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THE RELATIONSHIP BETWEEN PASSION AND IMAGERY USE IN COMPETITIVE YOUTH GYMNASTICS

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Original article

Abstract

The purpose of the present study was to examine the relationship between passion and imagery use in competitive youth gymnastics. The participants included 245 (male, $n = 10$; female, $n = 235$) gymnasts between the ages of 7-16 years participating in women's artistic gymnastics ($n = 221$), men's artistic gymnastics ($n = 7$), as well as trampoline and tumbling ($n = 17$). Athletes completed questionnaires measuring the frequency of imagery use and their passion towards the sport of competitive gymnastics. A series of multiple regression analyses indicated that both harmonious and obsessive passion were significantly related to all five types of imagery. More specifically obsessive passion was most strongly associated with four of the five types of imagery (CS, CG, MS, and MG-A), and harmonious passion was most strongly associated with one of the five types of imagery (MG-M). Results and implications of passion and imagery use in competitive youth sport are discussed.

Keywords: *imagery, passion, youth sport, gymnastics.*

INTRODUCTION

Competitive youth gymnastics begins at an early age, with girls reaching their gymnastics peak earlier than boys. It is not uncommon to see gymnasts engage in intensive physical training (20-30 hours per week) and psychological skills training as a result of their devotion to the sport (Cogan, 2006). In addition to the several hours of daily training (most days of the week), competitive gymnasts are expected to compete throughout the season, including qualifying competitions with the goal of making it to Provincial or National championships. As a result, families often make sacrifices including family activities, transportation to and from the gym, as well as costs of training and uniforms (Cogan & Vidmar, 2000). Thus, competitive youth gymnasts need to be very passionate about

the sport in order to allow for sustained engagement.

Philosophers have suggested being passionate about something is what it means to be human (Vallerand, 2012), and it is what makes people's lives most worth living (Vallerand, 2008). Philosophers suggest that without passion for activities, people would lack meaning in their lives (Curran, Hill, Appleton, Vallerand, & Standage, 2015). Thus, passion for a sport/activity is important to understand as it guides behaviour and provides motivation for sustained engagement. Passion can be defined as a strong inclination toward a personally meaningful, self-defining, and highly valued activity that one loves, finds important, and to which substantial time

and energy is invested (Vallerand et al., 2003; Vallerand, 2012). Passion can provide an autonomous, balanced, purposeful life by influencing motivation towards task-engagement and satisfying basic psychological needs. However, passion can manifest itself in compulsive and rigid behaviours whereby one feels controlled by the activity. The Dualistic Model of Passion (Vallerand et al., 2003; Vallerand, 2008) advances two types of passion that are non-dichotomous. Harmonious passion is thought to emerge from an autonomous full behavioural integration of an activity into one's identity. Harmonious passion is experienced through an activity in which one participates because it reflects what they like about themselves and complements other activities in their life. Obsessive passion reflects rigid persistence to engage in an activity because they cannot help themselves. This occurs when the activity becomes controlling over the person and can cause inner conflict with one's pre-existing values and beliefs and interferes with other important aspects in their life (e.g., family, friends, work, school, other interests). This occurs from an over-representation of the activity into one's identity and thus thwarts basic psychological need fulfilment.

The manifestation of passion for different activities can lead to either adaptive or maladaptive outcomes. Previous passion researchers have found links between passion to adaptive outcomes such as deliberate practice (Vallerand et al., 2007), improved performance (Vallerand et al., 2008), positive affect (Mageau & Vallerand, 2007), positive well-being (Rousseau & Vallerand, 2007), basic need satisfaction (Paradis, Cooke, Martin, & Hall, 2014), and team cohesion (Paradis, Martin, & Carron, 2012). Conversely, researchers have found that passion can also lead to maladaptive outcomes such as exercise dependence (Paradis, Cooke, Martin, & Hall, 2013), athlete burnout (Kent,

Kingston, & Paradis, 2018), team conflict (Paradis, Carron, & Martin, 2014), rigidity and inflexibility (Rip, Fortin, & Vallerand, 2006), rumination (Carpentier, Mageau, & Vallerand, 2012), life conflict (Vallerand et al., 2003), and negative emotions (Phillipe et al., 2010). In a meta-analysis on passion, researchers highlighted that harmonious passion is more commonly linked to adaptive outcomes from sport activity engagement such as positive affect and satisfaction, while obsessive passion is more commonly linked to maladaptive outcomes such as negative affect and rumination (Curran et al., 2015). However, these findings are not universal for each type of passion. In the context of high-performance sport, obsessive passion is often necessary to reach high levels of achievement. However, this does come at a cost, with potential negative influences on overall well-being.

Similar to passion impacting outcomes in sport, imagery has also been found to impact cognitive, behavioural, and affective outcomes in sport (Munroe-Chandler & Guerrero, 2017). Imagery is defined as creating or recreating an experience in one's mind (Vealey & Greenleaf, 2010). Researchers have noted that gymnasts engage in frequent imagery use (Calmels, D'Arripe-Longueville, Fournier, & Soulard, 2003; White & Hardy, 1998). In fact, Cogan (2006) has noted that "imagery is a top-priority mental skill in gymnastics" (p. 649). In qualitative studies, gymnasts have reported using various types of imagery for both training and competition (White & Hardy, 1998) and for dealing with fear of injury in their sport (Chase, Magyar, & Drake, 2005).

The majority of imagery research has stemmed from Paivio's (1985) analytic framework. The framework depicts that imagery is cognitive or motivational in nature and can operate on a specific or general level. Cognitive Specific (CS) imagery includes images of specific sport skills or techniques (e.g., doing a back walkover), whereas Cognitive General

(CG) imagery includes images of game plans, strategies or routines (e.g., gymnastics beam routine). Motivational Specific (MS) imagery includes images of an individual goal (e.g., winning a medal at a competition), whereas Motivational General (MG) imagery includes images of physiological arousal levels and emotions (e.g., feeling calm and relaxed in front of a crowd). This conceptualization of MG imagery was further differentiated between arousal and mastery (Hall, Mack, Paivio, & Hausenblas, 1998). Motivational General-Arousal (MG-A) imagery includes images associated with arousal and stress (e.g., being excited about competition), and the Motivational General-Mastery (MG-M) imagery includes images associated with being mentally tough, self-confident and in control (e.g., being focused in tough situations).

Children as young as seven years old engage in imagery use in sport (Munroe-Chandler, Hall, Fishburne, & Strachan, 2007). Moreover, imagery improves sport performance (Munroe-Chandler, Hall, Fishburne, Murphy, & Hall, 2012), strategies and tactics (Munroe-Chandler, Hall, Fishburne, & Shannon, 2005), sport competence (Catenacci, Harris, Langdon, Scott, & Czech, 2015), self-efficacy (Munroe-Chandler, Hall, & Fishburne, 2008; O, Munroe-Chandler, Hall, & Hall, 2014), and collective efficacy (Munroe-Chandler & Hall, 2004) all in young children (ages 7-17 years). Youth and adult athletes' use of imagery is similar in that they both use cognitive and motivational types of imagery (Hall et al., 2009). In fact, young athletes typically use MS imagery most and CG imagery the least (Hall et al., 2009). In a recent study with youth gymnasts (age 7-16 years), imagery use was found to be a significant predictor for gymnastics performance (Simonsmeier & Buecker, 2017).

Based on the extensive findings of passion's influences on multiple outcomes in sport and exercise and previous research findings of imagery use by children in

sport, the current study sought to examine the relationship between passion and imagery use in competitive youth gymnastics. It was hypothesized that the current sample would meet the passion criteria threshold of having means greater than three out of five (Vallerand, 2012). Upon meeting these criteria, it was hypothesized that obsessive passion would be more strongly related to imagery use than harmonious passion based on the high demands of competitive gymnastics.

METHODS

A sample of youth athletes were recruited from multiple competitive gymnastics clubs across the province of Ontario, Canada. The participants included 245 (male, $n = 10$; female, $n = 235$) competitive gymnasts between the ages of 7-16 years. The total sample had a mean age of 9.13 years ($SD = 1.90$) and a mean of 3.86 years ($SD = 2.41$) experience in competitive gymnastics. The participants competed in woman's artistic gymnastics ($n = 221$), men's artistic gymnastics ($n = 7$), and trampoline and tumbling ($n = 17$).

Imagery. The Sport Imagery Questionnaire for Children (SIQ-C; Hall et al., 2009) assesses the cognitive and motivational types of imagery first proposed by Paivio (1985) and later extended by Hall et al. (1998). The SIQ-C is a 21-item questionnaire measured on a five-point Likert scale anchored at 1 (*not at all*) and 5 (*very often*). For example, the statement "before doing a skill, I see myself doing it perfectly" assesses CS imagery and the statement "I see myself following the game plan or routine at competitions" assesses CG imagery. An example statement for MS imagery is, "I see myself as a champion", while "I imagine myself staying calm in competition" addresses MG-A imagery. Finally, the statement "I imagine myself being confident in competition" assesses MG-M imagery. The Cronbach's alpha internal consistency reliability scores for

each of the imagery subscales were between 0.64 and 0.83 respectively (CS = 0.83, CG = 0.64, MS = 0.76, MG-A = 0.81, MG-M = 0.74).

Passion. An adapted version of the Passion Scale (Vallerand et al., 2003), was used to measure passion in competitive youth gymnastics. The instrument was modified to reflect the context of gymnastics, and to ensure readability of the items were appropriate for a youth sample. The modified instrument included 15-items, with five items measuring harmonious passion, five items measuring obsessive passion, and five items measuring passion criteria.

Each item is measured on a five-point Likert scale anchored at 1 (*don't agree at all*) and 5 (*completely agree*). The statement "gymnastics still allows me to do other activities in my life" is a sample item for harmonious passion while the statement "if I could, I would only do gymnastics" is a sample item for obsessive passion. Finally, the statement "gymnastics is a part of who I am" is a sample item for the passion criteria. The Cronbach's alpha internal consistency reliability scores for the passion subscales were between 0.55 and 0.78 respectively (harmonious passion = 0.55, obsessive passion = 0.78, passion criteria = 0.77).

Upon receiving ethics clearance from the University's Research Ethics Board, contact was made to the gymnastics clubs through email. Consent was then obtained from gymnastics clubs and parents, while assent was obtained from all eligible athletes (i.e., 7-16 years, enrolled in a competitive gymnastics discipline, provincial gymnasts [levels 3-10]). The lead author travelled to each of the six clubs to collect the data. Prior to a training session, gymnasts were asked to complete general demographics questions including their age, gender, gymnastics club, gymnastics discipline, and their years of experience in competitive gymnastics. Next, participants were asked to complete two questionnaires; the SIQ-C (Hall et al.,

2009) to assess the frequency of imagery use, and the Passion Scale (Vallerand et al., 2003) modified for competitive youth gymnastics to assess their passion towards the sport of gymnastics specifically. The competitive gymnastics season begins in November and runs through to the end of May or the beginning of June, depending on the gymnast's level. Questionnaires were distributed and collected on the same day in the middle of the gymnasts' competitive season (January and February, 2019). Although we did not ask the athletes if they had participated in a competition this season, due to the timing of the data collection, it can be assumed that they all competed in at least one.

RESULTS

Prior to carrying out the main analyses (i.e., assessing the relationship between passion and imagery), we wanted to ensure the sample of athletes were in fact passionate about their sport. As such, five items on the passion scale assess the criteria for someone to demonstrate passion. The mean scores from this subscale (passion criteria) would indicate as hypothesized, this was a passionate group of athletes ($M = 4.66$ out of 5). Therefore, further analysis was warranted to test the relationship between passion and imagery in this sample. Table 1 presents the means, standard deviations, and Cronbach's alpha values of the study variables. Table 2 presents the Pearson Correlations between passion and imagery. Passion and imagery shared moderate to strong significant positive correlations. As expected, obsessive passion shared more salient relationships with imagery use than harmonious passion. Next, a series of multiple regression analyses were conducted to identify the variance accounted for in the passion-imagery relationship.

Imagery. The results of the multiple regression model depicting the associations between harmonious and obsessive passion

and imagery use are presented in Table 3. Overall, both passion subscales (harmonious and obsessive) were regressed with the five subscales of imagery and were significant. The regression model indicated that harmonious and obsessive passion were significantly and positively associated with CS imagery ($R^2 = .15$; harmonious passion, $\beta = .22$; obsessive passion, $\beta = .24$) and CG imagery ($R^2 = .18$; harmonious passion, $\beta = .24$; obsessive passion, $\beta = .27$). Similarly, the regression

models indicated that harmonious and obsessive passion were significantly and positively associated with MS imagery ($R^2 = .23$; harmonious passion, $\beta = .24$; obsessive passion, $\beta = .33$), MG-A imagery ($R^2 = .25$; harmonious passion, $\beta = .29$; obsessive passion, $\beta = .30$) and MG-M imagery ($R^2 = .27$; harmonious passion, $\beta = .39$; obsessive passion, $\beta = .22$).

Table 1
Means, Standard Deviations, and Alphas for Demographic Information, Passion, and Imagery.

Variable	Competitive Gymnastics		α
	Mean	SD	
Age	9.13	1.90	
Years of Experience	3.86	2.41	
Passion			
PC	4.66	.46	.77
HP	4.10	.54	.55
OP	3.71	.82	.78
Imagery			
CS	3.72	.87	.83
CG	3.80	.68	.64
MS	3.78	.86	.76
MG-A	3.84	.87	.81
MG-M	3.96	.64	.74

Note. PC = Passion Criteria; HP = Harmonious Passion; OP = Obsessive Passion; CS = Cognitive Specific; CG = Cognitive General; MS = Motivational Specific; MG-A = Motivational General-Arousal; MG-M = Motivational General-Mastery; both measures scored on a 5-point scale with higher numbers reflective of greater passion and greater imagery use.

Table 2
Correlations for Passion and Imagery.

	PC	HP	OP	CS	CG	MS	MG-A	MG-M
PC	1.00							
HP	.47*	1.00						
OP	.56*	.40*	1.00					
CS	.24*	.32*	.32*	1.00				
CG	.36*	.34*	.37*	.42*	1.00			
MS	.28*	.37*	.43*	.46*	.53*	1.00		
MG-A	.31*	.41*	.42*	.51*	.53*	.62*	1.00	
MG-M	.37*	.48*	.38*	.53*	.57*	.61*	.69*	1.00

Note: *Correlation is significant at the 0.01 level (2-tailed). PC = Passion Criteria; HP = Harmonious Passion; OP = Obsessive Passion; CS = Cognitive Specific; CG = Cognitive General; MS = Motivational Specific; MG-A = Motivational General-Arousal; MG-M = Motivational General-Mastery.

Table 3
Regression Analyses Between Harmonious and Obsessive and Passion.

Passion	Imagery	B	SE B	β	t
HP	CS	.36	.10	.22*	3.46
OP		.25	.07	.24*	3.64
HP	CG	.29	.08	.24*	3.69
OP		.23	.05	.27*	4.31
HP	MS	.37	.10	.24*	3.84
OP		.35	.07	.33*	5.44
HP	MG-A	.47	.10	.29*	4.83
OP		.32	.06	.30*	5.01
HP	MG-M	.46	.07	.39*	6.54
OP		.17	.05	.22*	3.73

Note: B, unstandardized beta (regression) coefficient; SE B, standard error of B; β , standardized beta (regression) coefficient; t, t-statistic short forms. PC = Passion Criteria; HP = Harmonious Passion; OP = Obsessive Passion; CS = Cognitive Specific; CG = Cognitive General; MS = Motivational Specific; MG-A = Motivational General-Arousal; MG-M = Motivational General-Mastery. $p < 0.01^*$

DISCUSSION

The aim of the current study was to explore the relationship between passion and imagery use in competitive youth gymnastics. It was hypothesized that the current sample would be passionate about gymnastics due to the substantial time commitment and level of engagement required. Additionally, it was hypothesized that obsessive passion would be more strongly related to imagery use than harmonious passion. Overall, results

indicated this was a highly passionate group of youth athletes and that both harmonious and obsessive passion shared significant positive relationships with all five types of imagery, with obsessive passion sharing the most salient relationship with four of the five types of imagery.

Harmonious passion was significantly and positively related to all five types of imagery. More specifically, harmonious passion had the strongest relationship with MG-M imagery, and in fact, had the

strongest relationship overall. Indicative of harmonious passion is having autonomous control over your activity engagement; for example, having a balance between their passion for gymnastics and daily life commitments (e.g., family, peers, school). This relationship with MG-M imagery may be explained by the nature of the MG-M items reflective of being in control (e.g., “I see myself being in control in tricky situations”). The caveat with the relationship between harmonious passion and MG-M imagery is that harmonious passion yielded a low Cronbach’s alpha value ($\alpha = .55$) and as such this finding should be interpreted with caution. Upon further review of the harmonious passion items, we noticed the means for the item “gymnastics fits in well with other activities in my life” and “gymnastics still allows me to do other activities in my life” were much lower than the other three harmonious passion items. This seems to support the notion of the demanding time commitment required in competitive youth gymnastics (Cogan, 2006). Risks of early sport specialization have been well documented in previous literature which includes social isolation from family and peers, as well as limiting experiences in other sports and activities (Malina, 2010).

Obsessive passion had significant positive relationships with all five types of imagery and the most salient associations with four of the five types of imagery. More specifically, obsessive passion was most strongly related to MS imagery. Indicative of obsessive passion is having no control over activity engagement; for example, only focusing on their passion towards gymnastics and scheduling daily life commitments (e.g., school) around their passion towards gymnastics. Upon further inspection of the MS items on the SIQ-C, the nature of the items reflects an ego-oriented motivation (e.g., “I see myself as a champion”). This finding can be further explained by research with youth soccer, in which a relationship between obsessive passion and ego

oriented motivational climate was found (Ommundsen, Lemyre, Abrahamsen, & Roberts, 2013). In the context of competitive youth gymnastics, there are many opportunities for individual success, as gymnasts compete in multiple events within a single competition, several times throughout the season. For example, in any given gymnastics competition, there will be a champion on each of the four events (i.e., vault, bars, beam, floor), as well as an all-around champion in each category, based on age and level.

We were also interested in examining the types of imagery gymnasts use and it appears that gymnasts report using the motivational types of imagery more so than the cognitive types of imagery, which is supported in previous research with youth athletes (Hall et al., 2009) and adult athletes (Hall et al., 1998). Similarly, the cognitive types of imagery were less frequently reported, with CS being the least frequently reported type of imagery. However contrary to previous research, we observed the mean for CG imagery to be used more frequently in gymnasts when compared to other youth sport athletes (Hall et al., 2009). We reviewed the SIQ-C items again as a possible explanation for this finding. One summation is that in the sport of gymnastics, the word “routine” takes on a different meaning than in other sports. That is, when gymnasts refer to a routine, they are alluding to their actual sequence of performance (e.g., choreographed floor routine). Their routines are choreographed, and a specific set of skills must be performed in sequence or they are in danger of losing multiple points. For other sports, the term routine may refer to pre-competition and/or pre-shot routines as well as strategies and tactics (Munroe-Chandler, Giacobbi, Hall, & Weinberg, 2000). This may also help explain the low Cronbach’s alpha score for the CG subscale. This is consistent with previous research wherein the CG subscale has a pattern of yielding the lowest

reliability score of all the imagery subscales (Fish, Hall, & Cumming, 2004).

The findings of the present study also call into further examination of the manifestation of obsessive passion in high performing individuals and the resulting outcomes. The relationship between obsessive passion and maladaptive outcomes has been well established (Currant et al., 2015). However, the occasional adaptive outcomes that are yielded from obsessive passion for unique samples, such as high performers, cannot be disregarded. The current study demonstrated obsessive passion to be more strongly associated with imagery use, undoubtedly an adaptive outcome in high performance sport. Previous researchers have also uncovered such findings with obsessive passion and other adaptive outcomes in sport such as deliberate practice and performance (Vallerand et al., 2007, 2008), and team cohesion (Paradis et al., 2012). In the context of competitive sport, being obsessively passionate may be important for success, facilitating increased commitment, and ultimately, high performance outcomes (Paradis et al., 2012).

The present study is not without limitations. Due to the nature of the study (cross-sectional, correlational, one data time point) causation cannot be inferred. Although passion is accounting for some of the variance of imagery use, it is unclear what is accounting for the remainder of the variance. As a result, passion could also influence the use of other psychological skills (e.g., goal setting, self-talk). Likewise, other factors could influence the use of imagery (e.g., coaching, motivational climate, imagery ability).

The present study is the first to demonstrate the relationship between passion and imagery use in competitive youth sport. Previous researchers have shown that imagery use changes over the course of a competitive season (Munroe, Hall, Simms, & Weinberg, 1998). As such, future researchers should implement a

longitudinal design to measure the degree to which their passion or imagery use impacts one another. Imagery is a dynamic psychological skill used by athletes of all ages (Munroe-Chandler et al., 2007) and competitive levels (Hall, 2001). Future researchers should examine imagery along with passion in a larger population of athletes across sports and competitive levels. Further, researchers should also seek to assess the relationships of other commonly used psychological skills (e.g., goal setting, self-talk) with passion.

The present study's finding that harmonious and obsessive passion is positively associated with imagery use provides preliminary support of the importance of this mental skill in competitive youth gymnastics. By establishing that youth gymnasts demonstrate high levels of passion, this can inform future researchers to consider the adaptive (e.g., deliberate practice; Vallerand et al., 2007) and maladaptive (e.g., athlete burnout; Kent et al., 2018) outcomes from the time commitment and sustained engagement in competitive youth gymnastics.

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