

A Comparison of Female Youth Sport Specializers and Non-Specializers on Sport Motivation and Athletic Burnout

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Youth sport burnout research is limited however sport specialization may factor into burnout. Therefore, the purpose of this study was to examine female athletes' sport motivations and athletic burnout, according to whether or not they specialized in one sport. Seventy-seven female high school athletes ($M\text{ age} = 15.81$, $SD = 1.27$) were surveyed on their practice habits, peer satisfaction, sport motivation (Sport Motivation Scale-II, Pelletier, Rocchi, Vallerand, Deci, & Ryan, 2013), and burnout (Athlete Burnout Questionnaire, Raedeke & Smith, 2001). Separate MANOVAs examining sport motivations and burnout across self-reported specialization status were not significant ($p > .05$). Regression results on burnout using sport motivation, practice habits, and peer satisfaction as predictors indicated athletes' amotivation was a predictor of burnout ($F(1, 76) = 31.64$, $p < .001$, $R^2 = .30$), yet overall perceived burnout was low. Results indicate that in female non-elite youth athletes, specializers and non-specializers are similar in sport motivations and do not experience elevated burnout perceptions.

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Within the United States, over 40 million youth participate in organized sports (Vealey & Chase, 2016) yet while participation has increased in recent decades (Telama, Yang, Hirvensalo, & Raitakari, 2006), more youth are now specializing in one sport due to parental pressure and the lure of potential future success, financial reward, and recognition (Carson, Landers, & Tjeerdsma-Blankenship, 2010; Côté, 1999). Sport specialization involves exclusive focus on one sport, which youth train for and compete in year-round (Gould, Carson, Fifer, Lauer, & Benham, 2009; Wiersma, 2000) and a contentious issue is whether specialization is a prerequisite for later athletic success (Baker, 2003). While there are notable examples of specialization success (e.g., Tiger Woods), concerns associated with specialization include limited motor skill development (Wiersma, 2000), heightened stress (Gould, 2010), overuse injuries (Kaleth & Mikesky, 2010), burnout (Gould et al., 2009) and dropout (Wall & Côté, 2007).

Support for early specialization comes from Ericsson, Krampe, and Tesch-Römer (1993) who posited that early specialization via "deliberate practice" (effortful practice lacking inherent enjoyment and for the sole purpose of improving one's current performance levels) was essential to developing sport expertise. Deliberate practice examples include rote sport skill practice or sport-specific physical conditioning drills. Ericsson et al. (1993) noted that one constraint with deliberate practice was that because it is not inherently motivating, it requires athlete commitment. Research indicates that youth who experience earlier (and more) involvement in sport practice activities that are not inherently enjoyable (e.g. deliberate practice activities) may decrease intrinsic sport motivation (Law, Côté, & Ericsson, 2007) and may lead to burnout (Strachan, Côté, & Deakin, 2009; Wall & Côté, 2007).

Unlike the specialization approach, other researchers (Côté, 1999; Côté, Baker, & Abernathy, 2003) have concluded that a more beneficial youth sport track is one which athletes participate in multiple sports (known as sampling), with greater emphasis on play-based activities (deliberate play) and less emphasis on deliberate practice. Deliberate play activities are more informally organized and aimed at increasing intrinsic motivation and enjoyment (Côté, Baker, & Abernathy, 2007), and examples include activities like sandlot baseball or driveway basketball, but could also include play-based activities within formal practice settings. Such play-like involvement is valuable for nurturing intrinsic motivation necessary during later, more regimented sport training (Baker, 2003). Since sampling provides an atmosphere that promotes intrinsic motivation (Côté et al. 2007), it may result in athletes experiencing more enjoyment, fewer injuries, and less burnout (Baker & Côté, 2006). Such results strengthen the contention that becoming a highly-motivated, self-determined athlete requires a foundation of intrinsic motivation early in sport development (Deci & Ryan, 2000).

Burnout is a concern with intensive youth sport participation (Coakley, 1992; Gould, Udry, Tuffey, & Loehr, 1996), and while athlete burnout has been studied, only limited research attention has addressed *youth sport* burnout (e.g., Harris & Watson, 2011, 2014). Specifically, burnout is a negative physical and psychological state, in which young athletes feel fatigued (physically and emotionally), less interested in their sport, and less capable of performing well (Vealey & Chase, 2016). Burnout is considered a syndrome and cognitive-emotional reaction to stress (Lonsdale, Hodge, & Rose, 2009), and there is consensus that a multidimensional view (including emotional and physical exhaustion, reduced accomplishment, and sport devaluation) provides a more accurate description of burnout and differentiates it from stress or amotivation (Raedeke & Smith, 2009). Examination of youth sport burnout is important given the long-term potential role of youth sport on social, psychological, and physical development (Fraser-Thomas, Côté, & Deakin, 2005). In addition, stress is apparent in youth athletes due to increased social evaluation (Scanlan, 1986), parental involvement (Smoll, 1986), and social isolation (Gould, 2010), all of which may lead to burnout especially from youth sport specialization. Strachan et al. (2009), for example, compared youth sport specialists and non-specialists and found specialists were significantly higher on their physical/emotional exhaustion dimension of burnout compared to non-specialists. While only a small percentage of youth athletes experience severe burnout, a greater percentage (as much as 38%) have experienced moderate burnout (Gustafsson, Kenttä, Hassmen, & Lundqvist, 2007), and youth athletes report greater burnout later in adolescence (Harris & Watson, 2014).

Examination of athlete burnout in general (Li, Wang, Pyun, & Kee, 2013; Lonsdale et al., 2009) and in youth athletes in particular (Harris & Watson, 2011, 2014) has effectively used self-determination theory (SDT, Deci & Ryan, 2000) as a theoretical framework. According to SDT, satisfying the core needs of competence, autonomy, and relatedness is fundamental for well-being, whereas thwarting of these needs lowers motivation (Ryan & Deci, 2000). In sport, chronically frustrated core needs may preface burnout, and SDT serves as a motivational framework to explain such burnout. Intrinsic motivation refers to engaging in an activity for personal satisfaction, such as when a tennis player finds it interesting to learn a new serve. Extrinsic motivation refers to engaging in an activity because it leads to a separate outcome that is either tangible (e.g., a trophy) or psychological (e.g., parental praise). Thus, when athletes experience support and satisfaction for autonomy, competence, and relatedness, they internalize their behaviors. Self-determination is thought of as a continuum of relative autonomy, and higher autonomy is associated with more internalized behaviors (Deci & Ryan, 1985). At one end of this continuum is amotivation, which is non-regulated and lacks intention (Deci & Ryan, 2002). For example, an amotivated athlete

might simply “go through the motions” and question if continued sport participation is worthwhile. Deci and Ryan (2000) also describe various extrinsic motivations which, from least to most self-determined, are: external, introjected, identified, and integrated regulation. External regulation is when externally controlled rewards (e.g., trophies) or punishments (e.g., from a coach) control behavior. Introjected regulation describes behaviors driven by a need for self-worth or guilt avoidance, thus are less self-determined. Identified regulation is when one’s behavior is perceived as important (e.g., an athlete practices because making the varsity squad is important to her), thus is accompanied by greater autonomy and commitment. Finally, integrated regulation is most autonomous and occurs when behavior is in accord with one’s values (Ryan & Deci, 2000). As one moves from amotivation to intrinsic motives, their sport motivations become more self-determined.

Previous athlete burnout research using SDT has found a positive relationship between burnout and amotivation (Cresswell & Eklund, 2005a; Gould et al., 1996; Lonsdale et al., 2009; Raedeke & Smith, 2001) and a negative relationship between burnout and self-determined forms of motivation (Cresswell & Eklund, 2005a, 2005b; Raedeke & Smith, 2001). Specifically, Cresswell and Eklund (2005a) found that amotivation was positively associated with burnout in rugby athletes, while intrinsic motivation was negatively associated with burnout. Similarly, as college swimmers’ motivation became less self-determined their burnout increased (Lemyre, Treasure, & Roberts, 2006). Joesaar and Hein (2011) found that dropout youth athletes perceived lower levels of competence, relatedness, and autonomy support and were less intrinsically motivated than youth athletes who continued. Finally, Harris and Watson (2014) examined burnout among youth swimmers and found the direct influence of intrinsic motivation, extrinsic motivation, and amotivation on burnout supported SDT’s utility in examining burnout among youth athletes.

Youth sport specialization may be a factor in burnout (Fraser-Thomas, Côté, & Deakin, 2005; Harris & Watson, 2014). A positive association has been noted between the time committed to a sport and the number of negative sport-related outcomes (including burnout) that participants experience (Malina, 2010; Wiersma, 2010), yet Gustafsson et al. (2007) found no association between youth athletes’ training loads and burnout. Therefore, while burnout may be related to sport specialization, the reasons remain unclear. Athletes’ less self-determined motivation may lead to burnout over time (Gould, Tuffey, Udry, & Loehr, 1997), yet little research has examined whether youth sport “specializers” may have less self-determined motivations or more burnout than non-specializers. For example, specialization often includes greater deliberate practice, which may not be perceived as enjoyable. Such evidence was supported by Wall and Côté (2007) who found that drop-out youth ice hockey athletes began their sport conditioning earlier and engaged in more conditioning

than athletes who continued their participation. In addition, Harris and Watson (2014) found that adolescent athletes had greater exhaustion and feelings of reduced accomplishment than younger athletes. Thus, sport specialization may contribute to a lack of self-determined behavior and lower sport enjoyment.

Therefore, the purpose of this study was to examine female high school athletes' sport motivation and burnout, according to whether they specialized in one sport or participated in multiple sports. Since research has shown that males and females may differ on burnout dimensions (Purvanova & Muros, 2010), the current study was delimited to female athletes. Given that sport specialization might lower intrinsic motivation (Law et al., 2007), it was hypothesized that athletes who specialized in one sport would have lower intrinsic motivation and higher extrinsic motivation compared to non-specializers. Additionally, since a concern with specialization is burnout (Gould, 2010; Strachan et al., 2009), it was hypothesized that specializers would report greater burnout compared to non-specializers. It was also hypothesized that regardless of specialization status, athletes reporting higher extrinsic motivation would report greater athletic burnout. Since peer relationships have been shown to foster youth athletes' intrinsic motivation (Riley & Smith, 2011; Strachan et al., 2009), it was hypothesized that athletes who had higher sport peer satisfaction would have greater intrinsic motivation, regardless of their specialization status. Finally, since more play-like sport involvement may nurture intrinsic motivation (Côté et al., 2007) and sport practice settings characterized by intensive, deliberate-practice activities may lessen intrinsic motivation (Law et al., 2007), it was hypothesized that regardless of specialization status, athletes who reported more frequent physical conditioning and deliberate practice-like activities during practice would have higher extrinsic motivation whereas athletes reporting more actual play and competition simulation during practice would report more intrinsic motivation.

Method

Participants and Procedures

A sample of 77 female high school athletes (M age = 15.81, SD = 1.25) was surveyed at sports camps held at Midwestern regional universities, and included athletes from soccer (n = 40), volleyball (n = 29), and tennis (n = 8). Ethical approval was granted by the authors' institution and other institutional review boards at universities where summer sports camps were held and data was obtained. Upon institutional review board and camp staff approval, researchers attended camp registration sessions and directly administered surveys. After obtaining on-site parental/guardian and athlete consent, participants who met study requirements (high school athlete or entering high school) completed a survey. Athletes were

directed to a quiet area adjacent to camp registration so they could complete a survey without other athletes present and so researchers could answer questions regarding the survey. Demographic and sport practice habit information was allowed to be completed with the help of a parent or guardian to enhance the reliability of the information collected (Law et al., 2007; Strachan et al., 2009). Following the completion of this information, participants independently completed the remainder of the survey. For this study, *youth sport specialization* was defined as athletes who limited their participation to one sport which was practiced for and competed in throughout the year, to the exclusion of other activities (Wiersma, 2000). Surveys were completed in under ten minutes and participants' names were not included on the surveys, thereby maintaining anonymity.

Measures

Demographic and Sport Practice Measures. Participants completed a survey that included their demographic information, specialization status (specializer / non-specializer), and current team status (varsity, junior varsity, or incoming freshman). Participants were also asked to estimate the average number of hours per week they spent (a) practicing their sport (or sports) and the average number of hours they spent (b) competing in their sport(s). Finally, participants were asked four questions that best characterized their practice habits relative to their sport(s). These items were measured on a four-point Likert type scale ranging from 1 (*never*) to 4 (*always*) in response to the prompt, "When thinking about your sport(s) you play, how often do you do the following in practice?" Specifically, participants were asked about the frequency in which they engaged in (a) physical conditioning (e.g. running sprint drills), (b) static sport drills to develop a *specific* sport skill (e.g. serving in tennis), (c) simulation drills with a play element (e.g. modified 3 vs. 3 play in soccer), and (d) playing a regular game during practice (e.g. soccer scrimmage). Finally, athletes were asked to rate on a 1-10 scale (10 as most satisfied), their satisfaction with peer relationships within their sport(s).

The Sport Motivation Scale II (SMS-II). The Sport Motivation Scale-II (Pelletier, Rocchi, Vallerand, Deci, & Ryan, 2013) is a revision of the Sport Motivation Scale (Pelletier et al., 1995) which measures sport participation motivations and is appropriate for use with high school athletes. It contains 18 items that assess six types of motivation (three items per subscale) including intrinsic regulation, integrated regulation, identified regulation, introjected regulation, external regulation, and non-regulation. Items were scored on a seven-point Likert type scale and represent responses to the question "Why do you practice sports (or your sport)? The SMS-II is recommended over the original SMS instrument, as it is more theoretically aligned in item content and is more time efficient. Pelletier et al. (2013) reported adequate validity and reliability (0.73 to 0.86) for the SMS-II.

The Athlete Burnout Questionnaire (ABQ). The Athlete Burnout Questionnaire (Raedeke & Smith, 2001) is a 15-item multidimensional instrument assessing three subscales of burnout, including (a) reduced sense of accomplishment, (b) emotional and physical exhaustion, and (c) sport devaluation. Respondents answer the extent to which each survey item pertains to them using a five-point Likert type scale ranging from 1 (*almost never*) to 5 (*almost always*). In addition, a global burnout index was computed by calculating a mean score from the three subscales (e.g., Raedeke & Smith, 2004). The psychometric properties of the ABQ were deemed adequate during the inventory's construction and with research using samples of high school athletes, and Cronbach alpha coefficients for the subscales of the ABQ range from .84 to .92 (Raedeke & Smith, 2001, 2004).

Data Analysis

Data analyses were performed using SPSS (Version 23.0) for Windows. Descriptive statistics were computed for athletes' practice habits, peer satisfaction, SMS-II subscale scores, and ABQ scores for the overall sample and by specialization status. A one-way MANOVA was conducted to examine sport motivation (SMS) differences between specialists and non-specializers. A separate one-way MANOVA was conducted to examine athletic burnout differences (ABQ) between specialists and non-specializers. A stepwise multiple linear regression was also performed using ABQ global index score as the criterion and SMS subscales, self-reported average practice and competition hours per week, and peer satisfaction scores as predictors. Finally, since previous youth sport research has found higher volumes of deliberate practice are less intrinsically motivating (Côté & Hancock, 2016) and positive peer relationships are associated with youth athletes' self-determined motivation (Riley & Smith, 2011), it was hypothesized that greater peer satisfaction and frequency of play-based activities would be predictive of athletes' intrinsic motivation. To test this hypothesis, a separate stepwise multiple linear regression was performed using the SMS-Intrinsic Motivation score as the criterion and peer satisfaction and self-reported practice habits as predictors. The *a priori* significance level for all analyses was set at the $p = .05$ level.

Results

Of the overall sample ($N = 77$), 53 athletes (69%) indicated they specialized in one sport. Specialization rates by sport indicated that 32 soccer athletes, 15 volleyball athletes, and six tennis athletes specialized in their sport. The mean self-reported age that specialization began was 10.81 years of age ($SD = 3.25$) with the average number of years specializing in their current sport being 3.81 years ($SD = 3.13$). The mean age of non-specializers was

15.83 ($SD = 1.40$) while the specialists' mean age was 15.79 years of age ($SD = 1.18$). Descriptive statistics for athletes' self-reported practice habits and peer satisfaction are displayed in Table 1. One-way MANOVA results examining the effect of sport specialization on sport motivations were not significant (Wilk's $\lambda(6, 70) = .945, p = .67$), indicating that sport motivations (SMS-II) were not influenced by specialization status. One-way MANOVA results examining the effect of sport specialization on athletic burnout (ABQ subscales and global burnout index) were also not significant (Wilk's $\lambda(3, 73) = .978, p = .65$), indicating that athletic burnout was not influenced by specialization status. Means and standard deviations for sport motivations and athletic burnout (by specialization status) are shown in Table 2.

Stepwise multiple linear regressions were used to examine the hypotheses of whether (a) athletes with greater extrinsic motivation would report greater athletic burnout (ABQ scores), (b) whether athletes more satisfied with their peer relationships (peer satisfaction ratings) would indicate greater intrinsic sport motivation (SMS-II), and (c) whether athletes' self-reported practice habits would be predictive of intrinsic and extrinsic motivation (SMS-II). The first multiple regression was performed using the ABQ global burnout index as the criterion and SMS subscales, practice hours per week, competition hours per week, and peer satisfaction ratings as predictors. At step 1 of the analysis, SMS Non-regulation (amotivation) entered into the regression equation and was significantly related to the ABQ global burnout index, $F(1,75) = 31.64, p < .001$. The multiple correlation coefficient was .55, indicating that 29.7% of the variance of the ABQ global burnout index could be accounted for by athletes' SMS amotivation score. No other predictors entered into the equation at step 2 of the analysis ($p > .05$). Thus, the regression equation for predicting athletes' global burnout index was: Predicted burnout = $.465 \times \text{SMS Non-Regulation score} + 6.303$.

The second multiple regression used SMS-Intrinsic motivation as the criterion and peer satisfaction rating and self-reported sport practice habits as predictors. At step 1 of the analysis, self-reported play during practice entered into the regression equation and was significantly related to the SMS Intrinsic motivation score, $F(1,75) = 8.20, p < .05$. The multiple correlation coefficient was .31, indicating that approximately 10% of the variance of athletes' SMS Intrinsic motivation could be accounted for by athletes' frequency of play during practice. No other predictors entered into the equation at step 2 of the analysis ($p > .05$). Thus, the regression equation for predicting athletes' SMS Intrinsic motivation was: Predicted Intrinsic motivation = $1.27 \times \text{frequency of play in practice} + 13.30$. Bivariate correlations were also calculated among self-reported practice habits, sport motivations, and athletic burnout dimensions. As displayed in Table 3, correlations of ABQ scores, SMS-II

Table 1

Means and Standard Deviations for peer satisfaction and self-reported training habits by specialization status

	Specializers (n = 53)		Non-Specializers (n = 24)	
	M	SD	M	SD
Peer satisfaction*	8.53	1.91	8.54	1.47
Average practice hours per week	8.11	4.65	11.63	5.05
Average competition hours per week	3.79	2.30	3.96	1.65
Physical conditioning during practice [†]	3.32	.67	3.25	.68
Static sport skill drills during practice	3.49	.70	3.83	.38
Simulation drills during practice	3.57	.64	3.42	.65
Playing regular game during practice	3.04	.81	2.63	.77

* As indicated on a 1 – 10 Likert scale with 1 = “least satisfied” and 10 = “most satisfied”

† Assessed on a 4-point Likert-type scale (1 = *never*, 4 = *always*)

Table 2

Means and Standard Deviations for Sport motivations (SMS-II) and Athletic burnout (ABQ) by specialization status

	Specializers (<i>n</i> = 53)		Non-Specializers (<i>n</i> = 24)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
SMS – Intrinsic Regulation	17.15	3.23	16.63	3.46
SMS – Integrated Regulation	14.89	4.02	15.96	3.53
SMS – Identified Regulation	16.49	3.57	16.96	3.29
SMS – Introjected Regulation	11.42	4.01	12.13	4.48
SMS – External Regulation	7.83	4.15	9.04	4.27
SMS – Non-Regulation	4.55	3.04	4.50	2.04
ABQ – Reduced Accomplishment	1.73	.53	1.62	.62
ABQ – Exhaustion	1.93	.76	1.92	.71
ABQ – Sport Devaluation	1.40	.49	1.48	.60
ABQ – Global Index	1.69	.45	1.67	.52

Table 3

Correlations for sport motivation, athlete burnout, and self-reported training habits.

	1	2	3	4	5	6	7
1. Physical conditioning	-----						
2. Static drills	0.13	-----					
3. Simulation drills	0.06	0.17	-----				
4. Play during practice	0.00	0.11	0.32**	-----			
5. Intrinsic regulation	0.15	0.02	0.23*	0.31**	-----		
6. Integrated regulation	0.09	0.13	0.24*	0.17	0.53**	-----	
7. Identified regulation	0.20	0.08	0.32**	0.18	0.66**	0.73**	-----
8. Introjected regulation	0.10	0.05	0.08	0.03	0.37**	0.56**	0.56**
9. External regulation	0.02	-0.06	-0.11	0.07	0.16	0.39**	0.37**
10. Non-regulation	-0.14	-0.25*	-0.35**	-0.14	-0.06	-0.04	-0.06
11. Reduced sense of accomp.	0.08	-0.22	-0.31**	-0.21	-0.22	-0.29**	-0.28*
12. Exhaustion	-0.05	0.04	-0.04	-0.12	-0.03	-0.01	-0.01
13. Sport devaluation	0.01	0.10	-0.12	-0.08	-0.13	-0.14	-0.16
14. Global burnout index	0.01	-0.03	-0.19	-0.18	-0.15	-0.17	-0.18

Note. * Correlations are significant at $p < .05$ level.** Correlations are significant at $p < .01$ level.

Table 3 continued

Correlations for sport motivation, athlete burnout, and self-reported training habits.

	8	9	10	11	12	13	14
1. Physical conditioning							
2. Static drills							
3. Simulation drills							
4. Play during practice							
5. Intrinsic regulation							
6. Integrated regulation							
7. Identified regulation							
8. Introjected regulation	-----						
9. External regulation	0.56**	-----					
10. Non-regulation	0.19	0.39**	-----				
11. Reduced sense of accomp.	-0.03	0.16	0.49**	-----			
12. Exhaustion	0.20	0.26	0.28*	0.40**	-----		
13. Sport devaluation	0.09	0.19	0.55**	0.36**	0.42**	-----	
14. Global burnout index	0.12	0.27*	0.55**	0.74**	0.84**	0.73**	-----

Note. * Correlations are significant at $p < .05$ level.

** Correlations are significant at $p < .01$ level.

scores, and athletes' self-reported practice habits indicated that more frequent static practice drills were positively associated with amotivation, more frequent simulation drills in practice were negatively associated with amotivation and reduced sense of accomplishment (ABQ), and that more frequent play-based activities during practice were associated with greater intrinsic regulation.

Discussion

The purpose of this study was to examine the relationship between female athletes' sport motivation and athletic burnout according to whether or not they specialized in one sport. Results of two separate MANOVAs indicated that neither athletes' sport motivations nor athletic burnout differed by specialization status. In addition, the only significant predictor of global burnout was amotivation. No relationship between athletes' peer satisfaction and intrinsic motivation was found, and the only practice habit that predicted intrinsic motivation was self-reported play (scrimmage) during practice. Similar to other burnout research (Lonsdale & Hodge, 2011), amotivation was strongly correlated with reduced sense of accomplishment while sport devaluation was moderately correlated with mental/physical exhaustion.

The lack of significant findings on motivation or burnout across specialization status supports previous research positing that specialists and non-specialists may be more alike than dissimilar in their experiences and outcomes (Strachan et al., 2009), especially in non-elite sport settings. In addition, SDT recognizes that social factors such as coach-created motivational climates (Ntoumanis, Taylor, & Thøgersen-Ntoumani, 2012) and social support (Reinboth, Duda & Ntoumanis, 2004) influence athlete motivation and burnout. For example, playing for a highly controlling coach may lessen athletes' perceived autonomy, decreasing intrinsic and identified regulation while increasing introjected, external regulation, and amotivation. Athletic burnout is also influenced by athletes' perceived quality of the relationship with the coach (Isoard-Gautheur, Trouilloud, Gustafsson, & Guillet-Descas, 2016). Specifically, Isoard-Gautheur et al. noted that an ego-involving coach-created climate predicted a reduced sense of accomplishment through mastery avoidance and a task-involving climate was negatively associated with sport devaluation through mastery-approach goals. Therefore, since perceptions of coach attitudes and behaviors may influence athletes' motivation and burnout, it may be that coaches of athletes in this sample created sufficiently autonomy-supportive environments so as not to negatively influence sport motivations or burnout, regardless of athletes' specialization status.

This sample was composed of high school athletes and specializers were not “elite” in their status, nor was their specialization history as lengthy ($M = 3.81$ years) compared to other research (e.g., specializers’ history $M = 6.9$ years in Strachan et al., 2009), and may have been an insufficient specialization period to observe substantial changes in motivation or burnout. This was indirectly confirmed by low burnout scores for both specializers and non-specializers (See Table 2). One approach used to interpret burnout using the ABQ (Raedeke & Smith, 2009) has been to divide normative ABQ distributions into thirds with scores in the upper third defined as high burnout, those in the middle third as average burnout, and those in the bottom third as reflecting low burnout. Subscale means for the ABQ of both specializers and non-specializers in the current study were below the bottom third cutoff for adolescents (Raedeke & Smith, 2009) in emotional/physical exhaustion ($M = 2.60$), reduced sense of accomplishment ($M = 1.80$), and *almost* at the bottom third cutoff ($M = 1.40$) for sport devaluation (Non-specializers $M = 1.48$), which reflected athletes who were low in overall burnout perceptions. Harris and Watson (2011) noted that the limited duration of youth athletes’ sport participation may make it more difficult for them to experience reduced sense of sport accomplishment and sport devaluation, as they may not have acquired the necessary sport experience or developmental capacity to conceptualize what a decrease in sport accomplishment would entail. This may have occurred in the current sample, especially since specializers reported a limited specialization history (< 4 yrs). Hence, only youth athletes with more extensive specialization histories may experience a greater level of reduced sense of accomplishment and sport devaluation. This shorter specialization history may also have explained why extrinsic motivations were not predictive of burnout. While external regulation was significantly correlated with burnout ($r = .27, p < .05$), it was not significant in the prediction equation for burnout. Lack of significant findings between extrinsic motivation and burnout in this study supports previous work indicating nonsignificant or trivial relationships between extrinsic motivation and burnout (e.g., Cresswell & Eklund, 2005b; Raedeke & Smith, 2001). The absence of any relationship may be because external regulations remain relatively stable within an athlete’s sport environment regardless of the burnout being experienced. Lack of significant findings pertaining to burnout across specialization status may, in part, also be explained by the healthy worker effect (Schaufeli & Enzmann, 1998), especially since withdrawal is an end result of burnout. This effect refers to an underestimation of workplace burnout prevalence because only those who are not burned out would be included in the study. Similarly, more severely burned out athletes may not have been present in this sample because they had already dropped out of sport.

The finding that amotivation was a significant predictor of burnout supports previous athletic burnout research using the SDT framework (Cresswell & Eklund, 2005a; Harris &

Watson, 2014; Lonsdale & Hodge, 2011). Positive correlations between amotivation and reduced sense of accomplishment (.49), exhaustion (.28), and sport devaluation (.55) were comparable to Raedeke and Smith (2001) who found positive correlations ranging from .31 to .64 between amotivation and burnout dimensions. Since amotivation is usually a result of thwarting of basic need satisfaction or a belief that effort will not yield a desired outcome, this result makes sense.

While it has been adroitly noted that practice and play activities have been understudied with respect to their impact on athletes' motivation (Hendry, Crocker, & Hodges, 2014), the result that self-reported frequency of playing a regular game in practice predicted intrinsic motivation supports the notion that play-based activities are more enjoyable than deliberate practice activities. While Côté et al. (2007) refer to deliberate play occurring in informal settings, it may also be that play-based activity in structured practice settings is more intrinsically motivating than static drills, conditioning, or simulation drills. For example, research has shown that adolescent athletes reporting higher amounts of sport-specific play have higher motivation (Forsman, Blomqvist, Davids, Kontinen, & Liukkonen, 2016). While the play-based activities reported within this study are different than Côté's (1999) notion of informal deliberate play, the provision of structured play in practice still appears to have value in fostering adolescents' intrinsic motivation. The exact nature of play within practices in this sample was unknown as results were simply derived from one survey item asking about frequency of "playing a regular game during practice" (akin to scrimmage). However, it has been noted that deliberate play activities include greater active engagement in the sport activity (Côté et al., 2007). As such, play during practice likely involved greater active sport engagement, which was perceived as more intrinsically motivating. In other words, the greater active sport engagement characterized by game play (scrimmages rather than static drills or conditioning) was sufficient to be perceived as intrinsically motivating and would support that athletes enjoy sport practice activities most related to actual performance (Helsen, Starkes, & Hodges, 1998). Team sport practices are also inherently social activities and it may also be that athletes find social aspects of organized play (e.g., scrimmage) enjoyable along with the active engagement in the sport activity itself. The current measures used to assess athletes' practice habits (four items on practice habit frequency) did not assess their informal deliberate play habits outside of structured sport practices, nor were athletes' practice habit estimates compared against coaches' estimates of practice habits. Such information could have provided greater accuracy in training habit estimates and more informal deliberate play activities across specialization status. As such, future studies comparing youth specialists and non-specialists should obtain coaches' estimates of practice habits and measures of athletes' informal play habits within their sport(s).

Limitations and Future Research

At this point, it is important to discuss several potential limitations to the current study. First, while this study was delimited to female athletes, the sample size was small, there was a discrepancy between the specialist ($n = 53$) and non-specialist ($n = 24$) sample sizes, and there were limited sports (soccer, tennis, and volleyball) represented. Such a discrepancy between comparison groups (specialists comprised 69% of the overall sample) warrants caution interpreting MANOVA results. A decision was made to delimit the sample to females because previous meta-analysis results (Puranova & Muros, 2010) in non-sport settings have shown males and females differ in their emotional exhaustion and depersonalization responses to burnout. However, it may yet be worthwhile to examine whether male youths of equivalent ages and sport tracks (specialist/non-specialist) display similar amotivation and burnout patterns as females. Therefore, future research examining motivation and burnout relationships in youth athletes should incorporate larger samples (including male and female youth athletes), similar comparison samples for specialists and non-specialists, and a more diverse variety of sports. Second, the design was cross-sectional, yet burnout is not a stable experience (Creswell & Eklund, 2005a), hence this design does not provide information on how burnout or sport motivation change in relation to each other over time. Longitudinal designs examining burnout progression relative to self-determination constructs are needed to gain a better understanding of the youth athlete burnout process. For example, seasonal (time) variations have been observed between burnout and motivation (e.g., Creswell & Eklund, 2005a), and the burnout experience and motivational consequences may vary over time in response to factors like increased training volume and competitive stress during a sport season. Thus, because data was collected at sports camps (outside of competitive seasons), time of measurement may have influenced the lack of relationship between extrinsic motivation and burnout. Future research should examine the relationship between youth sport motivation and burnout across a sport season to determine if this relationship exists over time within the context of a competitive season. Third, the specialization experiences of the self-reported specialists in this sample was likely very diverse. For example, the number of years specialists reported "specializing in their sport" was heterogeneous ($M = 3.81$, $SD = 3.13$). This large variability in specialization period was likely due to the non-elite status of high school athletes in the study, yet makes it difficult to have a more reliable interpretation of burnout and sport motivation changes that might occur over time.

Fourth, amotivation has been shown to be strongly correlated with the burnout dimensions of sport devaluation and reduced sense of accomplished, and moderately correlated with exhaustion (Lonsdale et al., 2011). A reciprocal relationship was also noted by Lons-

dale et al. between amotivation and sport devaluation, yet they observed that amotivation and sport devaluation constructs as measured by the ABQ and Behavioral Regulation in Sport Questionnaire (BRSQ) were not distinct and should be interpreted with caution as the relationship could have been a measurement artifact. This may also be the case with amotivation (SMS-II) and burnout (ABQ) subscales. Therefore, caution is warranted in interpreting amotivation-burnout relationship and future researchers may want to examine how much common variance is associated with amotivation (SMS-II) and ABQ subscales.

Finally, while this study obtained a general indicator of athletes' sport peer satisfaction and practice habits, previous research has shown that athletic burnout may also result from other SDT constructs, such as autonomy-supportive and controlling climates (Cresswell & Eklund, 2005a; Lonsdale & Hodge, 2011), and the perceived athlete-coach relationship (Isoard-Gautheur et al., 2016). Negative social influences may inhibit autonomy and thwart athletes' self-determination, increasing risk for burnout. Thus, it may not be sport specialization *per se* that is associated with youth athletes' burnout, but specialization combined with controlling social influences (e.g., parents, coaches), or a negatively perceived coaching relationship that lessen athletes' self-determination and may precede youth athlete burnout. Therefore, future research comparing specializers and non-specializers should assess of motivational climate within these two sport settings in order to determine whether athletes' perceptions of autonomy-supportive or autonomy-controlled sport climate influences self-determined motivation or burnout.

Notwithstanding the aforementioned limitations of the present study, the findings provide support for the notion that in non-elite female youth athletes, specializers and non-specializers appear similar on their sport motivations and do not experience athletic burnout. It is recommended that researchers examining youth athletes' motivations and burnout within single-sport specializers examine possible interactive effects of both practice/play constraints and motivational climates within youth sport settings.

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