threat appraisals were assessed via two items adapted from the cognitive appraisal ratio (Tomaka et al., 1993). Evaluated demands were assessed by asking "How demanding do you usually find stressful sporting competition?", and evaluated coping resources were measured by asking "Generally, how able are you to cope with stressful sporting competition?". Items were rated on a 6-point Likert scale ranging from 1 = *'not at all'* to 6 = *'extremely'*. A demand resource evaluation score (DRES; Moore et al., 2013) was calculated by subtracting demands from resources (range = -5 to 5), where zero or a positive score reflected a challenge appraisal, and a negative score reflected a threat appraisal. The DRES has been used widely and has face and predictive validity (e.g., linked to performance; Hase et al., 2019).

Sports performance. Perceived performance was assessed via three items adapted from the Athlete Satisfaction Questionnaire (ASQ; Riemer & Chelladurai, 1998). Participants rated their satisfaction over the competitive season in terms of their results, progress, and skill level on 7-point Likert scales anchored between 1 = *'not at all satisfied'* and 7 = *'extremely satisfied'*. A mean score was calculated (range = 1 to 7), with higher scores reflecting better performance. The ASQ is valid and reliable (e.g., Riemer & Chelladurai, 1998), and had an internal consistency score of $\alpha = .69$.

Psychological wellbeing. Well-being was measured via the World Health Organisation Well-Being Index (WHO-5; Topp et al., 2015). This measure consisted of five items (e.g., "I have felt cheerful and in good spirits"), and participants rated how well each statement applied to them over the past two weeks using a 6-point Likert scale ranging from 0 = *'at no time'* to 5 = *'all of the time'*. Items were summed (range = 0 to 25), and the total was then multiplied by four to reach a final score (range = 0 to 100), with higher scores indicating greater well-being. The WHO-5 is valid and reliable (Topp et al., 2015), and showed good internal consistency ($\alpha = .87$).

Translation. The participant information sheet, consent form, and online questionnaire

were offered to participants in English or French, based on the language they felt most comfortable and capable of responding in. To do so, the online questionnaire was initially written in English and then translated into French by the lead researcher who is proficient in both languages, having been born in France to British parents. Great attention was given to linguistic, functional, cultural, and metric equivalence (Peña, 2007). A French version of the DCICS was acquired (Gaudreau, 2020). All other measures were translated following ‘decentering’ procedures (see Sechrest et al., 1972).

Data analysis. Data was analysed using SPSS version 26. First, the distribution of the data was explored using descriptive statistics and skewness and kurtosis z-scores (i.e., $>$ or $<$ 1.96), which revealed three non-normally distributed variables (i.e., perceived performance, mental distraction, and distraction-orientated coping). Follow-up outlier analyses identified seven univariate outliers (i.e., two for perceived performance, two for mental distraction, and three for distraction-oriented coping), which, when winsorised to 1% higher or lower than the next most extreme value, normalized the data. Next, to examine any differences in higher- (i.e., task-, distraction-, and disengagement-oriented) and lower- (e.g., mental imagery, effort expenditure, thought control, seeking support, relaxation, logical analysis, distancing, mental distraction, venting of unpleasant emotions, and disengagement) order coping strategies based on sex (i.e., male, female), nationality (i.e., French, British, other-European), and competitive level (i.e., World Cup, European Cup, FIS Circuit), independent *t*-tests and one-way ANOVAs were conducted. Finally, forced entry multiple linear regression analyses were used to assess the relationships between higher-order and lower-order coping strategies and trait challenge and threat appraisals, perceived performance, and psychological well-being while controlling for co-variables (i.e., age, nationality, sex, status, circuit, training sessions per week, and years spent competing).

QUALITATIVE PHASE

Participants. A subsample of elite alpine skiers from the quantitative phase were recruited via volunteer sampling (i.e., 26 of the 44 skiers left their contact details in the survey and were contacted regarding an interview). A total of seven skiers (4 male, 3 female; 4 French, 3 British; $M_{\text{age}} = 25$ years, $SD = 7$; $M_{\text{experience}} = 12$ years, $SD = 2$; $M_{\text{sessions}} = 6$ per week, $SD = 1$) agreed to be interviewed. Participants competed on the World Cup ($n = 2$), European Cup ($n = 1$), or FIS ($n = 4$) circuits.

Procedure. Before being interviewed, participants provided informed consent. Four interviews were conducted via Microsoft Teams and three by telephone. Interviews lasted 18 to 57 minutes ($M = 33$ minutes, $SD = 14$), and were recorded with a Dictaphone. Interviews were transcribed by the lead researcher verbatim, with participants given pseudonyms to protect anonymity.

Interview guide. The questions used in the interview aimed to build on the data collected in the quantitative phase by asking participants to recount their subjective experiences. Indeed, semi-structured interviews were used to allow space for the researcher to delve into the interviewee’s experience whilst following a fixed set of questions. A series of open-ended questions were prepared to guide the interview, divided into three sections: (1) ice-breaker questions to build rapport and generate contextual knowledge regarding the participant’s competitive alpine skiing experience (e.g., “How long have you been competing?”), (2) core questions designed to attain a vivid account of participants’ experiences (e.g., “What strategies do you use to cope during stressful competition?”) as well as the effect of these strategies on performance and well-being (e.g., “How effective do you consider these strategies?”), and

(3) closing questions encouraging participants to expand on any previous or unmentioned points (e.g., “Is there anything else you would like to add?”).

Translation. Interviews were held in the native language of the participant (four in French and three in English). The participant information sheet, consent form, and interview questions were also in both languages. To do so, these forms were first written in English, then translated into French. The lead researcher did the translation and ensured linguistic, functional, cultural, and metric equivalence (Peña, 2007). Each interview held in French was first transcribed verbatim. Then the lead researcher created meaning and patterns from the data so that it could be analysed in parallel with the data from English-speaking participants. To do so, the researcher coded and labelled the interview text at a semantic level into English, by finding equivalent patterns that had appeared in the English-spoken interviews, or by using a one-way translation procedure, before organizing these labels into three level themes. Therefore, all themes and labels were established in English, though at this stage, most of the interview text remained in French, untranslated. However, for the results and discussion sections, when quotes from the French-spoken interviews were required, the relevant text was translated into English. To further ensure linguistic equivalence, these quotes were translated twice, from French to English, and then English to French, at a week’s interval. Both French versions were compared, and the English translation adapted until the original and final versions of French text corresponded.

Data analysis. After transcription, the interview data was analysed using small q thematic analysis (Braun & Clarke, 2019). Using Braun et al.’s (2016) six-step process, analysis began with reading and re-reading the transcripts while making informal notes in the margins on ideas congruent with aim 3 (e.g., ‘pre-comp warm-up’). After familiarization, text was coded semantically and labelled to capture its relevance (e.g., ‘physical warm-up’). Next, by noting the codes on a whiteboard to give perspective and a clearer view, the codes were organized into three theme levels, refined, and named (e.g., ‘physical warm-up’ became ‘following a routine’). Finally, using a spreadsheet which associated the different themes with relevant quotes, the results were written using the quotes to achieve a compelling narrative. Coherent with the pragmatic approach, abductive logic was applied. Drawing first on induction, this enabled the generation of codes to represent knowledge created from subjective experiences (e.g., ‘support from friends’). Next, to construct coherent higher-order themes once the codes were established, a deductive approach was used: DCICS states ‘seeking support’ as a task-oriented strategy, thus, ‘support from friends’ became ‘peer support’. This allowed participants’ experiences to be illustrated both inductively and deductively (i.e., via DCICS; Hurst et al., 2011).

Rigor. According to Tracy’s model for quality in qualitative research (2010), several procedures were used to enhance the quality of the qualitative data (Smith & McGannon, 2018). First, a pilot interview was conducted to ensure the interview guide was effective and to make any final changes to the wording of questions (e.g., a question about the support received by athletes to cope with stress was added, to enable the interviewees to discuss support from their networks). During data collection, the lead researcher ensured transcript accuracy by writing the transcript as soon as the interview was over, avoiding any time gap (Tracy, 2010). Data analysis occurred following a logical and transparent coding process, with logs kept tracing any changes made. To aid openness and transparency (Tracy, 2010), a rigorous explanation covering transcription, coding, and analysis, was presented. Furthermore, with a critical friend, the lead researcher explored alternative interpretations and ensured the themes were pertinent (e.g., renaming the lower-level theme ‘Stress-is-enhancing mindset’ to ‘Viewing stress as beneficial’), improving impartiality (Morse, 2015). Lastly, the lead researcher drew

upon their knowledge and experience as a ski instructor and ex-alpine skier to positively influence the analysis, interpretation, and quality of the data.

Results

QUANTITATIVE FINDINGS AND DISCUSSION

Descriptive statistics and bivariate correlations are shown in Table S1. The skiers made greater use of task-oriented coping than distraction- and disengagement-oriented coping.

Differences in coping strategies based on sex, nationality, and competitive level. Male and female skiers did not differ in task-oriented coping, $t(42) = 1.04$, $p = .305$, $d = 0.32$. However, for lower-order strategies, male skiers ($M = 3.61$; $SD = 0.71$) used more mental imagery than females ($M = 3.00$, $SD = 0.76$), $t(42) = 2.74$, $p = .009$, $d = 0.83$. Moreover, male skiers ($M = 4.00$, $SD = 0.64$) used effort expenditure more than females ($M = 3.51$, $SD = 0.74$), $t(42) = 2.38$, $p = .022$, $d = 0.71$. However, male and female skiers did not differ in their use of distraction-, $t(42) = -0.99$, $p = .329$, $d = -0.30$, or disengagement-, $t(42) = -0.65$, $p = .522$, $d = -0.21$, oriented coping.

Nationalities differed in task-oriented coping, $F(2,41) = 4.25$, $p = .021$, $\eta_p^2 = .17$. Post-hoc LSD t -tests revealed that French skiers ($M = 3.06$, $SD = 0.56$) used less task-oriented coping than other-European skiers ($M = 3.77$, $SD = 0.38$; $p = .016$). However, British and French or other-European skiers did not differ ($p = .052$ and $.237$, respectively). For lower-order strategies, effort expenditure differed between nationalities, $F(2,41) = 3.53$, $p = 0.39$, $\eta_p^2 = .15$, with French skiers ($M = 3.54$, $SD = 0.68$) using it less than British skiers ($M = 4.07$, $SD = 0.75$; $p = .023$). However, other-European and British or French skiers did not differ ($p = .810$ and $.095$, respectively). Furthermore, relaxation differed between nationalities, $F(2,41) = 3.24$, $p = .049$, $\eta_p^2 = .14$, with French skiers ($M = 2.75$, $SD = 0.99$) using it less than British ($M = 3.48$, $SD = 0.89$) skiers ($p = .022$). However, other-European and British or French skiers did not differ ($p = .933$ and $.174$, respectively). Finally, there were no nationality-based differences in distraction-, $F(2,41) = 1.83$, $p = .173$, $\eta_p^2 = .08$, or disengagement-, $F(2,41) = 1.38$, $p = .263$, $\eta_p^2 = .06$, oriented coping.

There were no differences between skiers of different competitive levels in their use of task-, $F(2,41) = 1.00$, $p = .377$, $\eta_p^2 = .05$, or disengagement-, $F(2,41) = .307$, $p = .737$, $\eta_p^2 = .02$, oriented coping. However, for lower-order strategies, mental distraction differed by competitive level, $F(2,41) = 5.74$, $p = .006$, $\eta_p^2 = .22$, with World Cup ($M = 2.97$, $SD = 0.80$) and European Cup ($M = 2.62$, $SD = 0.88$) skiers using it more than FIS Circuit skiers ($M = 1.99$,

TABLE I
Means, Standard Deviations, And Intercorrelations For All Variables.

Measure	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Perceived Performance	4.47	0.99																
2. Stress Appraisals	0.14	1.46	.14															
3. Well-Being	59.27	19.12	0.46**	.34*														
4. Task-Oriented Coping	3.24	0.56	0.18	-.16	.17													
5. Mental Imagery	3.32	0.79	.17	.01	.33*	.71***												
6. Effort Expenditure	3.77	0.72	.06	.03	.10	.57***	.42**											
7. Thought Control	3.68	0.84	.21	.03	.34*	.55***	.32*	.04										
8. Seeking Support	2.73	0.91	.17	-.10	.04	.75***	.23	.34*	.43**									
9. Relaxation	3.05	0.97	.11	-.31*	-.15	.73***	.40**	.25	.26	.56***								
10. Logical Analysis	2.88	0.85	-.00	-.25	.06	.66***	.52***	.35*	.11	.35*	.32*							
11. Distraction-Oriented Coping	2.53	0.61	-.03	-.52***	-.34*	.35*	.10	.25	.21	.26	.37*	.19						
12. Distancing	2.66	0.91	-.16	-.44**	-.39**	.28	.07	.14	.14	.19	.29	.28	.79***					
13. Mental Distraction	2.45	0.84	.13	-.32*	-.15	.25	.09	.21	.20	.20	.28	.01	.74***	.19				
14. Disengagement-Oriented Coping	2.13	0.86	-.19	-.40**	-.39**	.04	-.08	-.05	-.25	.06	.06	.37*	.37*	.32*	.22			
15. Venting of Unpleasant Emotions	2.29	0.99	-.02	-.17	-.20	.09	-.03	.05	-.19	.14	.02	.37*	.25	.28	.06	.91***		
16. Disengagement	1.96	0.93	-.33*	-.57***	-.51***	-.03	-.11	-.14	-.27	-.03	.09	.29	.43**	.30*	.35*	.89***	.62***	

Significant correlation marked by asterisk. * $p < .05$, ** $p < .01$, *** $p < .001$.

SD = 0.59) ($p = .003$ and $.018$, respectively). However, World Cup and European skiers did not differ ($p = .258$).

Coping and trait challenge and threat appraisals. Task-oriented coping did not predict appraisals ($\beta = -.10, p = .558$; see Table S2), but distraction-oriented coping was associated with threat appraisals ($\beta = -.57, p < .001$). For lower-order strategies, distancing ($\beta = -.46, p = .002$) and mental distraction ($\beta = -.47, p = .009$) were associated with threat appraisals. Finally, disengagement-oriented coping was also associated with threat appraisals ($\beta = -.37, p = .014$), as was the lower-order strategy, disengagement ($\beta = -.54, p < .001$).

Coping and perceived performance. Task-oriented coping did not predict performance ($\beta = .28, p = .076$; see Table S2), but for lower-order strategies, thought control was associated with better performance ($\beta = .37, p = .010$). Distraction- ($\beta = .01, p = .945$) and disengagement- ($\beta = -.17, p = .252$) orientated coping did not predict performance.

Coping and psychological well-being. Task-oriented coping did not predict well-being ($\beta = .24, p = .146$; see Table S2), but distraction-oriented coping was associated with poorer well-being ($\beta = -.36, p = .022$). For lower-order strategies, distancing was associated with poorer well-being ($\beta = -.38, p = .011$). Disengagement-oriented coping was also associated with worse well-being ($\beta = -.36, p = .018$), as was the lower-order strategy, disengagement ($\beta = -.48, p = .001$).

Elite alpine skiers made greater use of task-oriented coping than distraction- and disengagement-oriented coping. Moreover, coping strategy use differed between skiers based on sex, nationality, and competitive level. Indeed, male

TABLE S2
Forced Entry Multiple Linear Regression Analyses Examining Relationships Between Higher-Order Coping Strategies And Trait Stress Appraisals, Perceived Performance, And Psychological Well-Being While Controlling For Co-Variates (I.E., Age, nationality, sex, status, circuit, training sessions per week, and years competing).

Dependent variable	Independent variable	R ²	B	SE B	t	95% CI
Stress appraisals	TOC	0.20	-0.26	0.44	-0.59	[-1.15, 0.63]
	DTOC	0.47	-1.37	0.32	-4.33	[-2.01, -0.73] ***
	DGOC	0.32	-0.63	0.24	-2.58	[-1.127, -0.13] *
Perceived performance	TOC	0.36	0.49	0.27	1.83	[-0.05, 1.02]
	DTOC	0.30	0.02	0.25	0.07	[-0.49, 0.52]
	DGOC	0.32	-0.19	0.17	-1.17	[-0.53, 0.14]
Psychological well-being	TOC	0.26	8.20	5.52	1.49	[-3.00, 19.40]
	DTOC	0.32	-11.25	4.70	-2.39	[-20.79, -1.71] *
	DGOC	0.33	-7.89	3.18	-2.48	[-14.35, -1.43] *

skiers used more mental imagery and effort expenditure than female skiers, and French skiers used less task-oriented coping than other-European skiers, and less effort expenditure and relaxation than British skiers. Finally, both World Cup and European Cup skiers used more mental distraction than FIS Circuit skiers. The sex-based results support Crocker and Graham (1995), who found that female athletes used social support more than male athletes. However, some studies have found that female athletes use greater task-oriented coping than males (e.g., seeking support; Nicholls et al., 2007), a result which differs from the present study. In line with the nationality-based findings, Hoedaya and Anshel (2003) found cultural differences impacted athletes' coping, with Indonesian athletes using more disengagement-orientated coping than Australian athletes. Elite athletes have also been shown to use more task-orientated coping than non-elite athletes (Calmeiro et al., 2014). However, in this study, higher- (World and European Cup) and lower- (FIS) level skiers only differed in their use of mental distraction. This could be explained by higher-level skiers' 'busy' competitive environment (e.g., live television, large crowds, higher stakes), which could benefit from "positive distraction" (Waugh et al., 2020), whereby athletes make a conscious decision to engage momentarily in distraction-oriented strategies.

Task-oriented coping did not predict any outcomes (e.g., performance). While distraction- and disengagement-oriented coping failed to predict performance, they did predict trait challenge and threat appraisals and well-being such that greater distraction- and disengagement-oriented coping were linked to threat appraisals (i.e., situational demands evaluated as exceeding coping resources) and poorer well-being. It is surprising that no effects emerged for task-oriented coping given that prior research has linked this type of coping with more positive outcomes (e.g., challenge appraisals; Thompson et al., 2020). These null effects could be due to the relatively high frequency with which task-oriented coping was used, thus making it unable to discriminate between skiers of varying appraisals, performance, or well-being. For distraction-oriented coping, the findings corroborate previous research which found an association between distraction-oriented coping and threat appraisals (e.g., Nicholls et al., 2014). Distraction-oriented coping has also been negatively associated with coping effectiveness, clarifying such coping's links to poorer well-being (Nicholls et al., 2015). Concerning disengagement-oriented coping, results are consistent with past work (e.g., Tamminen, 2021), where disengagement-oriented coping was related to threat appraisals and poorer well-being (e.g., Doron & Martinent, 2017).

Collectively, the results imply that to promote challenge appraisals, higher perceived performance, and better psychological wellbeing, the use of distraction- and disengagement-oriented coping could be limited among elite alpine skiers. Nevertheless, it is important to note that some prior research has shown that distract-

tion techniques can lead to positive outcomes (e.g., better well-being), particularly when used sparingly in conjunction with other strategies (e.g., Waugh et al., 2020). Thus, distraction-oriented coping may be beneficial if used wisely (e.g., momentary use of mental distraction with relaxation). Despite the relatively novel findings, the quantitative part of this study has its limitations. First, the DCICS contained a list of prescribed coping strategies and therefore did not allow for an exploration of any unique coping techniques used by the elite alpine skiers. Second, while the quantitative phase hinted at the associations between coping strategies and outcomes (e.g., stress appraisals, performance), these links could be explored in greater depth using qualitative methods. Thus, follow-up interviews were conducted with a subset of skiers to explore the coping strategies they used in competition, and how they may have impacted outcomes (e.g., well-being).

Qualitative Findings and Discussion

As can be seen in Table S3, two overarching themes, six themes, and 15 sub-themes were generated: (1) task-oriented strategies, namely, mental

TABLE S3
Strategies Used By Elite Alpine Skiers To Cope With Stressful Competition.

Overarching Themes	Themes	Sub-themes	
Task-Oriented Coping	Mental Imagery	Visualization	
		Managing Internal Events	Positive thinking
	Boosting confidence		
	Rationalizing the event		
	Acceptance of stress		
	Focus on inspiring others		
	Engaging in a meditative state		
	Seeking Support		Peer support
			Professional support
	Logical Analysis	Following a routine	
Focusing on enjoyment			
Setting targets			
Viewing stress as beneficial			
Distraction-Oriented Coping	Distancing	Focusing on themselves	
	Mental Distraction	Distraction from the event	

imagery (i.e., visualization), managing internal events (i.e., positive thinking, boosting confidence, rationalizing the event, acceptance of stress, focus on inspiring others, engaging in a meditative state), seeking support (i.e., peer support, professional support), and logical analysis (i.e., following a routine, focusing on enjoyment, setting targets, viewing stress as beneficial), and (2) distraction-oriented strategies, namely, distancing (i.e., focusing on themselves) and mental distraction (i.e., distraction from the event).

Task-oriented coping strategies. The skiers noted using strategies to alter or overcome the stressors encountered during competition (Hurst et al., 2011). This overarching theme included five themes and 13 sub-themes.

Mental imagery. Most skiers said visualizing the course, event, and desired outcomes pre-competition helped combat stressors on race day. This strategy was neatly illustrated by Sophie:

Sometimes, what would help me overcome a big surge of stress, in my first few years at World Cup level, was to put myself into that stressful situation the night before. I was in my bed, I'd imagine I was at the start, I'd picture the race and the stress of it all. I'd do this to reduce, in a way, part of the stress I'd have the next day, to better overcome it, so it wouldn't be as significant. (Sophie)

This aligns with previous research on imagery in sport (e.g., Ely et al., 2020). Indeed, Hanton et al. (2009) explain how athletes can use imagery to assert control over their mental state. In fact, imagery can increase an athletes' self-confidence or self-efficacy, which could lead to an event being appraised as a challenge (vs. threat; Coelho et al., 2012). Moreover, as illustrated by Sophie, imagery can be used as a form of stress inoculation (Meichenbaum, 2007), helping athletes prepare to face future stressors by exposing themselves to stressors through visualization.

Thought control. Nearly all skiers described controlling their thoughts pre-competition. One strategy was positive thinking, as illustrated by Josh: "I'd psych myself up, you know, I'd reinforce positive thoughts in my head, the night before ... to give myself the best chance." Positive thinking is like motivational self-talk, which has been positively related to performance (e.g., Hatzigeorgiadis et al., 2011). Indeed, positive self-talk may have enhanced performance by boosting self-efficacy, thereby prompting a challenge appraisal (Jones et al., 2009).

Other skiers tried to work on their self-confidence in training to better cope when they faced stressors in competition. This was supported by Lily, who noted that:

I'm working on being more confident, and I think it helps with stress, because if you're confident... it's less stressful, because you have the means to succeed ... For me, it's working on confidence and your ability to do things, and then I think that if you feel more capable, you're less stressed. (Lily)

Self-confidence can shield athletes from negative emotions (e.g., anxiety; Hanton et al., 2004), and greater self-confidence (or self-efficacy) can encourage athletes to appraise potentially stressful competition as a challenge (e.g., Jones et al., 2009), thereby prompting the use of more adaptive coping strategies (e.g., task-oriented; Besharat & Pourbohloul, 2011). Additionally, higher self-confidence can help athletes maintain concentration, which can aid performance (Coelho et al., 2012).

Another strategy was to rationalize the feeling of stress. This was supported by Sophie: “I need to rationalize the event really, when it’s becoming too stressful.” According to studies on Rational Emotive Behavior Therapy (Ellis, 1957) in sport, irrational beliefs prompt maladaptive behaviours and emotions (e.g., venting unpleasant emotions, disengagement coping), whereas rational beliefs prompt adaptive behaviours and emotions (e.g., thought control, relaxation; Jordana et al., 2020). Indeed, Chadha et al. (2019) found that irrational beliefs were linked with threat appraisals, and thus fewer irrational beliefs could help skiers appraise competition as a challenge.

Similarly, accepting the feeling of stress was noted as a common coping strategy, as illustrated by Ben: “When I feel stressed, the first thing to do really, is to accept it”. According to Lindsay and Creswell (2017), accepting negative thoughts to enter one’s awareness, as opposed to labelling them as ‘unwanted’, causes these thoughts to pass without judgement, reducing their harmful impact (e.g., on performance). Indeed, interventions using these principles, such as Mindfulness-Acceptance-Commitment therapy, have been shown to aid performance and well-being (Gardner & Moore, 2007).

Finally, to perceive an event in a less stressful manner, skiers aimed to inspire others through their performance. This intention was supported by the following quote from Kevin:

One of the strategies that I’ve not mentioned is that when I have a bad day, I don’t think to myself, ‘I do this for me’, I think, ‘I need to do it for them’. I’m doing this race to inspire somebody else. (Kevin)

While the benefits of inspiring others are unclear, feelings of inspiration positively alter athletes’ cognition by increasing their awareness of their skills (Figgins et al., 2016). By aiming to inspire others, athletes act as role models with a duty to cultivate inspiring moments (Searle & Hanrahan, 2011). This sense of responsibility could give them focus and control, replacing feelings of anxiety (Thrash & Elliot, 2004), and thus aiding performance and well-being (potentially by encouraging challenge vs. threat appraisals; Jones et al., 2009).

Several skiers noted engaging in a meditative state (e.g., relaxation techniques), which were seen as effective in controlling pre-competition states.

This strategy was neatly illustrated by Kevin:

What I've recently started to do in addition to that [physical warm-up] is just do like a meditative silence, just kind of really keep quiet ... and just be in that physical moment, my breathing calms, my heartrate drops, I feel far better. (Kevin)

Indeed, while exploring the effect of psychological strategies on physiological markers (e.g., cortisol), Dawson et al. (2014) found somatic relaxation techniques (e.g., breathing) had the largest effect. Also, in a review by Pelka et al. (2016), most studies showed relaxation aided performance, further supporting the use of relaxation strategies pre-competition.

Seeking support. Most skiers said they used support to cope with competition. Indeed, the skiers noted that they often turned to their peers for support, as described by Hannah:

Sometimes, on a race morning, someone will say, 'so, today, I don't know why, I'm feeling really stressed, I'm not feeling good', and so generally, we [the teammates] try to help, things like 'look, it's a beautiful day, be happy, it's going to be okay, don't worry, you can do this'. (Hannah)

This quote reflects 'communal coping' (Tamminen & Gaudreau, 2018), defined by Lyons et al. (1998) as a shared process in which stressors are confronted by the merging of individuals' resources in a team or community. Leprince et al. (2018) found that teammates engaged in various communal coping strategies (e.g., motivational support, reassurance). Communal coping is most applicable to team sports, however, following Evans et al.'s (2012) Sport Team Interdependence Typology, alpine skiers' team environment is contrient (despite often considered an individual sport), suggesting they share a group identity, and may therefore effect each other (e.g., well-being).

Interestingly, support was not solely sourced from fellow skiers, but also other professionals (e.g., sport psychologists). For example, Lily stated: "I needed that [professional] psychological support because I didn't have as much support from my coaches anymore". This aligns with past research on the vital role of social support for performance and well-being (e.g., Freeman, 2021). Indeed, Kristiansen and Roberts (2010) found social support (e.g., informational, emotional) was crucial to help elite youth athletes cope with competitive stress. Research suggests that social support might aid responses to stress by promoting challenge appraisals (e.g., Freeman & Rees, 2009).

Logical analysis. Many skiers noted using strategies aimed at approaching competitions more methodically (e.g., pre-competition routines). This strategy was neatly exemplified by Tom:

If I go through X, Y, and Z, in the lead up to my race run, then I'll be in a good position to maximize my performance. So, knowing I have a routine to trust and knowing that, as soon as I push out the start gate, my training will take over and you don't think as much, that certainly helps with stress. (Tom)

In their study of soccer players' pre-competition routines, Hazell et al. (2014) reported that an effective routine led to better performance. Indeed, athletes have revealed feelings of safety in stressful environments when following such routines, possibly because they may increase feelings of control, which in turn could induce challenge appraisals (Jones et al., 2009).

Next, skiers spoke of enjoyment as a means of coping. This strategy was illustrated by Sophie:

Often what helps me overcome competitive stress is the energy from the race, being part of a team, being part of a show in a sense, part of a great event. What I try and do to overcome that stress is to take all the positive atmosphere from the event. Often, it would be from the crowd, like it was a bit of a celebration, taking part in this great event, and using the positive aura from the competition. (Sophie)

Intrinsic sources of enjoyment have been shown to increase self-confidence, decrease state anxiety, and improve performance (e.g., Barnicle & Burton, 2016). Thus, enjoyment could be an essential tool for tackling stressors (Lee et al., 2019), and research has shown that reappraising anxiety as excitement can be beneficial in stressful situations (e.g., public speaking; Brooks, 2014).

The skiers noted that having specific targets also combatted stress, as illustrated by Sophie:

Sometimes what motivates me is to give myself a target, to beat a girl that I've watched go down before me on the TV, or yeah, to aim for a specific position. In the end, sometimes that's what gives me the tools I need to overcome the stress. (Sophie)

Unrealistic goals can elevate anxiety (Swann et al., 2021). However, when appraising stressful competition as a challenge, athletes often focus on attaining desirable outcomes (e.g., skill mastery; Espedido & Searle, 2018). Indeed, athletes adopting approach goals (e.g., striving to demonstrate competence vs. themselves or others) are more likely to adopt challenge appraisals (Jones et al., 2009), and challenge appraisals have been linked to better outcomes (e.g., well-being; Brown et al., 2017).

Finally, skiers discussed how they viewed stress as beneficial, something that they believed helped them during potentially stressful competition. For example, Ben stated:

Nowadays when I feel the effects of stress, it really helps me. Pressure helps me, I know that if I'm feeling stressed it's good, it's useful, it's helpful really. And when I feel stres-

sed, it often leads to the best races, because if you don't have any pressure, for me that suggests you're not really willing to... you're not completely committed. Whereas when you're feeling stressed, you give your all, you're focused on the race, you're completely absorbed. (Ben)

Adopting a stress-is-enhancing mindset, as shown in the above quote, has been related to challenge appraisals and other positive outcomes (e.g., better well-being; Mansell, 2021). Rather than reducing stress, Crum et al. (2017) suggest a stress-is-enhancing mindset (vs. stress-is-debilitating) increases cognitive flexibility and positive emotions (e.g., excitement).

Distraction-oriented coping strategies. Skiers noted using distraction-oriented coping, redirecting their attention away from competitive stressors to unrelated factors (e.g., watching videos). This overarching theme included two themes and two sub-themes.

Distancing. Many skiers suggested that they distanced themselves from the event and their competitors to focus on themselves. This was exemplified by Lily who noted that:

I save a little time, between my warm-up and the race's start, where I refocus on myself. I try to create a bubble around me to feel completely alone, to erase all the people around me, and to concentrate on what is important at the present time. (Lily)

Distraction-oriented coping can reduce the significance of stressful events (Kowalski et al., 2005), and distancing may be used when competition demands are deemed overwhelming and cannot be faced actively, particularly by athletes with low resilience (Secades et al., 2016). Athletes' efforts to distance themselves from unfavourable stimuli (e.g., worrisome thoughts) may be an attempt to direct their attention towards optimal stimuli (e.g., task demands) aided by an inward focus, like in a state of mindfulness (Gardner & Moore, 2007). Indeed, mindfulness has been shown to enhance performance (e.g., Bühlmayer et al., 2017).

Mental distraction. Several skiers discussed how they distracted themselves from the competitive event to help them cope. For example, Josh stated:

Getting to the race, you're a bit nervous, and what I'd do is, I'd have a chat with my friends ... on the way there, or I'd like sleep or go on my phone, to forget, and take my mind off it. (Josh)

Given past research (e.g., Gaudreau, 2004), distraction-orientated coping is an effort to maintain optimal cognitive and physical resources for competition. While viewed favourably by skiers, research suggests that overuse of distraction-oriented strategies (e.g., scrolling through social media), combined with little task-oriented coping (e.g., planning), could result in greater

feelings of stress (Tamminen, 2021). Thus, distraction-oriented coping may only be beneficial when utilized with appropriate task-oriented coping strategies (Gaudreau, 2004).

Overall, several coping strategies were used by the elite alpine skiers in competition. Most of the strategies were shared among most skiers (e.g., visualization, pre-competition routines), and mirrored existing research (e.g., Cascagnette et al., 2021; Dunker et al., 2020). Nevertheless, certain strategies were unique (e.g., focus on inspiring others). Indeed, finding inspiration in sport has been shown to positively affect athletes' cognitive states (Figgins et al., 2016). However, the focus on inspiring others is a novel coping strategy. Other coping strategies mentioned by the skiers have also yet to be explored in great depth (e.g., use of stress-is-enhancing mindsets; Mansell, 2021). For instance, communal coping has been researched in team sports (e.g., soccer), but the results indicated that this strategy might also be used by individual-sport athletes (Tamminen & Gaudreau, 2018). Finally, the qualitative data did not reveal any disengagement-oriented coping (e.g., resignation), which research suggests may have detrimental effects if used in excess (e.g., Gaudreau et al., 2010). This finding might indicate that skiers understand the negative effects of disengagement-oriented coping or are uncertain on how to effectively balance task-, distraction-, and disengagement-oriented coping to deal with stressors (e.g., high task-oriented and momentary disengagement-oriented coping). In fact, both the quantitative and qualitative results show skiers use an array of different coping strategies, particularly task-oriented and distraction-oriented, to help them cope during competition.

General Discussion

To perform to their best, athletes must use various coping strategies (Cosma et al., 2020). Despite vast interest in stress and coping (Nicholls et al., 2016), little work has explored the coping strategies used by elite alpine skiers, and how these strategies differ by sex, nationality, and competitive level as well as their associations with trait challenge and threat appraisals, perceived performance, and psychological well-being. Thus, this study aimed to shed light on these issues. Informed by relevant theory (e.g., TCTSA; Jones et al., 2009), this study showed that elite alpine skiers deploy numerous coping strategies. Indeed, skiers used more task-oriented coping (e.g., seeking support) than distraction- (e.g., distancing) and disengagement- (i.e., venting of unpleasant emotions) coping. Sex-based differences were also found, with male skiers using more mental imagery and effort expenditure than female

skiers. Nationality-based differences also emerged, with French skiers using less task-oriented coping than other-European skiers, and less effort expenditure and relaxation than British skiers. For competitive level, higher-level skiers used more mental distraction than lower-level skiers. While task-oriented coping was unrelated to outcomes (e.g., performance), greater distraction- and disengagement-oriented coping was linked with threat appraisals and poorer well-being. Finally, qualitative data revealed some unique strategies (e.g., aiming to inspire others).

The findings have some important implications for theory and practice. First, the quantitative results confirm the theoretical proposition that certain coping strategies (e.g., distraction- and disengagement-oriented) are linked with threat appraisals (Jones et al., 2009), which, in turn, have been linked with poorer performance and well-being (e.g., Brown et al., 2021; Hase et al., 2019). Furthermore, the data suggests that current coping models (e.g., DCICS; Hurst et al., 2011) do not represent all possible strategies, with new additions needing further exploration (e.g., stress-is-enhancing mindset). With regards to applied practice, the findings imply that to maximize performance and well-being, practitioners (e.g., sport psychologists) could teach athletes' task-oriented coping strategies (e.g., visualization, pre-competition routines) which they could use in competition. Moreover, practitioners could limit athletes' use of distraction- and disengagement-oriented coping given their links to threat appraisals and poorer well-being. Indeed, practitioners should help skiers make a balanced use of task-, distraction-, and disengagement-oriented coping, employing strategies that are most beneficial for a given setting (e.g., when mental and physical resources need to be preserved). In this study, higher-level skiers made greater use of distraction techniques – or 'positive distraction' (Waugh et al., 2020) – which could be justified by their 'busy' competitive environment (e.g., live television, large crowds, higher stakes), so this recommendation should be made with caution and requires further research. Finally, given elite alpine skiers train in teams, encouraging communal coping (e.g., information sharing, interpersonal emotional regulation; Leprince et al., 2018) to face shared stressors collectively could help skiers' cope better with potentially stressful competition.

Despite these implications, it is important to note this study's limitations. First, impartiality in the translation processes may be questioned due to the researcher-translator dyad (Shklarov, 2007). Although the lead researcher put all means in place to reduce bias, future research should consider separating the responsibilities of the translator from those of the researcher. Second, although a similar sample size was used to previous research (e.g., Magelssen, 2012), the relatively small sample could have limited power (i.e., statistical power for

the quantitative and informational power for the qualitative phase), and thus future research should overcome the challenges of gathering data from elite athletes and replicate the findings with a larger sample (Pensgaard & Roberts, 2003). Third, while participants represented various nations, these were limited to Europe. Thus, further research should explore stress and coping across other cultures and nationalities (e.g., Canadian, Japanese). Finally, this study focused on coping usage in elite alpine skiers in response to competition (e.g., an important race). However, stressors are also encountered in the organization that skiers operate (e.g., coach conflict), as well as in their personal lives (e.g., death of a loved one), and so future research should also explore how they cope with these stressors (Arnold & Fletcher, 2021).

To conclude, this study explored the coping strategies used by elite alpine skiers' during competition, whether coping strategy usage differed based on sex, nationality, or competitive level, and how these coping strategies linked to trait challenge and threat appraisals, perceived performance, and psychological well-being. Overall, elite alpine skiers used more task-oriented coping than distraction- or disengagement-oriented coping. Key differences also emerged based on sex (e.g., male skiers used more mental imagery), nationality (e.g., French skiers used less relaxation), and competitive level (e.g., higher-level skiers used more mental distraction). Moreover, greater distraction- and disengagement-oriented coping was linked to trait threat appraisals and poorer well-being. Finally, qualitative data revealed some unique coping strategies (e.g., inspiring others) that may benefit performance and well-being via challenge appraisals, but further research is required.

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