

Assessing Youth Sport Burnout: A Self-Determination and Identity Development Perspective

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The utility of Deci and Ryan's self-determination theory (1985) and Coakley's unidimensional identity model (1992) has yet to be adequately assessed in understanding youth athlete burnout. This may be due to a lack of measures available to assess these relevant constructs in a youth athlete sample. Having such inventories would likely enhance practitioners' ability to identify, prevent, and treat this phenomenon more effectively in young children. Therefore, the current study assessed the psychometric properties for modified burnout, motivation, and athletic identity inventories for a youth athlete sample. Participants included 88 youth swimmers ranging in age from 7 to 12 years, who completed measures assessing burnout, motivation, and athletic identity. Internal consistencies and exploratory factor analyses provided preliminary psychometric support for the use and continued evaluation of these revised measures with young athletes.

Keywords: Burnout, youth sport, athlete, motivation, athletic identity

Burnout has become a topic of increasing interest to the sport psychology community, with a great deal of this research having been initiated nearly 20 years ago; however, an examination of the literature reveals that only a limited amount of research attention has been given to the exploration of burnout among child and adolescent athletes. Although some studies targeting youth sport athletes have made a significant contribution to the sport burnout research, the majority of this research has used samples of adolescent athletes without accounting for athletes younger than 13 years of age (e.g., Gould, Tuffey, Udry, & Loehr, 1996, 1997; Gould, Udry, Tuffey, & Loehr, 1996; Gustafsson, Kentta, Hassmen, & Lundqvist, 2007; Raedeke, 1997; Raedeke & Smith, 2001). The importance of attending to burnout in a younger sample of athletes is particularly significant given the implications of sport

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participation for young athletes regarding their social, psychological, and physical development (see Fraser-Thomas, Côté, & Deakin, 2005). In addition, researchers have documented the presence of stress among youth sport participants due to social evaluation (Scanlan, 1986), the demonstration of competence (Roberts, 1986), and parental pressure/involvement (Scanlan, 1986; Smoll, 1986). With stress having been linked to the experience of burnout in adolescent and adult-aged athletes (Gould, Udry et al., 1996; Smith, 1986), it is conceivable that the experience of burnout among younger athletes is a potential outcome. This is further supported by the fact that stress and other negative sport experiences for youth athletes have been documented as potential results of their sport participation (Amorose, Anderson-Butcher, & Cooper, 2009; Smoll, 1986). Therefore, clinical and educational sport psychology practitioners may be likely to encounter burnout within their applied work with young athletes. For the purposes of the present research, burnout was defined as a multidimensional phenomenon consisting of physical and emotional exhaustion, a devaluation of one's sport, and a reduced sense of sport accomplishment (Raedeke, 1997; Raedeke & Smith, 2001).

Several theories have played instrumental roles in guiding research toward defining and understanding burnout and the variables believed to influence it. Such theories have taken a cognitive-affective perspective (Smith, 1986), a negative response to training stress view (Silva, 1990), a sport commitment or entrapment viewpoint (Raedeke, 1997; Schmidt & Stein, 1991), and a social phenomenon approach (Coakley, 1992). Within the framework of these theories, burnout has been explored primarily within a collegiate athlete population, with some research extending to Olympic athletes (Kjormo & Halvari, 2002). A recent trend in athlete burnout research has involved the utilization of achievement motivation theories as a means for understanding burnout. This emerging line of research has included Nicholls' (1984) achievement goal theory (Chi & Chen, 2003; Harris & Smith, 2009; Wyner, 2005) and Deci and Ryan's (1985; Ryan & Deci, 2000) self-determination theory (Cresswell & Eklund, 2005a, 2005b, 2005c; Lemyre, Treasure, & Roberts, 2005). Due to their novelty and potential utility in the realm of athlete burnout, especially as it pertains to a youth athlete population, of particular relevance to the current study are self-determination theory and Coakley's unidimensional identity model.

The self-determination theory of motivation (SDT) has recently been used as a means to examine burnout in athletes, specifically those who participate at the collegiate and professional levels. Developed by Deci and Ryan (1985; Ryan & Deci, 2000), SDT proposes that individuals are motivated to satisfy their basic needs of being autonomous, to demonstrate competence within their activity of interest, and to experience a sense of relatedness with others. This theory further postulates that an individual's motivation can be categorized along a continuum from amotivation to intrinsic motivation, with extrinsic motives for participation falling between the two. Specific categories of extrinsic and intrinsic motivation fall along this continuum and include (from least to greatest) self-determined motives for participation: external regulation; introjected regulation; identified regulation; integrated regulation; and the intrinsic motives to experience stimulation, success, and obtain knowledge. As an individual moves along the continuum from amotivation to intrinsic motives for participation, they are suggested to become more self-determined in their reasons for continued involvement. Previous research utilizing elements of SDT in examining athlete burnout has observed a link between

constructs of SDT and burnout, with studies yielding a positive association between athlete burnout and amotivation (Cresswell & Eklund, 2005a, 2005c; Gould, Udry et al., 1996; Raedeke & Smith, 2001), in addition to a negative relationship with intrinsic or self-determined forms of motivation (Cresswell & Eklund, 2005a, 2005c; Raedeke & Smith, 2001).

Cresswell and Eklund (2005a, 2005b, 2005c) used SDT to investigate burnout levels exclusively within the sport of rugby. Their results provided support for the examination of athlete burnout using SDT. Their research with amateur rugby players (2005a) tested three causal and noncausal models with regard to motivation and burnout. Amotivation was positively associated with burnout, with intrinsic motivation demonstrating a negative association with burnout. These authors were successful in replicating and extending the results of the above mentioned study to professional rugby players (Cresswell & Eklund, 2005b). The results of this study revealed that intrinsic motivation was significantly and negatively correlated with burnout as was denoted by the reduced accomplishment and sport devaluation subscales. Amotivation was positively associated with burnout as denoted by these same burnout subscales. These same authors have also used a longitudinal methodology to examine athlete burnout among rugby players using SDT (Cresswell & Eklund, 2005c) and provided additional support for their previously found associations between athlete burnout and motivation types. Lemyre and colleagues (2005) also used a longitudinal design to assess collegiate swimmers' burnout, affect, and motivation using SDT as a framework over the course of a competitive season. Their analyses revealed that as motivation became less self-determined, athletes' scores on all three burnout subscales increased as well. Although an encouraging and novel line of burnout research, a paucity of research has used this perspective in the examination of youth athlete burnout.

In establishing an alternative model to the stress-based theories, Coakley (1992) interviewed adolescent athletes identified as having experienced burnout in sport and inquired about how their sport participation was tied to other areas of their lives. Results indicated that although stress was associated with burnout, its roots seemed to rest in a social framework. Athletes reported experiencing stress and pressure from sport due to a perceived lack of autonomy regarding their sport involvement. Further, participants expressed disappointment in missing other social experiences due to their sport participation. Coakley concluded that burnout is best understood as the product of a constrained set of life experiences limited solely to sport, resulting in the development of a single identity or self-concept (e.g., athletic identity), a process he termed "unidimensional identity." He further noted that a lack of control over their sport experiences and general life development was also a likely contributor to burnout among athletes.

Only a limited number of burnout studies have addressed the influence of athletic identity and a unidimensional identity on the development of athlete burnout (Goodger, Gorely, Lavallee, & Harwood, 2007); however, some athlete burnout research has yielded results that appear to support Coakley's findings and the notion of unidimensional identity and external control components of Coakley's model (Black & Smith, 2007; Gould, Udry et al., 1996; Gustafsson, Hassmen, Kentta, & Johansson, 2008; Gustafsson, Kentta, Hassmen, Lundqvist, & Durand-Bush, 2007). Further, Brewer (1992) noted that athletic identity may be positively related to identity foreclosure. Given that this process refers to a strong and exclusive

identification with the athletic role without exploring alternative roles (Murphy, Petitpas, & Brewer, 1996), identity foreclosure appears to conceptually relate to what Coakley (1992) described as a unidimensional identity regarding the athletic role. Additional support for this model came from Raedeke (1997), who revealed that swimmers categorized as malcontented reported the highest levels of burnout and also perceived alternative activities to swimming as being attractive. This provided some support for the influence of athletic identity on the experience of burnout in that, according to Coakley (1992), athletes are believed to burn out from their sport when they realize the foreclosure of their identity as an athlete has contributed to their inability to experience other opportunities outside of sport.

Despite SDT and Coakley's identity model having been used independently as models examining burnout in older adolescent and adult athletes, research addressing constructs of SDT and identity development appear to provide conceptual support for examining both theories concurrently within a burnout context. For example, Deci and Ryan (1991) suggested that the formation of one's identity (i.e., the "self") is a motivational experience that can include either self-determined (intrinsic) or externally motivated processes "through which a person contacts the social environment and works towards integration with respect to it" (p. 238).

More recently, researchers have integrated both identity and constructs of SDT within their investigations in sport and exercise settings (Wilson & Muon, 2007; Woodruff, 2004). From a qualitative examination of collegiate student-athletes, Kimball (2007) found that student-athletes' perceptions of autonomy appeared to be linked to their own developed sense of identity as an athlete. Specifically, Kimball suggested that collegiate student-athletes participate in an environment where their autonomy is consistently restricted by factors related to coaching behaviors, NCAA regulations, and commercialism of intercollegiate athletics. Further, their ability to reframe such nonautonomous situations as being a product of their own commitment to the student-athlete identity and associated lifestyle enhanced their sense of self-determination, perceived control over their environment, and satisfaction with their sport experience.

Although SDT and Coakley's identity model provide a promising perspective from which to examine the occurrence of burnout among athletes, a paucity of research has explored burnout in younger athletes. In fact, Goodger et al. (2007) contended that future burnout research attention should be given to the psychosocial perspective on burnout (e.g., Coakley, 1992) rather than the traditional stress-based models (e.g., Silva, 1990; Smith, 1986). In order for these issues to be adequately addressed, sport psychology researchers and practitioners require measures that are psychometrically appropriate given the unique developmental differences among young athletes.

Within the sport psychology profession, Brodtkin and Weiss (1990) examined literature from several disciplines including psychology, physical education, gerontology, and leisure studies in an effort to establish developmentally appropriate categories that accounted for cognitive, physical, and psychological differences among sport and exercise participants. The results of their review led authors to create six age groups of participants: 6–9 years of age, 10–14 years of age, 15–18 years of age, 19–22 years of age, 23–39 years of age, 40–59 years of age, and 60–74 years of age. Regarding these first three developmental categories, Vernon (2004) also constructed similar groupings (6–11, 10–14, 15–17) and noted that

these groups differ on cognitive, social, physical, and emotional characteristics as well. For the population of youth athletes relevant to the current study, participant categories have been referred to as midchildhood (7–10 years of age) and early adolescence (11–12 years of age), given the age and developmental range of these athletes. Cognitively, these athletes tend to be more concrete in their thinking and are not fully able to reason abstractly. In addition, athletes in these age groups may have a limited attention span and find sophisticated language more difficult to comprehend (see Visek, Harris, & Blom, 2009). Given these developmental differences among sport and exercise participants, particularly in their cognitive development, it seems that to assess various constructs within the sport psychology discipline, developmentally appropriate measures need to be evaluated for their use in effectively working with youth sport participants.

To date, related research has frequently used such inventories as the Athlete Burnout Questionnaire (Raedeke & Smith, 2001), the Sport Motivation Scale (Pelletier, Fortier, Vallerand, Tuson, & Briere, 1995), and the Athletic Identity Measurement Scale (Brewer & Cornelius, 2001; Brewer, Van Raalte, & Linder, 1993) to assess burnout, motivation along the SDT continuum, and athletic identity, respectively. While these measures have had a significant impact on the assessment of these constructs, they have not been validated for use with a younger athlete population (age < 13 years). The lack of developmentally appropriate measures has created a challenge in assessing burnout within a sample of younger athletes using any theoretical framework to guide such endeavors, including SDT and Coakley's model. Further, with only a limited amount of research attention having been given to the exploration of burnout among children and younger adolescent athletes, it is evident that additional efforts need to be directed toward this special population of sport participants. This is particularly true given the positive implications of sport participation for young athletes regarding psychological, social, and physical development (Fraser-Thomas et al., 2005). Therefore, the purpose of the current study was to assess the psychometric properties of the Athlete Burnout Questionnaire, the Sport Motivation Scale, and the Athletic Identity Measurement Scale, which were modified by the authors for a youth athlete sample.

Method

Participants

The data reported in the current study is part of a larger project in which additional data were collected for the purpose of understanding the factors affecting youth athlete burnout. For the current study, only data from those participants who completed the modified inventories (age < 13 years) are reported. The remaining data used a series of alternative measures and were not included in the present analyses due to this difference in assessment. The 88 participants in the current study represent a sample of female ($n = 49$) and male ($n = 39$) athletes from competitive club swimming programs located in the mid-Atlantic region of the United States. The mean age of participants was 10.36 years ($SD = 1.44$). On average, these athletes started swimming at close to seven years of age ($M = 6.83$, $SD = 1.93$), swam close to three and one half days per week ($M = 3.41$, $SD = 1.01$), and practiced between one and two hours per session ($M = 1.73$, $SD = .69$). The majority of

participants were Caucasian (80.0%), with some reporting being of mixed ethnic heritage (10.6%). About 63% of the sample also reported being involved in sports other than swimming.

Procedures

Following Institutional Review Board approval, the head coaches from approximately 25 mid-Atlantic club swimming teams were contacted for permission to survey athletes on their respective teams. Those coaches, parents, and swimmers who consented/assented to participate ($n = 7$ teams) were provided a cover letter that described the study, its voluntary and anonymous nature, and the rights of participants. At the start of each data collection session, parents and swimmers were addressed by the research team, who explained the purposes and nature of the project. At this time, the researchers provided consent forms to parents and assent forms to swimmers. After obtaining assent from swimmers and consent from their legal parent/guardian, the parent/guardian received the demographic forms to complete while the swimmers received a packet containing the instruments and were given scripted instructions on how to complete them in the order in which they were received. In an effort to adhere to the standardized administration procedures and script for survey completion, inventories were not counterbalanced.

Instrumentation

A demographic questionnaire was completed by parents/guardians that assessed the swimmer's age, gender, nationality, age when the participant first started competing in swimming, number of days and hours per day spent swimming each week, and other sport involvement. Instruments completed by youth swimmers assessed burnout, motivation, and athletic identity. For these inventories, modified versions of each were created and used due to the participants' developmental stage and because the original inventories had yet to be used and validated with athletes of these ages. Permission to modify these inventories was received from the original author of each inventory. For these questionnaires, two doctoral students and a professor of sport and exercise psychology independently modified the instructions and items as deemed appropriate, while attempting to maintain the original meaning. These modified versions were then used in a pilot study of youth athletes. Subsequently, these revised measures were submitted to a reading specialist who examined each inventory for content and readability. Readability statistics were computed using the Fry Reading Level, Flesch Reading Ease Score, and the Flesch-Kincaid Grade Level to ensure that the modified inventories were appropriate for participants from the younger children developmental group (see Table 1). All statistics supported the modifications and the inventories were deemed to be developmentally appropriate by the reading specialist and researchers.

Athlete Burnout. To assess burnout in athletes, a modified version of the Athlete Burnout Questionnaire for youth was used (Raedeke & Smith, 2001). This multidimensional inventory contains 15 items that assess three subscales of sport burnout. Subscales include (a) reduced sense of accomplishment, (b) emotional and physical exhaustion, and (c) sport devaluation. Participants responded to the degree each item applies to him or her using a 5-point Likert-type scale ranging

Table 1 Readability Statistics for Modified Inventories

	Flesch Reading Ease	Flesch-Kincaid Grade Level	Fry Reading Level (years)
Athlete Burnout Questionnaire (ABQ)	86.4	2.7	9
Athletic Identity Measurement Scale (AIMS)	78.2	4.8	–
Sport Motivation Scale (SMS)	82.2	5.0	10

Note. No Fry Reading Level score was calculated for the AIMS due to there being a too few words and paragraphs in the measure to accurately calculate the score.

from 1 (*almost never*) to 5 (*almost always*). The psychometric properties of this instrument were deemed adequate, as construct validity and test-retest reliability were established for an adult population during the inventory's construction (Raedeke & Smith, 2001). Recent studies utilizing this instrument have also yielded sound validity and reliability with high school athletes (Price & Weiss, 2000; Raedeke & Smith, 2004), collegiate athletes (Harris & Ostrow, 2007; Lemyre et al., 2005; Wiggins, Cremades, Lai, Lee, & Erdmann, 2006), and amateur and professional rugby players (Cresswell & Eklund, 2004, 2005a, 2005b, 2005c). Inventory modifications included adapting items to account for the participants' age. For example, the original ABQ item, "I'm not performing up to my ability in swimming" was modified to, "I am not swimming as well as I think I can."

Motivation. To assess the motivational constructs of self-determination theory, the Sport Motivation Scale modified for youth athletes (SMS; Pelletier et al., 1995) was used. The SMS is a 28-item inventory that assesses three types of intrinsic motivation (intrinsic motivation to know, accomplish things, and experience stimulation), three types of extrinsic motivation (external regulation, introjection, and identification), and amotivation. The psychometric properties of the original version of the inventory were previously established by the authors during the survey's construction (Pelletier et al., 1995) and through more recent research (Cresswell & Eklund, 2005a, 2005b, 2005c). Other researchers have successfully used the SMS within a youth sport population of adolescent athletes (Gould, Udry et al., 1996; Raedeke & Smith, 2001). Inventory modifications included adapting items to account for the participants' age. For example, the item, "For the pleasure I feel in living exciting experiences" was modified to, "I swim for the pleasure I feel in doing exciting things." Additionally, the original 7-item Likert-type scale used in the SMS was shortened to a 5-point Likert-type scale in an attempt to make the inventories more age-appropriate.

Athletic Identity. To assess the degree to which participants identify with their role as an athlete, the Athletic Identity Measurement Scale modified for youth athletes was used (AIMS; Brewer & Cornelius, 2001; Brewer et al., 1993). The most recent version of the AIMS consists of seven items in which athletes are asked to rate how strongly they agree or disagree with each statement. Scores for this measure were recorded using a Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly*

agree). Support for the AIMS' validity and reliability were previously provided by its authors for its original and revised form (Brewer & Cornelius, 2001; Brewer et al., 1993), with more recent studies also providing additional psychometric support (Tasiernski, Kennedy, Gardner, & Blaikley, 2004; Visek, Hurst, Maxwell, & Watson, 2008). Researchers have also demonstrated adequate psychometric properties using the original 10-item AIMS in samples of adolescent athletes (Gould, Udry et al., 1996; Raedeke, 1997). Inventory modifications for the current study included adapting items to account for the participants' age. For example, the item, "I would be very depressed if I were ever injured and could not compete in sport" was adapted to "I would be very upset if I were ever injured and could not swim in competitions." Further, the original 7-item Likert-type scale used in the AIMS was shortened to a 5-point Likert-type scale in an attempt to make the inventory more age-appropriate.

Results

Missing data values were relatively minimal in the total sample and were within the 15% margin of acceptability for participants and variables (George & Mallery, 2006). These missing data values were replaced using the sample's mean for the item in question. Descriptive statistics (e.g., means and standard deviations) were computed for athletes' responses on the subscales of the SMS and ABQ, in addition to the total score for the AIMS. These statistics are displayed in Tables 2, 3, and 4 for the ABQ, SMS, and AIMS, respectively.

To assess the reliability of the modified versions of the inventories, Cronbach's alpha coefficients were calculated to examine the measures' internal consistencies. After completing a series of factor analyses on the modified versions of these inventories, only three subscales of the SMS were retained (i.e., intrinsic motivation to know, external regulation, and amotivation). Therefore, Cronbach's alpha coefficients were only calculated for these three subscales of the SMS. Results generally supported the internal consistency of subscales and/or total score of all the inventories ($\alpha > 0.70$; Kaplan & Saccuzzo, 1997). Values ranged from 0.74 to 0.88 for the subscales of the ABQ, and from 0.71 to 0.81 for the SMS subscales. The alpha coefficient for the AIMS approached adequate reliability with a value of 0.69.

Exploratory Factor Structure of the Modified Measures

To provide support for the factors of the modified versions of the ABQ, SMS, and AIMS, three exploratory factor analyses were conducted. All procedures used a principal components analysis for extracting factors. Because of the novelty of these modified measures and that factors including the subscales of the ABQ were used as dependent variables for other analyses of the study, the principal components extraction method was selected instead of a principal factors extraction (Tabachnik & Fidell, 2007). For all analyses, both orthogonal and oblique rotations were used to determine which produced the strongest factor solutions statistically and conceptually. Similar procedures are typically used in multivariate research (Tabachnik & Fidell, 2007) and have been conducted within the athlete burnout research area (e.g., Raedeke & Smith, 2001). For all analyses, a varimax orthogonal rotation produced the strongest factor solutions. A minimum loading of 0.40 was established for the inclusion of a variable in a factor.

Although a smaller sample was used for the present analyses, several indicators were inspected that would suggest a sufficient sample size was obtained to perform the current statistical analyses. Tabachnik and Fidell (2007) suggested indicators should include multiple moderate to strong correlations between several variables/items ($r > 0.30$). In addition, a Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy value that is above 0.60 suggests that adequate sampling has been achieved for the factorability of items to occur. Bartlett's Test of Sphericity is a test of the factorability of variables and is sensitive to sample size; a significant value is desirable. A significant value with a smaller sample size may also indicate that an appropriate sample has been obtained for the factorability of items to occur. Finally, an examination of the communality values for each analysis should ideally reveal scores for each item that are less than one. Such a value also indicates that an adequate sample size has likely been obtained with appropriate correlations present among variables. For all of the following analyses, each of the abovementioned criteria were met, suggesting an adequate sample was obtained to conduct these analyses.

Athlete Burnout Questionnaire (ABQ). A four-factor solution was initially generated for the youth-modified version of the ABQ. After inspecting the factor loadings within each of the components, it was revealed that several items cross-loaded on three of the four factors. Further, one factor was found to contain only two items with strong loadings. Therefore, this solution was not retained. Subsequent factor analyses in which a forced three-factor solution was obtained revealed the strongest solution for the modified version of the ABQ with 61.60% of the variance accounted for (see Table 2). The three factors extracted all had eigenvalues above 1.0 and were identified as emotional and physical exhaustion, sport devaluation, and reduced accomplishment. Five, four, and three items loaded on these subscales, respectively, with loadings ranging from 0.51 to 0.84. It should be noted that two items cross-loaded on two factors (items 5 and 7) but were deemed appropriate for one factor after researchers examined the wording of items for content. Two of the remaining items were found to cross-load on two factors (items 6 and 15), with the last remaining item loading on an unanticipated factor (item 13).

Sport Motivation Scale (SMS). The youth-modified version of the SMS was best explained by a three-factor solution that accounted for 59.73% of the variance (see Table 3). Each factor had eigenvalues above 1.0 and all were clearly defined by their corresponding items. All items loaded on the originally identified subscales with loadings ranging from 0.51 to 0.87. Each factor contained four items and was interpreted to include the intrinsic motivation to acquire knowledge, external regulation, and amotivation subscales of the SMS.

Athletic Identity Measurement Scale (AIMS). A three-factor solution was revealed for the youth-modified version of the AIMS. Six items were originally retained for this solution due to the cross-loading of the seventh item on two factors. However, internal consistency of this 6-item factor was poor ($\alpha = 0.50$). After inclusion of the seventh item, internal consistency improved to 0.69 and the variance accounted for by the solution was above 70%. Because the total AIMS score is traditionally used when reporting results rather than individual subscales, all seven of the items were retained. Six of the items were well-defined on the three factors with loadings ranging between 0.69 and 0.92 (see Table 4). The first

Table 2 Factor Loadings, Internal Consistencies, and Descriptives for Modified ABQ

	Factor 1 (E)	Factor 2 (D)	Factor 3 (RA)	Communality
ABQ 2	0.72	–	–	0.53
ABQ 4	0.76	–	–	0.78
ABQ 8	0.82	–	–	0.74
ABQ 10	0.84	–	–	0.77
ABQ 12	0.68	–	–	0.59
ABQ 1	–	0.79	–	0.66
ABQ 5	–	0.63	–	0.72
ABQ 7	–	0.52	–	0.52
ABQ 13	–	0.33	–	0.52
ABQ 14	–	0.82	–	0.69
ABQ 3	–	–	0.77	0.64
ABQ 6	–	–	0.39	0.45
ABQ 9	–	–	0.51	0.49
ABQ 11	–	–	0.80	0.73
ABQ 15	–	–	0.23	0.43
<i>Final Solution</i>				
Eigenvalue	6.38	1.73	1.13	
Variance accounted for	27.99	17.73	15.88	
Cronbach Alpha				
Coefficient (α)	0.88	0.74	0.77	
Mean (M)	2.11	1.87	1.95	
Standard Deviation				
(SD)	0.99	0.85	0.80	

Note. (E) = Exhaustion, (D) = Devaluation, (RA) = Reduced Accomplishment

factor was identified as the social identity subscale and contained two items. The exclusivity subscale was also revealed and contained its traditional two items similar to the original measure. The third factor included one item from its original negative affectivity subscale in addition to one item that traditionally has loaded on the social identity subscale. The seventh item originally in question fell strongest on the negative affectivity subscale as well, which is consistent with the original version of this measure (Brewer & Cornelius, 2001).

Discussion

It is conceivable that burnout may exist among young athletes given that research has documented stress and other negative sport experiences for youth athletes as potential consequences of sport participation (Amorose et al., 2009; Smoll, 1986).

Table 3 Factor Loadings, Internal Consistencies, and Descriptives for Modified SMS

	Factor 1 (IM Know)	Factor 2 (Amot.)	Factor 3 (Ext. Reg.)	Communality
SMS 2	0.76	–	–	0.60
SMS 4	0.76	–	–	0.63
SMS 23	0.80	–	–	0.67
SMS 27	0.82	–	–	0.72
SMS 3	–	0.64	–	0.47
SMS 5	–	0.68	–	0.49
SMS 19	–	0.69	–	0.51
SMS 28	–	0.87	–	0.80
SMS 6	–	–	0.75	0.60
SMS 10	–	–	0.81	0.66
SMS 16	–	–	0.73	0.60
SMS 22	–	–	0.51	0.41
<i>Final Solution</i>				
Eigenvalue	3.05	2.85	1.26	
Variance accounted for	21.60	19.93	18.19	
Cronbach Alpha				
Coefficient (a)	0.81	0.73	0.71	
Mean (<i>M</i>)	3.57	1.67	2.37	
Standard Deviation (<i>SD</i>)	0.99	0.90	1.00	

Note. Factor 1 = Intrinsic Motivation to Know, Factor 2 = Amotivation, Factor 3 = External Regulation.

Thus, the importance of examining burnout in young samples of athletes is significant, given the influence that sport participation has on these athletes regarding their psychological, social, and physical development. Because there appears to be relatively little research using any theoretical frameworks to examine the burnout experience among youth sport participants, research grounded in theory is clearly needed to address this potentially negative outcome of sport involvement. For this to be adequately addressed, the field of sport psychology first requires measures that are psychometrically appropriate for younger athletes. Following the development of these measures, researchers will be able to better assess the burnout experiences of young athletes and techniques for reducing burnout in these athletes using multiple methods of inquiry.

The present study assessed preliminary psychometric data for the Athlete Burnout Questionnaire, the Sport Motivation Scale, and the Athletic Identity Measurement Scale, which were each modified for use with a youth athlete sample. Results of the exploratory factor analyses and internal consistencies provided preliminary psychometric support for the continued evaluation of the modified versions of the

Table 4 Factor Loadings, Internal Consistencies, and Descriptives for Modified AIMS

	Factor 1	Factor 2	Factor 3	Communality
AIMS 1	0.86	–	–	0.60
AIMS 2	0.85	–	–	0.63
AIMS 4	–	0.76	–	0.67
AIMS 5	–	0.91	–	0.72
AIMS 3	–	–	0.70	0.47
AIMS 6	–	–	0.79	0.49
AIMS 7	–	–	0.46	0.51
<i>Final Solution</i>				
Eigenvalue	2.59	1.19	1.14	
Variance accounted for	27.71	22.68	19.80	
AIMS Total Cronbach Alpha Coefficient (α)		0.69		
AIMS Total Score Mean (M)		3.48		
AIMS Total Score Standard Deviation (SD)		0.74		

Note. Factor 1 = Intrinsic Motivation to Know, Factor 2 = Amotivation, Factor 3 = External Regulation.

ABQ, SMS, and AIMS. For the modified ABQ, a three-factor solution emerged that was relatively similar to the original version of this measure and accounted for approximately 62% of the variance. The relatively strong factor loadings of the revised measure suggest that this version of the ABQ has potential utility in examining burnout in younger athletes (i.e., age < 13 years). The internal consistencies of these subscales provided further support for the measure's psychometric integrity (Cronbach's α range = 0.74–0.88). The exhaustion and devaluation subscales accounted for a similar percentage of variance when compared with the original version. With researchers documenting the presence of stress among youth sport participants (Roberts, 1986; Scanlan, 1986; Smoll, 1986), and with stress linked to the experience of burnout in young and adult-aged athletes (e.g., Gould, Udry et al., 1996; Smith, 1986), it is not surprising that the emotional and physical exhaustion subscale would emerge as the measure's strongest factor.

The reduced accomplishment subscale was found to account for somewhat less variance than its original counterpart. There were also three items on the youth-modified version that cross-loaded on the reduced accomplishment and devaluation subscales. It appears that reduced sport accomplishment and sport devaluation were also components of the burnout experience among the youth athlete sample, even when considering the few items that cross-loaded on both subscales. The total variance that was accounted for and the fact that all items loaded on a particular factor suggests that items are measuring some aspect of the multidimensional nature of burnout similar to the original inventory. Therefore, one must consider that while

reduced accomplishment may be a manifestation of burnout in sport participants, it may play less of a role in younger athletes. This may be particularly true when one considers the time that may be necessary for athletes to establish norms for accomplishment and value for their sport involvement. Horn (2004) noted that as athletes' mature from middle childhood (7–12 years) to adolescence (13–18 years), they experience an increase in the sources used to evaluate their competence or ability. The limited duration of a young athletes' sport participation may make it more difficult to experience reduced sport accomplishment and devaluation, as they may not have had the necessary experiences or developmental capacity to conceptualize what a decrease in accomplishment and value would entail.

Alternatively, items from the reduced accomplishment and devaluation scales may require additional modification to further distinguish the constructs they are intended to measure among young athletes. Future research might consider the development of additional trial items or using more specific language with regard to modifying current items to enhance the construct validity of these scales (e.g., "I don't like swimming as much as I used to" versus "I'm not into swimming like I used to be"). As a whole, interpretation of the validity and reliability scores does suggest that the youth-modified version of the ABQ has provided future researchers with a good measure to work from regarding the assessment of burnout among youth athletes.

Results for the youth modified version of the SMS also demonstrated preliminary support for its utility in measuring motivation in youth athletes. The seven-factor solution contained in the original version of this measure was not supported for the current study's younger athlete sample. Although modifications were made to account for the development of these young athletes, it is possible that the modifications did not adequately match the cognitive development of the participants. Further, one might posit that the seven-factor solution includes constructs on the SDT continuum that are difficult for youth athletes to differentiate from one another, particularly the different forms of extrinsic and intrinsic motivation. This possibility may be further supported in that the strongest solution that emerged from the exploratory factor analysis contained three factors that represented the most extreme points along the self-determination theory continuum (e.g., amotivation, external regulation, intrinsic motivation for knowledge). The corresponding items of these subscales loaded exclusively and strongly while contributing to a solution that accounted for nearly 60% of the variance. Other burnout researchers using the SMS to assess self-determination theory in adult athletes have used similar subscales. Cresswell and Eklund (2005a, 2005b, 2005c) suggested that using these few subscales can provide a representation of the entire SDT continuum while minimizing the burden placed on athletes from having to complete all 28 items of the original version of this measure. The reliability analysis demonstrated adequate results that also support continued psychometric assessment for this modified measure's utility in examining motivation in youth athletes.

The youth-modified version of the AIMS also demonstrated promising psychometric properties and closely approximated the factor structure from the work of Brewer and Cornelius (2001). Future research is needed to continue to assess the appropriateness of this modified version of the AIMS based upon the age and/or developmental characteristics of athletes. Given that 70% of the variance was accounted for with this solution and that a total athletic identity score is typically

reported rather than subscale scores, the youth-modified version of the AIMS used in the current study revealed strong potential for the assessment of athletic identity in younger athletes.

Limitations and Future Directions

Although promising results were obtained in the current study regarding the assessment of youth sport burnout using SDT and Coakley's (1992) unidimensional identity model as theoretical frameworks, there are certain limitations that should be noted. One area of concern for burnout research using the ABQ is that norms are not yet available for comparison of the current study's burnout scores. For sport psychology clinicians and researchers to effectively ascertain the degree of burnout athletes are experiencing, the use of established norms for various age groups would be helpful for comparison when using the ABQ.

Another limitation within the current study was the sample size. Although the sample obtained was adequate to use the statistical procedures that were conducted, a larger sample would have been more ideal to conduct structural equation modeling and factor analytic procedures. It was of interest that only about 25% of those teams solicited for participation agreed to allow their team to be involved in the current study. The teams approached for participation were among a relatively competitive group of swimming programs. As a result, some coaches did not appear to be willing to set aside time from practice to allow their swimmers to complete the measures. It is also possible that after being informed about the nature of the study and inventories swimmers would be asked to complete, coaches and parents were apprehensive to allow their athletes to complete the measures, as their responses could negatively implicate coaches' and parents' attitudes and practices regarding athletes' swimming involvement. Although the anonymous and confidential nature of survey completion was stressed to coaches, parents, and athletes, it might be helpful for future research in this area to emphasize to these individuals how this line of research can potentially benefit swimming programs and their athletes' continued swimming success and enjoyment.

Additional research attention should be given to the continued psychometric assessment of the youth modified versions of the ABQ, SMS, and AIMS, using larger sample sizes when available. Confirmatory factor analyses could potentially provide support for the modified versions of these measures, in addition to further supporting the factor structure of the original versions of these inventories. In addition, the subsequent evaluation of these measures should include youth athletes from sports outside of swimming to better ascertain the external validity of the modified inventories.

Conclusion

Generally, the current study provided some preliminary psychometric support for versions of the ABQ, SMS, and AIMS modified for youth sport participants. With the availability of psychometrically sound instruments to assess burnout, motivation, and athletic identity in a youth sport population, sport psychology researchers and practitioners can continue to advance their exploration and understanding of these constructs both within and outside of a burnout context. In addition, the availability

of such measures would likely enhance sport psychology practitioners' ability to identify and assess such areas within both clinical and psychoeducational practice so that youth athletes receive appropriate interventions necessary to enhance their sport experiences.

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