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I've Seen This, So I've Got This! Exploring the Use of Imagery and Self-Talk Within Action Sports Athletes

Patrick R. Young
Wingate University, p.young@wingate.edu

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Cover Page Footnote

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Wingate University

Abstract

The present study aimed to expand the current knowledge of psychological skills usage within athletes of action sports by exploring the use of imagery and self-talk within skateboarders and snowboarders. Skateboarders and snowboarders ($N = 74$) completed the Athletic Coping Skills Inventory (ACSI-28; Smith et al., 1995), the Self-Talk Questionnaire (S-TQ) for sports (Zervas et al., 2007), and the Sport Imagery Questionnaire (SIQ; Hall et al., 1998). Results indicated that participants scored significantly higher than reported norms of traditional athletes (Smith et al., 1995) on the coping with adversity and goal-setting/mental preparation subscales of the ACSI-28, and to a similar degree to traditional athletes on the remaining subscales. However, participants scored significantly lower on the total score of the ACSI-28 than previously reported action sports athletes (Young & Knight, 2014). Participants scored significantly higher than reported norms of traditional athletes on the cognitive functional and motivational functional subscales of the S-TQ. On the SIQ, participants scored significantly lower than reported norms for traditional athletes (Hall et al., 2005) on the MG-M subscale, while scoring similarly to reported norms on the CG, CS, MS, and MG-A subscales. Results of the present study confirm that action sports athletes utilize psychological skills to a degree similar to that of traditional athletes, and that skateboarders and snowboarders specifically include the use of imagery and self-talk within their psychological skills arsenal.

Keywords: psychological skills, imagery, self-talk, skateboarding, snowboarding

Introduction

The use and effectiveness of psychological skills by elite athletes is well documented within the sport psychology literature (Foster et al., 2015). Specifically, psychological skills have been reported to increase athletes' degrees of confidence, satisfaction within their sport, overall enjoyment in sport, and sport performance (Birrer & Morgan, 2010; Tod et al., 2011). Although the use of psychological skills by athletes within traditional sports has been established (Arvinen-Barrow et al., 2007; Greenspan & Feltz, 1989; Hardy et al., 2010; Theodorakis et al., 2000; Weinberg et al., 2005), there has only recently been inquiries into nonathlete populations such as military personnel (Blank et al., 2014), business executives (Fletcher, 2011; Ievleva & Terry, 2008), and performing artists (Filho et al., 2016). Additionally, investigations into the use of psychological skills by athletes within nontraditional sports, such as action sports (also referred to as risk, extreme, or lifestyle sports), are sparse (Young & Knight, 2014). With the increase in popularity of action sports venues such as the X Games and Dew Tour, and the inclusion of such action sports as skateboarding and snowboarding into the Olympic Games, an investigation into the degree to which athletes from these specific action sports utilize psychological skills is warranted.

Every sport contains some element of risk and the potential threat of injury. Traditional sports, such as American football, lacrosse, rugby, and hockey among others, report a high degree of injuries each year (National Safety Council [NSC], 2021). According to the NSC (2021), within the United States there were 222,086 injuries reported by football players, 55,469 by lacrosse and rugby players, and 32,982 by hockey players in 2021. The recent traumatic experience of NFL player Damar Hamlin, who suffered a cardiac arrest requiring the administration of cardiopulmonary resuscitation on the playing field after tackling an opposing player (Mather, 2021), has further contributed to the public's perception of the dangers of participating in traditional sports. However, only one American football player within the NFL has ever died on the playing field (Charles Hughes in 1971; Hille, 2021). Additionally, previous research by the National Center for Catastrophic Sport Injury Research has indicated a fatality rate of merely 0.095 per 100,000 participants of American football (Kucera et al., 2018).

In contrast, action sports, such as skateboarding, snowboarding, skydiving, and rock climbing among others, are sports that contain a continuous risk of severe injury or death (Cogan & Brown, 1999; Kerr, 1991). These sports also typically take

place in unpredictable, dynamic, and inherently dangerous environments (Young & Knight, 2014), which significantly increases the probability of injury to or death of action sport athletes as compared to athletes of traditional sports. According to the NSC, in 2021, there were 245,177 injuries sustained by skateboarding, scooter, and hoverboard athletes, 57,065 snowboarding injuries, and 18,220 surfing and waterskiing injuries (NSC, 2021). In terms of fatalities, research into the action sport of skydiving has suggested a rate of one death per 1,000 jumps, while the action sport of BASE jumping has reported a rate of one death in 60 jumps (Monasterio et al., 2012). Furthermore, the last few months of 2022 and early portion of 2023 witnessed four rock-climbing fatalities (Goldberg, 2022; Ireland, 2022; Yahoo!news, 2022) as well as two parachutes failing to open, resulting in serious injuries for a skydiver and BASE jumper (Massey, 2023; Yutig, 2023). The continuous threat of injury and death that action sport athletes expose themselves to while participating in their sports necessitates not only a high degree of physical skill and ability, but also a degree of psychological preparedness in order to increase the probability of sport success. Thus, the use of psychological skills would seem to be important in facilitating the execution of sport-related tasks by action sports athletes, and could potentially reduce the threat of injury or death while engaged in action sports.

Previous research into athletes of various action sports has identified that these athletes do utilize psychological skills (Young & Knight, 2014). However, two specific action sports that have received little attention in the sport psychology literature are skateboarding and snowboarding. The ability to reassure one's confidence via self-talk and visualize the successful execution of future tricks or maneuvers is essential in action sports. Although research on the use of imagery within action sports (e.g., rock climbing and skydiving) does exist (Barton, 1996; Boyd & Munroe, 2003; Fournier et al., 2008; Hardy & Callow, 1999; Jones et al., 2002), no studies have investigated the degree to which self-talk is utilized by action sports athletes. In fact, researchers have called for an investigation into the use of self-talk within risk-inherent sports, such as action sports (Zervas et al., 2007), suggesting that this is an area of interest.

Therefore, the purpose of the current investigation was to confirm the previously reported use of psychological skills by action sports athletes. More specifically, this study sought to extend upon the existent knowledge of imagery use by action sports athletes by identifying whether skateboarders and snowboarders specifically engage in imagery use and utilize self-talk. Finally, the current study aimed to determine the degree to which skateboarders' and snowboarders' usage of imagery and self-talk is equivalent to that of athletes of traditional sports. As such, the following review will discuss self-talk and imagery, and their impact on psychological variables such as confidence.

Self-Talk in Sport

According to Hardy (2006), self-talk can best be conceptualized as dynamic, multidimensional self-state-ments, which provide instructional and motivational content. Instructional self-talk, also referred to as cognitive self-talk, addresses aspects such as the execution and accuracy of sport tasks and the development of game-play strategies (Hardy, 2006; Zervas et al., 2007). Motivational self-talk can provide athletes with encouragement and confidence (Zervas et al., 2007), as well as help them regulate arousal levels (Hardy, 2006).

Within sport, confidence is essential for an enhanced performance (Feltz, 2007). Previous research within action sports has suggested that confidence, or more specifically self-efficacy, is a characteristic of action sports athletes (Celsi et al., 1993; Diehm & Armatas, 2004; Llewellyn & Sanchez, 2008; Llewellyn et al., 2008) and can be a determining factor as to whether an athlete chooses to participate (Slanger & Rudestam, 1997). An important source of confidence lies within one's self-talk or the inner dialog one has with oneself. Identifying the frequency and nature of self-talk engaged in by action sports athletes could provide further insight regarding the impact it has on variables such as confidence, within these athletes.

When athletes of any sport hesitate or act passively, they often put themselves at risk. Action sports is no exception; failing to commit to ollie (i.e., jump with one's skateboard or snowboard) down a set of stairs, onto a handrail, or over a gap (i.e., a physical distance that typically transitions from high to low ground), among other obstacles can put athletes in danger of not only failing to land their trick or maneuver, but also of seriously injuring themselves. As such, it is not uncommon to hear or see action sports athletes "talking to themselves" prior to attempting a trick or maneuver, whether it be as a motivational tactic or a method of increasing their confidence to "stick" or land the trick.

Action sports such as skateboarding and snowboarding are primarily individual in nature, and as such, the athletes' inner voice is often the only voice they hear while participating. Thus, the motivational and instructional forms of self-talk would seem to provide value for these types of action sports athletes. Athletes can remind themselves of previous performance accomplishments and use self-talk cue words such as "I got this" to help them maintain or increase their confidence to execute the task at hand. Additionally, the use of self-talk phrases or statements could aid in motivating or "hyping" up athletes so that they feel confident enough to "send it" or commit to landing a trick or maneuver (i.e., executing the task).

Research within traditional sports has indicated that the use of instructional self-talk by athletes can increase performance (Zetou et al., 2014). Within action sports, utilizing instructional self-talk could help athletes attend to

specific tactical aspects and technical instructions of their sport task, similar to that of traditional sport athletes. For example, by bringing one's attention to "landing bolts" (i.e., landing one's trick or maneuver perfectly), the need to maintain their balance on their board, remain in their stance, rotate their head and or shoulders, or kick out or scoop their foot in a particular manner could increase the probability of the athlete successfully landing their trick or maneuver. This is similar to the instructional self-talk a basketball player might use to bring their attention to the "snapping of the wrist" when shooting or a football player being mindful to have a "quick release" off of the line of scrimmage. Although it is likely that action sport athletes utilize instructional self-talk, it has yet to be empirically demonstrated within the sport psychology literature. Additionally, although traditional sport does pose some threat of injury, as previously mentioned action sports maintain a continuous threat of injury and or death (Cogan & Brown, 1999; Kerr, 1991). This continuous threat suggests that bringing one's attention to the tactical and technical aspects of task execution could potentially decrease the probability of a negative consequence (i.e., injury or death).

The use of instructional self-talk helps athletes eliminate distractions and narrow their focus to the important sport-related elements within their environment. Even though traditional sporting events take place in static and controlled environments (e.g., arenas, stadiums, etc.), distractions still occur that can impact performance. For athletes of traditional sports, these distractions can include crowd noise, referee/umpire decisions, the presence of important spectators (e.g., scouts, coaches, significant others, etc.), and the weather among others (Galanis et al., 2017). By utilizing instructional self-talk, traditional athletes can focus their attention away from these distractions, back to the relevant, sport-related tasks. This in turn can help increase sport performance (Galanis et al., 2017; Hardy, 2006).

Conversely, action sports primarily take place outdoors in unpredictable and dynamic environments. Therefore, external distractions are a constant threat to maintaining one's attentional focus, and thus the use of such self-talk would seem advantageous for action sport athletes. For example, "street" skating in skateboarding often takes place in public places where pedestrians and moving vehicles are present. Thus, being able to instruct oneself to attend to the important and relevant cues, while ignoring nonrelevant environmental stimuli would be beneficial to performance. The same would be true for snowboarders, who utilize public ski resorts that contain other skiers and snowboarders of varying skill levels, as well as numerous nonsport-related obstacles (e.g., ski-lifts, rocks, ski patrol, etc.). As sport confidence, and subsequently sport performance, is impacted by what athletes think about, especially in regards to what may happen to them while participating in their sport (Vealey, 2001), examining the use of self-talk

within athletes of action sports could extend the understanding of this psychological skill within nontraditional sports.

Imagery in Sport

Another manner in which athletes can increase their confidence in sport is via the use of imagery. Imagery or visualization as it is sometimes referred to has been defined as the "mental creation or recreation of sensory experiences that appear to the person imagining them to be similar to the actual event" (Morris et al., 2005, p. 4). Previous research suggests that imagery is both a popular and effective strategy used by athletes to increase performance in sport (Cummings & Ramsy, 2009; Morris et al., 2005). Similar to self-talk, imagery contains both cognitive (i.e., specific and general) and motivational (i.e., specific and general) aspects (Paivio, 1985). While cognitive specific (CS) and cognitive general (CG) imagery integrate similar sport elements to instructional self-talk (e.g., technical skills, cognitive strategies and routines), motivational general (MG) imagery is further refined. Specifically, motivational general-mastery (MG-M) imagery concerns images that can impact one's level of confidence, degree of mental toughness, and resilience, while the motivational general-arousal (MG-A) centers on images regarding arousal and affect (Cummings & Williams, 2013). In terms of action sports, the ability to maintain or build confidence, develop resilience in order to overcome failure, and bring attention to specific skills would provide endless opportunities for athletes to practice, experiment, and execute tasks in their mind, prior to actually attempting to land a trick or maneuver.

In support, professional skateboarder Aaron "Jaws" Homoki, who is known for skating large stair sets (e.g., the Lyon 25-stair set in France, the biggest drop recorded in skateboarding history with a height of 14′ 9″ and a length of 22; Coote, 2016; Zarley, 2016) and gaps, has indirectly noted how using imagery can be an effective tool.

> I don't picture myself rolling away, I picture myself trying it. But then once I stick it, I can get the feeling of how it is gonna feel to roll away, and then the pictures of rolling away start happening the closer I get. The imagination starts building from trying it, and then it slowly builds to landing it. (Komma & Dobija-Nootens, 2019, para. 31)

It is clear from Jaws' statement that being able to imagine the entire process of mentally preparing and landing a trick can help boost confidence and trust in one's ability. Considering that each and every attempt by a skateboarder or snowboarder to land a trick or maneuver is physically demanding and could potentially result in injury or death, being able to mentally practice such scenarios is advantageous.

Engaging in imagery and gaining "mental reps" provides athletes of action sports the ability to practice a trick a hundred, if not thousands, of times, and create a "mental blueprint" on how to land it successfully, prior to physically attempting it. In the case of Jaws, during his first attempts at the Lyon 25, he tore his medial collateral ligament and was sidelined for six months (Zarley, 2016). When an unsuccessful attempt has the possibility to lead to such negative outcomes, being able to mentally rehearse becomes an extremely useful tool for athletes to have in their mental toolbox.

The Present Study

It is clear that both self-talk and imagery can positively impact one's degree of confidence in traditional sport. As confidence increases, so too does performance. As participation and success in action sports necessitate a high degree of confidence as well, it seems reasonable to postulate that athletes of action sports would engage in the use of self-talk and imagery to mentally prepare themselves to successfully land tricks and maneuvers within their sports. The benefits of doing so would not only seem to impact confidence, but also one's ability to achieve the desired amount of motivation necessary to engage in a sport, which could possibly result in serious injury and or death.

Thus, the purpose of this investigation was to explore the use of psychological skills in general, and more specifically self-talk and imagery, by athletes who participate within the action sports of skateboarding and snowboarding. As such, it was hypothesized (H_1) that skateboarders and snowboarders would report scores on a measure of psychological skills (as measured by ACSI-28; Smith et al., 1995) that were similar to or higher than athletes of other action sports (i.e., not skateboarding and snowboarding). It was also hypothesized (H_2) that skateboarders and snowboarders would report usage of psychological skills that was similar to or higher than athletes of traditional sports. Additionally, it was hypothesized (H_3) that skateboarders and snowboarders would report scores on a measure of self-talk (S-TQ; Zervas et al., 2007) that were similar to or higher than athletes of traditional sports. Finally, as imagery usage has yet to be investigated within athletes of action sports, it was hypothesized (H_4) that skateboarders and snowboarders would report scores on a measure of imagery use in sport (SIQ; Hall et al., 1998) that were similar to or higher than athletes of traditional sports.

Method

Participants

Participants were a purposive sample of skateboard and snowboard athletes who were recruited on site at various skateboard parks and ski resort locations surrounding a southeastern US state. Recruitment also took place via online social media websites (i.e., Twitter and Facebook). Being an active skateboarder and or snowboarder was the primary criterion for inclusion. Participants who did not provide data or did not complete the SIQ ($n = 12$) or the ACSI-28 ($n = 17$), were excluded from the data analyses regarding these measures.

Participants ($N = 75$) included males ($n = 63$) and females ($n = 12$) ranging in age from 18 to 53 years ($M = 26$, SD $= 9$), who self-identified as either a skateboarder ($n = 33$) or a snowboarder ($n = 42$). The majority of the sample (65.3%) indicated having participated in their action sport for more than five years, while 21.3% reported between one and four years of participation. A small portion of the sample (13.3%) reported between one month and one year of participation. Nearly 75% of the sample reported engaging in their sport between one and 10 days per month, while the remaining 25% reported 11 or more days per month. Additionally, nearly the entire sample (97.3%) reported participation in at least one other action sport besides skateboarding or snowboarding.

Measures

Demographic and Action Sport Experience Questionnaire
This questionnaire assessed participants' demographic characteristics such as age, sex, and whether the participant engaged in either skateboarding or snowboarding. Participants also responded to questions regarding their frequency of skateboarding and or snowboarding, and whether they had ever participated in additional action sports (e.g., rock climbing, skydiving, etc.). Participants' responses to the question regarding their current participation in skateboarding or snowboarding were used as a screening tool to assess inclusion within the study.

Athletic Coping Skills Inventory (ACSI-28)
The ACSI-28 is a measure of various psychological coping skills. The original scale contains seven sport-specific subscales which include coping with adversity, peaking under pressure, goal-setting/mental preparation, concentration, freedom from worry, confidence and achievement motivation, and coachability. There are four items which represent each of the seven subscales. The response format for the ACSI-28 consists of a 4-point Likert scale that includes *almost never* (1), *sometimes* (2), *often* (3), and *almost always* (4). The individual subscales represent different coping skills. A higher score on a subscale or the total scale represents a higher degree of psychological coping. Acceptable degrees of test–retest reliability and discriminant and convergent validity have been reported for the ACSI-28 (Smith et al., 1995). The current study used a modified version of the ACSI-28 (Smith et al., 1995), which was previously tailored for

use with athletes of action sports (Young & Knight, 2014). As skateboarding and snowboarding rarely involve formal coaching, the subscale for coachability was removed from the ACSI-28. Thus, the modified version included only 24 items. Furthermore, as these action sports do not involve "games," seven item stems were modified from "playing in sports" to "participating in sport." A more detailed account of the modifications made to the ACSI-28 for athletes of action sports is given by Young and Knight (2014).

Self-Talk Questionnaire for Sports (S-TQ)

The S-TQ assesses athletes' degree and frequency of self-talk during an important sport attempt or competition (Zervas et al., 2007). There is a total of 11 items on the S-TQ, which represent the motivational and cognitive functions of self-talk. Participants are asked to report "how often" they have used self-talk in various sport situations. The response format consists of a 5-point Likert scale that ranges from *never* (1) to *always* (5). High scores reflect an increased use of self-talk. Test–retest reliability, convergent validity, and divergent validity have been reported as acceptable for the S-TQ (Zervas et al., 2007).

The current study used a modified version of the S-TQ (Zervas et al., 2007). Specifically, the stems for item one and two were adapted to better reflect action sports. Within skateboarding and snowboarding, the phrase "an attempt" is often used to indicate whether an athlete has attempted to perform a particular trick or maneuver on their skateboard or snowboard, while the phrase "a line" is used to determine whether an athlete has tried to complete a sequence of tricks or maneuvers consecutively, without making a mistake or error. Thus, for item one, the original statement of "I talk to myself in order to be able to concentrate more fully on the competition" was modified to "I talk to myself in order to be able to concentrate more fully on the attempt, line, or event." For item two, the original statement of "I talk to myself about technical elements of the competition" was modified to "I talk to myself about technical elements of the attempt, line, or event." The remaining nine items remained in their original format.

Sport Imagery Questionnaire (SIQ)

The SIQ measures the frequency of an individual's imagery use within a sport context (Hall et al., 1998). There is a total of 30 items, which correspond to specific aspects of imagery. These aspects are represented by five subscales, which include motivational specific (MS), motivational general-arousal (MG-A), motivational general-mastery (MG-M), cognitive specific (CS), and cognitive general (CG). The response format for the SIQ utilizes a 7-point Likert scale that ranges from *rarely* (1), through *sometimes* (3), to *always* (7). Higher scores indicate a greater frequency of imagery use. As indicated by previous research (Hall et al., 1998, 2005; Hallman & Munroe-Chandler, 2009), the SIQ has been found to have an acceptable degree of predictive and content validity, as well as internal reliability among the subscales.

The current study utilized a modified version of the SIQ (Hall et al., 1998), in which the stems of 13 items were modified to better reflect the sport experiences of athletes of action sports. For example, the phrase "I image the atmosphere of winning a championship" was changed to "I image the atmosphere of a successful attempt," and "I image alternative strategies in case my event/game plan fails" was changed to "I image alternative strategies in case my attempt/line plan fails." The remaining 17 items were left unchanged, as they are applicable to the experiences of athletes within action sports.

Procedure

The current study used a sampling method similar to that of Young and Knight (2014). This included the use of both a paper and pencil questionnaire packet and the use of an online questionnaire packet which was delivered via Qualtrics. After receiving approval from the institutional review board, prospective participants were approached directly by the researchers at various physical locations (e.g., skateboard parks and ski resorts). Flyers with a QR code, a link to the online survey version, and a description of the study were also posted at physical locations and across the campus of a small, private southeastern university. Additionally, researchers utilized online social media websites (i.e., Twitter and Facebook) by tweeting and sharing the link to the online questionnaire to various skateboard and snowboard companies, publications, and professional skateboard and snowboard athletes. Both versions of the questionnaire were preceded by a prompt for participant consent. Upon receiving consent, participants were first administered the demographic and action sport experience questionnaire to ensure that the inclusion criteria were met. After completing this questionnaire, participants were presented with the modified version of the ACIS-28, the S-TQ, and finally the SIQ. Upon completion of the four questionnaires, participants were provided with a standardized debriefing script and thanked for their participation.

Statistical Analysis

Frequencies were calculated for the amount of action sport participation in general and per month, as well as the degree to which the current sample had participated in action sports other than skateboarding or snowboarding. Descriptive statistics were also calculated for participants' scores, by action sport, on each of the six subscales and the total score of the modified ACSI-28,

on the S-TQ total score, and on each of the five subscales of the SIQ.

An independent samples *t*-test was conducted to examine any differences between skateboarders and snowboarders on the total score on the modified ACSI-28 (exploratory analysis). Additional independent samples *t*-tests were conducted to examine any differences between skateboarders and snowboarders on the two subscales and total score on the S-TQ (exploratory analyses), and the five subscales of the SIQ (exploratory analyses).

An independent samples *t*-test was conducted to examine if the current sample of skateboarders and snowboarders reported scores on the ACSI-28 similar to or higher than previously reported for action sports athletes (H_1). A one-sample *t*-test was conducted to compare the results of the current sample verses normative data from athletes of traditional sports on the six subscales of the modified ACSI-28 (H_2). Two additional one-sample *t*-tests were conducted to compare the results of the current sample verses normative data from athletes of traditional sports on the S-TQ total score (H_3) and the five subscales of the SIQ (H_4).

Finally, a series of *t*-tests were conducted on the ACSI-28, S-TQ total score, and each of the five subscales of the SIQ to explore the impact of participant sex on the use of psychological skills.

Results

Descriptive Statistics

Descriptive statistics for the modified ACSI-28 total score and subscales for both skateboarders and snowboarders are presented in Table 1. Descriptive statistics for the S-TQ total score and subscales for both skateboarders and snowboarders are presented in Table 2. Finally, the descriptive statistics for the SIQ subscales for both skateboarders and snowboarders are presented in Table 3.

Inferential Statistics

Use of Psychological Skills by Action Sports Athletes

An independent samples *t*-test was conducted on the modified ACSI-28 to determine if a significant difference existed between skateboarders and snowboarders on the total score. As no significant difference was observed between skateboarders and snowboarders on the total score, $t(59) = -0.04$, $p = 0.96$, scores for all participants were combined to use for further analysis regarding the ACSI-28 and previously reported scores by athletes of action sports.

It was hypothesized that skateboarders and snowboarders would display scores on the ACSI-28 that were similar to or higher than reported norms for athletes of action sports. A one-sample *t*-test was conducted comparing the total score of the current sample with the total score ($M = 45.63$) from a mixture of action sports athletes found within the literature (Young & Knight, 2014). Results indicated that the current sample reported a significantly lower degree of coping skills, $t(60) = -3.20$, $p = 0.001$, than previously reported action sport athletes, and thus the hypothesis was rejected.

It was also hypothesized that skateboarders and snowboarders would display scores on the ACSI-28 that were similar to or higher than reported norms for athletes from traditional sports. A one-sample *t*-test was conducted comparing each of the subscale scores of the current study's participants on the ACIS-28 with reported norms of high school varsity athletes from various traditional sports found within the literature (Smith et al., 1995). Results indicated that the current sample scored significantly higher on the coping with adversity, $t(60) = 2.7$, $p < 0.01$, and goal-setting/mental preparation, $t(61) = 6.36$, $p = 0.001$, subscales. The current sample also scored similar to the traditional athletes on the subscales for concentration, $t(61) = 1.46$, $p = 0.15$, confidence, $t(61) = 0.78$, $p = 0.44$, peaking under pressure, $t(61) = 1.52$, $p = 0.13$, and freedom from worry, $t(61) = 0.12$, $p = 0.91$. Therefore, the hypothesis was confirmed.

Table 1
ACSI-28 by subscale by action sport.

	Skateboarders		Snowboarders		Total	
	(*n* = 27)		(*n* = 34)		(*N* = 61)	
	M	**SD**	**M**	**SD**	**M**	**SD**
Coping with adversity	6.74	1.40	7.00	2.09	6.89*	1.80
Peaking under pressure	7.14	2.41	6.65	2.46	6.87	2.43
Goal-setting/mental preparation	7.11	1.77	6.91	1.99	7.00*	1.88
Concentration	7.32	1.83	7.41	1.97	7.37	1.89
Freedom from worry	6.14	2.45	6.79	2.75	6.50	2.62
Confidence/motivation	8.18	1.61	7.91	1.85	8.03	1.74
Total score	42.59	7.77	42.68	7.01	42.64**	7.30

*Significantly higher than reported norms for traditional sports athletes, $p < 0.01$. **Significantly lower than reported norms for action sports athletes, $p = 0.001$.

Table 2
S-TQ by subscale by action sport.

	Skateboarders		Snowboarders		Total	
	($n = 33$)		($n = 41$)		($N = 74$)	
	M	**SD**	**M**	**SD**	**M**	**SD**
Cognitive function	13.48	3.80	12.76	3.55	13.08	3.66
Motivational function	24.70	5.68	22.85	6.22	23.68	6.02
Total score	38.18	8.58	35.80	8.93	36.88*	8.79

*Significantly higher than reported norms for traditional sports athletes, $p = 0.001$.

Table 3
SIQ by subscale by action sport.

	Skateboarders		Snowboarders		Total	
	($n = 33$)		($n = 36$)		($N = 67$)	
	M	**SD**	**M**	**SD**	**M**	**SD**
Cognitive specific	4.72	1.03	4.40	1.31	4.55	1.19
Cognitive general	4.85	0.98	4.54	1.06	4.68***	1.03
Motivational specific	5.18*	1.09	4.38	1.21	4.74	1.22
Motivational general arousal	4.87	0.96	4.38	1.21	4.61****	1.12
Motivational general mastery	4.95	0.91	4.39	1.13	4.65**	1.06

*Significantly higher than current sample of snowboarders, $p < 0.05$. **Significantly lower than reported norms for traditional sports athletes, $p < 0.05$.
***Lower than reported norms for traditional sports athletes, $p = 0.03$. ****Lower than reported norms for traditional sports athletes, $p = 0.02$.

The impact of participant sex was also examined on each of the modified ACSI-28 subscales and total score. Females scored significantly higher on the worry subscale, $t(60) = -3.65$, $p = 0.001$, then did males. The difference between males and females on the coping subscale approached a level of significance, with the score for males being slightly higher, $t(59) = 1.95$, $p = 0.056$. Scores on the remaining subscales and total score did not differ significantly between male and female participants.

Use of Self-Talk by Action Sports Athletes

A series of independent samples *t*-tests were conducted on the S-TQ subscales and total score to determine any significant difference between skateboarders and snowboarders. To control for any potential type 1 errors, a Bonferroni correction was conducted. Based on the resultant adjustment ($\alpha \leq 0.016$), no significant differences between skateboarders and snowboarders were observed on either the cognitive function, $t(73) = 0.85$, $p = 0.4$, or motivation function, $t(72) = 1.32$, $p = 0.19$ subscales, nor the total score, $t(72) = 1.15$, $p = 0.26$.

As no significant difference existed between skateboarders and snowboarders on any aspect of the S-TQ, the total scores on the S-TQ from both groups of participants were combined ($M = 36.88$, SD $= 8.79$). This combined total score on the S-TQ was then compared to reported normative data of traditional athletes on the S-TQ. Although normative data on the S-TQ are sparse (Hardy et al., 2018), a study by Georgakaki and Karasidou (2017) provided a baseline total score ($M = 28.71$, SD $= 7.38$) for athletes from a traditional sport (i.e., competitive swimming).

It was hypothesized that skateboarders and snowboarders would display scores on the S-TQ that were similar to or higher than reported norms for athletes of traditional sports. Results of a one-sample *t*-test indicated that the current sample of action sport athletes scored significantly higher on the S-TQ total score, $t(73) = 7.99$, $p = 0.001$, than the traditional sports athletes. As such, the hypothesis was confirmed.

The impact of participant sex was also examined on each of the S-TQ subscales and total score. No significant differences were observed on any of the S-TQ subscales or on the total score between male and female participants.

Use of Imagery by Action Sport Athletes

A series of independent samples *t*-tests were conducted on the various subscales of the SIQ to determine if significant differences existed on imagery use between skateboarders and snowboarders. To control for any potential type 1 errors, a Bonferroni correction was conducted. Based on the resultant adjustment ($\alpha \leq 0.01$), skateboarders scored significantly higher on the MS subscale, $t(64) = 2.78$, $p = 0.01$. It should be noted that skateboarders did report higher levels of imagery on the MG-M subscale, $t(64) = 2.21$, $p = 0.03$; however, this difference was not statistically significant after factoring in the Bonferroni adjustment. No significant differences were observed on the CS, $t(64) = 1.12$, $p = 0.27$, the CG,

$t(65) = 1.27, p = 0.21$, or the MG-A, $t(65) = 1.8, p = 0.08$ subscales.

It was hypothesized that skateboarders and snowboarders would display scores on the SIQ that were similar to or higher than reported norms for athletes of traditional sports. As no significant differences were observed on three of the five SIQ subscales, the scores of both skateboarders and snowboarders were combined. A series of one-sample *t*-tests were then conducted to compare the scores of the current sample on the subscales of the SIQ with normative data (CS: $M = 4.96$, SD = 1.11; CG: $M = 4.80$, SD = 1.07; MS: $M = 4.50$, SD = 1.31; MG-M: $M = 5.44$, SD = 1.17; MG-A: $M = 4.64$, SD = 1.05) collected on intercollegiate athletes from traditional sports found within the literature (Hall et al., 1998). Based on the Bonferroni adjustment, the current sample scored significantly lower on the MG-M subscale, $t(65) = -6.03, p = 0.001$. It should be noted that the current sample did score lower on the CG, $t(66) = -2.20, p = 0.03$, and MG-A, $t(66) = -2.41, p = 0.02$, subscales; however, this difference was not statistically significant after factoring in the Bonferroni adjustment. No significant difference was observed on the CS, $t(65) = -1.71, p = 0.09$, or MS, $t(65) = 1.64$, $p = 0.11$, subscales. As such, the hypothesis was only partially supported.

The impact of participant sex was also examined on each of the SIQ subscales. No significant differences were observed on any of SIQ subscales between male and female participants.

Discussion

The purpose of the present study was to further examine the use of psychological skills within athletes of action sports. Specifically, this study sought to shed light on psychological skills usage within the under-represented action sports of skateboarding and snowboarding, and compare their usage with normative data from the sport psychology literature of athletes from both traditional and action sports. Results confirm that the current sample of skateboarders and snowboarders utilize psychological skills to a similar degree, or more than in some instances, as previously reported athletes from traditional sports, yet slightly less so than previously reported action sports athletes. Thus, the current study extends on the existing knowledge of psychological skills use by athletes of action sports and provides insight into the depth of their use by skateboarders and snowboarders specifically.

These findings suggest that psychological skills provide value to the action sport experience of skateboarders and snowboarders. Identifying that these particular action sports athletes possess skills relating to coping with adversity and goal-setting/mental preparation to a higher degree than athletes of traditional sports is also relevant. More specifically, these findings suggest that the inherent risk and or danger within the skateboarding and snowboarding environments may necessitate that athletes possess above average coping skills to overcome any adverse effects of engaging in their respective action sports, as well as an enhanced degree of task preparation and goal-setting to increase the probability of successfully landing their tricks or maneuvers. As such, bringing awareness of the potential benefit of psychological skills use within action sports could aid in the skill development and avoidance of risk of current and future skateboarding and snowboarding athletes.

Action sports are by definition sports that contain a consistent threat of injury and or death (Cogan & Brown, 1999). The complexity of skateboarding and snowboarding tricks and maneuvers, in addition to the unpredictable nature of their sport environments creates a scenario in which it would be beneficial for athletes to possess the mental tools necessary to overcome such challenges and adversity. Although coping skills may not directly translate to an increased performance within action sports, they do provide tools and resources to help one create a more optimistic mindset regarding the likelihood of positive sport outcomes while participating in action sports.

The use of goal-setting and mental preparation however is directly linked to increases in sport performance. The ability to set goals has repeatedly been found to facilitate growth and performance (Latham & Locke, 2007). Additionally, the use of process goals, that emphasize the development of task-relevant strategies (e.g., specific skills or techniques), can be particularly useful when attempting to learn a new and challenging task (Jeong et al., 2021). By identifying a long-term outcome goal of successfully landing a trick or maneuver, such as a 360 flip (a 360° flip of the board) on a skateboard or a backside 180 rewind (rotating 180° and then reversing direction at the last minute) in snowboarding, and then breaking it down into more short-term, attainable process and performance goals, skateboarders and snowboarders can begin progressing within their sport. With the attainment of these smaller goals, such as learning to ollie, then kick-flip, and then varial flip (a 180° flip of the board), a skateboarder can build their confidence and "hype" themselves up to continue the push towards ultimately landing the 360 flip. Although these types of goal-setting strategies are commonly taught within traditional sports, action sports such as skateboarding and snowboarding rarely, if ever, have coaches or formal instructions (Seifert & Hedderson, 2009) that would include such participatively set or assigned goals. Thus, the identification that the current sample of skateboarders and snowboarders perhaps utilize self-set goals is noteworthy for aspiring action sport athletes and potential coaches or consultants working with such athletes.

In support, previous research (Boyd, 2019) investigating goal orientation within skateboarding has suggested that

skateboarders tend to reflect a high degree of task orientation. Individuals high in task orientation tend to adopt an incremental approach towards improving and achieving mastery, and thus often set process goals to facilitate growth (Weinberg & Gould, 2019). Within skateboarding, the ability to master a trick or maneuver may require hours, days, and weeks of practice (Boyd, 2019). As such, self-setting process goals, which empha-size attention to detail, continued effort, and persistence, would seem to be advantageous in mastering complex movements and progressing within skateboarding. As skateboarding shares many characteristics with snowboard-ing (Boyd, 2019), it is reasonable to suggest that snowboarders would also adopt a task orientation, which could account for the degree of goal-setting/mental preparation within the current sample of snowboarders.

Although the current sample scored at or above the norms reported by athletes of traditional sports, they reported a significantly lower degree of psychological skills usage than that of previously reported action sports athletes. It is possible that skateboarding and snowboard-ing environments, although risky, are not perceived by skateboarders and snowboarders to be as dangerous as other action sports such as rock climbing, skydiving, and wingsuit flying among others. Reports of death and serious injury are often associated with the athletes of these particular action sports (Annapurna, 2022; Purtell, 2019; Sachon, 2022), while skateboarders' and snowboarders' injuries, although often serious, do not frequently result in death. Perhaps the salient reality that any slight miscalcula-tion could result in death within rock climbing, skydiving, and wingsuit flying promotes a greater necessity for psychological skills usage by athletes within these specific action sports. As such, it would seem reasonable to postulate that skateboarders and snowboarders may report a lower usage of such general psychological skills.

This sample of skateboarders and snowboarders did, however, indicate a significantly higher degree of self-talk than previously reported traditional sports athletes. As self-talk is a primary source of confidence, it seems reasonable that athletes of action sports would utilize this psycholo-gical skill to enhance their self-belief to successfully navigate any potential elements of risk inherent within their sports. Instructional self-talk specifically can increase the likelihood of executing a sport task (Hardy, 2006). As the current sample scored moderately high on the cognitive function subscale of the S-TQ, which assesses one's degree of instructional self-talk, it is reasonable to believe that engaging in such self-talk would be beneficial to increasing these athletes' confidence and consequently their sport performance.

Additionally, as the majority of skateboarding and snowboarding tricks and maneuvers are challenging and complex, it is reasonable to suggest that an athlete would need to possess a high degree of motivation in order to consider attempting or, more importantly, committing to executing them. Engaging in self-talk strategies to "hype" oneself up or to "send it" would seem to be an effective way of committing to a potentially risky action sport task. In support, the current sample scored moderately high on the motivational function subscale of the S-TQ. Within traditional sports, making a mistake or committing an error rarely results in serious injury or death; this however is not the case with action sports. Thus, within skateboarding and snowboarding, an athlete utilizing their inner voice to sufficiently motivate themselves to "send it" would be beneficial, in regards both to ensuring the requisite drive to perform their trick and also to avoid any adverse physical consequence.

Imagery is also a source of confidence and motivation for athletes, as it can help athletes mentally prepare, rehearse sport-related tasks, and provide athletes with a "mental blueprint" to successfully accomplish their sport tasks. As previously mentioned, within skateboarding and snowboarding, it is common for athletes to be provided with a limited amount of practice on high-stakes obstacles and jumps (e.g., an ollie down a large stair set in a public place or a first descent down a backcountry trail). In some cases, these athletes will not have any opportunity to physically rehearse or practice, which could negatively impact their degree of confidence and motivation to attempt a trick. Furthermore, as the consequences of failing to land a trick or maneuver in action sports are often physically demanding (e.g., resulting in injury), having the ability to mentally rehearse tricks and create successful outcomes provides action sports athletes with unlimited mental reps to practice, prepare, and strategize.

Therefore, it would seem that action sports athletes, such as skateboarders and snowboarders, would especially benefit from the use of imagery. Although the current sample scored lower on CG, MG-M, and MG-A than athletes from traditional sports, they did report similar usage of both CS and MS imagery. As mentioned, this type of imagery would seem to be advantageous for athletes of action sports as it could help increase confidence in their abilities and create the mindset and drive necessary to "send it" (i.e., motivational specific imagery) and "stomp their landing" (i.e., cognitive specific imagery) (e.g., successfully execute their trick or maneuver). The use of this type of imagery would also be associated with a form of mental preparation, which, as previously mentioned, is an aspect of psychological skills that skateboarders and snowboarders engage in.

Conclusion

It is clear that psychological skills benefit sport performance, especially in regard to building and main-taining confidence, and motivating athletes to participate. This is true whether the sport in question is traditional in

nature or an action sport. In regard to the current study, the results add to the limited existing literature on the use of psychological skills by action sports athletes, by demonstrating that skateboarders and snowboarders utilize these skills. These findings also provide preliminary support that self-talk and imagery are especially relevant to these specific action sports athletes, and potentially to action sports athletes in general.

Limitations and Future Directions

As the current study was descriptive in nature, any explanation of the utility of the psychological skills reported by participants of the current study must be interpreted cautiously. A previous investigation into the use of psychological skills by athletes of action sports (Young & Knight, 2014) noted that the ACSI-28 fails to encapsulate all forms of psychological skills. The current study attempted to mitigate this limitation by also investigating the use of self-talk and imagery by athletes of action sports. Although this extends the knowledge of psychological skills usage by these athletes, other psychological skills (e.g., arousal regulation, mindfulness, among others) remain untested within this population. Additionally, as participants were not asked to provide information regarding ethnicity or race, and the sample was heavily skewed towards male athletes, caution should be used when considering the degree to which these findings represent the majority of action sports athletes. Finally, it should be reiterated that the current sample of action sports athletes were skateboarders and snowboarders. Although the overwhelming majority reported participating in other types of action sports, the results of the current study should be interpreted only within the lens of psychological skills usage by skateboarders and snowboarders specifically, and not by action sports athletes in general.

Future research should continue to explore the use of psychological skills within athletes of action sports, and examine the use of self-talk and imagery specifically. Additionally, an investigation into the use of other psychological skills, such as arousal regulation and mindfulness among others, within athletes of action sports is also warranted. Furthermore, future research should consider investigating other demographic variables, such as race, ethnicity, and perhaps gender identity, which could provide more context regarding the demographics of athletes who participate within action sports and utilize psychological skills.

Acknowledgments

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