Abstract

In a series of related studies, the relevance of a role strain framework to interpret the difficulties junior elite athletes experience in their multiple life domains was assessed. Here, the Role Strain Questionnaire for Junior Athletes (RSQ-JA) was developed to measure the role strain experienced by junior athletes. In Study 1, role strain was explored via interviews with 20 elite junior athletes. Based on themes emerging from these interviews, an initial 65-item pool for the RSQ-JA was created and subjected to an exploratory factor analysis in Study 2. The factors derived in Study 2 were tested for factorial validity using confirmatory factor analysis in Study 3. Results supported a 22-item five factor structure for the RSQ-JA. These factors reflected the salient sources of role strain, namely; (i) overload in school, (ii) overload in sport and between roles, (iii) between-role conflict, (iv) underload, and (v) ambiguity. The RSQ-JA therefore provides the initial validation of the first measure of role strain experienced by junior elite athletes.

Keywords: talent, sport, school, dual career, stress, coping

Development and Initial Validation of the Role Strain Questionnaire for Junior Athletes (RSQ-JA)

Elite junior athletes fulfil dual careers (Wylleman & Lavallee, 2004). They are athletes and students, and are therefore required to fulfil both training and school commitments (Brettschneider, 1999; Dubois, Ledon, & Wylleman, 2014). Given only one in three junior elite athletes progress to a senior elite level (Oldenziel, Gagné, & Gulbin, 2003), accomplishing good secondary education is critical for those who did not make it to a professional level in their sport. Yet, school is typically perceived to conflict with sport in terms of time commitment (Henriksen, Stambulova, & Roessler, 2010a, 2010b) making balancing school and sport difficult (Blom & Duijvestijn, 2008; Dubois, et al., 2014). Accordingly, better understanding the interplay between school and sport within the lives of junior elite athletes is an important topic of research.

A number of studies have investigated the sport specific stressors that athletes experience (Hanton, Fletcher, & Coughlan, 2005; Nicholls & Polman, 2007; Tamminen & Holt, 2010). This work extends to the dual careers of athletes, and how the concurrent demands from school and sport affect other life domains such family and friendships (Christensen & Sørensen, 2009; Dubois et al., 2014). Notably, Christensen and Sørensen's (2009) research indicates that the pressures junior athletes experience in their lives, and a lack of time for friends and leisure, are associated with dropping out of school and choosing courses of lower cognitive burden. Dubois et al. (2014) similarly emphasized dissatsifaction amongst athletes who were forced to make educational decisions based on the toll the subjects would take on their time, instead of their vocational preferences. Increasingly, professional sport organisations are beginning to

recognise that a well balanced dual career will increase sport performance of elite junior athletes (Pink, Saunders, & Stynes, 2014). Hence, the present study seeks to untangle the interplay between school and sport by developing and validating a measure of athlete role strain.

Role strain

Role strain emerged from research in the workplace where it was defined as "the felt difficulty in fulfilling role obligations" (Goode, 1960, p. 483). This work extends to both within-role obligations, as well as tension between role obligations. Elite junior athletes experience role strain due to the sport role (e.g., training demands, performance expectations; Brenner, 2007), but also as a result of competing, personally meaningful, roles (e.g., friends, school, family; Christensen & Sørensen, 2009; Wylleman & Lavallee, 2004). Adopting this perspective, a model of role strain for adolescents was developed which encapsulates four central components (Fenzel, 1989a; Holt, 1982).

The first component of role strain is ambiguity and is described as a lack of understanding or clarity about one's responsibilities in one or multiple roles (Holt, 1982; Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964). For example, a junior athlete might be unsure about the training requirements associated with his/her sport and this uncertainty might breed associated stresses. Ambiguity has been widely examined in relation to fulfilment of the athlete role. In particular, studies employing the Role Ambiguity Scale (Eys, Carron, Beauchamp & Bray, 2003) indicate that experiences of ambiguity are associated with increased cognitive and state anxiety (Beauchamp, Bray, Eys, & Carron, 2003), lower athlete satisfaction (Eys, Carron, Bray, & Beauchamp, 2003), and less confidence in coach competence (Bosselut, McLaren, Eys, & Heuzé, 2012).

The second component of role strain model is conflict. Conflict consists of two components. First, it refers to a discrepancy between the expected behaviours or performance by others (e.g., coaches, parents) within a particular role (Fenzel, 1989a). For instance, a sport coach might prefer a junior athlete to prioritize sport over school, whilst a teacher might prefer this athlete to prioritize school over sport. Second, conflict reflects the athletes' personal schema of what constitutes acceptable behaviour or performance (Fenzel, 1989a). Here, a junior athlete might be expected to show aggression in his/her game, but dislike doing so. This internal discrepancy has a number of costs for athletes' performance and well-being. For instance, role conflict has been associated with lower self-efficacy, and higher burnout in university and elite athletes (Beauchamp & Bray, 2001; Kjormo & Halvari, 2002).

The third component of role strain model is overload. It refers to the perception that the demands placed on athletes within and between roles exceed the personal resources to meet them (Fenzel, 1989a). Overload can thus occur due to a depletion of physical and mental vigour, self-efficacy, social-support and time. An example of overload might be a perceived lack of time to fulfil both school and sport demands. Many researchers have identified overload, or a lack of recovery time, as a critical risk factor of stress and burnout amongst athletes (Brenner, 2007). This is similarly the case in school, with deficits in self-efficacy being important to students' development of burnout (Moen, 2013).

The final component of role strain model is underload. It refers to a perceived underutilization of one's resources (Holt, 1982). Underload therefore manifests when an imbalance is perceived between high personal capabilities and a lack of challenge posed

by the environment. A junior athlete in a rural area, for instance, might only have access to lower level sport clubs and thus not be challenged to further develop his/her sporting abilities. When perceived abilities outweigh perceived challenge in achievement domains, apathy and boredom are expected to result (Fredricks, Alfeld, & Eccles, 2010). In sport, boredom related to a lack of challenge has been identified as a significant antecedent to dropout amongst promising athletes (Enoksen, 2011).

While the role strain framework is clearly applicable to sport, it has not been applied in this context. To date, instruments have tapped into separate elements of role strain to examine individual stressors, but no measure is available to capture the full array of role strain dimensions. In domains other than sport, tools to directly measure role strain have been developed (e.g., Early Adolescent Role Strain Inventory; Fenzel, 1989a). Research using this tool has demonstrated that higher role strain is associated with poorer school performance, lower global self-worth, lower self-esteem and lower perceived competence (De Bruyn, 2005; Fenzel, 1989a, 1989b, 1992, 2000). The available evidence therefore indicates that role strain is important for performance and health outcomes, and it has potentially important implications for elite junior athletes.

The present set of studies

The role strain model provides a useful heuristic for the stressors that encapsulate role stain. Therefore, we propose that this framework has utility to explain important variability in athletes' lived experiences in the way they balance the competing demands of their relevant life domains (e.g., school, sport family and friendships). To test this hypothesis, in Study 1, we investigated the experiences of athlete role strain in a series of semi-structured interviews. Based on these experiences, in Studies 2 and 3, we developed

and validated a measure of role strain in junior athletes. Overall, these studies sought to advance the understanding of role strain in junior-elite sport, as well as to provide a springboard for subsequent research into its antecedents and consequences.

Study 1

The purpose of Study 1 was to explore the role strain that junior elite athletes experience in their relevant life domains and to inform the item generation for Study 2.

Method

Participants. Twenty Australian elite junior athletes who attended secondary school at the time of the study, were interviewed (aged 13-17 years; M_{age} =15.5 years; *SD* =.9). Athletes from one team sport (Australian Rules Football, ARF) and two individual sports (Tennis and Gymnastics) were approached. Within each sport, participants were sampled based on their current sport performance level. The gymnasts (N=5) and tennis players (N=4) were identified by their respective sport federations as belonging to the 'National Top' in their age category. The ARF players were either identified by the Australian Football League as belonging to the 'National Top' (ARF-AFL, N=5) or scouted by a Sports Academy as talented players (ARF-SA, N=6). ARF is mainly played competitively by males, therefore our sample predominantly consisted of male adolescents (17 men, 3 women). The mean time spent in school, sport and travel varied across participant groups. On average gymnasts spent the most time in school, sport and travel (66 hours per week; see Table 1). Our sample included participants attending both public and private schools.

Ethical approval was granted from the relevant institutional research ethics committee and the Department of Education and Early Childhood Development in

Victoria. Written consent was received from parents/guardians, and the participants prior to commencement of the study.

Interview procedure. Participants were asked to record their age, sport performance level and time commitments on a sheet to be returned to the researcher prior to their interview. Each junior elite athlete was interviewed individually and agreed verbally to audio recording of their interview (Olympus WS-812 digital audio recorder). The interview times ranged from 22 to 46 minutes (M_{time} = 35 minutes; SD = 8).

To ensure that the participants felt at ease, a site familiar to the participant was chosen for the interview. For athletes classified as 'National Top', interviews were conducted in a closed room at their training centre. The ARF-SA athletes were interviewed in a closed room at their school.

The interviewer followed a semi-structured interview guide which included background information, the roles the participant fulfilled, role expectations, challenges in meeting role demands and in balancing multiple roles, and how successful the participants perceived themselves to be at balancing their roles. Example questions were: 'Which roles do you fulfil?' and 'What is your experience of balancing all of your roles?'. In order to ensure that no life role was omitted, the participants were encouraged to talk about all of their roles, such as school, sports, arts, family and religion (Marks & MacDermid, 1996). The interviews were conducted by the first and second authors. For confidentiality, all participants were coded (e.g., P1, P2 etc.) and their respective sports were not mentioned.

Analysis. Interviews were transcribed verbatim and coded using the MAXQDA 11 software. A deductive approach was adopted for the initial thematic coding, as is

recommended for qualitative analysis when existing theories are being tested (Elo & Kyngäs, 2008). Specifically, the researchers initially coded the data using the definitions of the four role stressors identified by Fenzel (1989a; 1989b; 1992; 2000). Only semantic themes were identified. Two investigators, trained in qualitative research methods, were involved in the coding process.

After this initial deductive approach, an inductive approach was taken to ensure that additional higher order themes were not omitted, and to allow for lower-order themes to emerge. Three random transcripts, one from each sport, were first coded by both investigators. Differences were discussed and resolved until mutual agreement was reached, this, for example led to the redefinitions of the stressors 'role conflict' and 'role ambiguity'. A new higher order theme 'feeling misunderstood' was added. A second set of three interviews was coded by the two researchers in accordance with the new definitions and the newly identified themes. Minimal differences between the researchers' coding results were noted. These differences were discussed and the researchers agreed on the coding scheme. The researchers coded and compared two more interviews and agreed that the coding scheme appeared to have reached saturation. The primary researcher coded the remaining 12 interviews and did not identify any additional higher or lower order themes.

Results

Participant identified roles and role stressors. All participants reported being an athlete, student, family member and friend. In addition, some identified themselves with other roles including; an athlete in another sport (n= 1 state level; n = 5 local club/recreational); a part-time employee (n=2); and, a boyfriend (n=1). One ARF player

identified multiple athlete roles due to his involvement in different teams (within the same sport).

All participants in our sample mentioned experiences of overload at least once in the interview, 95% of the athletes mentioned experiences of conflict, while experiences of ambiguity were reported by 75% of the participants. Only one participant (5%) reported an experience of underload.

Overload. All elite junior athletes reported experiences of role overload, instances in which the athletes felt that role demands exceeded their resources. Often, these experiences were not due to one specific role, rather it was the combination of roles that exceeded the athletes' resources. A perceived lack of time to fulfil all of their role demands was frequently reported. For example, "I can get through the work no problems, but making sure that I have enough time each day to do it, that's the hardest thing" (P14) and "I just get frustrated that there's so much to do, and I feel as if there's so little time … and, not really much I can do to change that." (P9). These experiences of overload were not constantly present, but occurred periodically at times of high strain, for instance when training camps clashed with exam periods in school.

Overload was, to a lesser extent, present in school, sport, friend and family roles. For instance, some had difficulties concentrating long enough to complete all their homework, others mentioned struggling to live up to their coaches' expectations, and in one case the divorce of parents taxed the athlete's psychological and time resources.

Conflict. Due to the perceived lack of resources to fulfil all the roles the athlete would like to fulfil (overload), the prioritization of one role over the other frequently occurred. This process of role prioritization, which often involved a degree of sacrifice,

forms the basis of the conflict experienced by the talented athletes. Almost half of the athletes reported not being able to spend as much time as they would like with family and friends because of other commitments. Strong feelings were associated with having to prioritize school and sport over family and friends:

> I was tempted to quit. Just because you don't see mates, you don't get to socialise as much as what you'd normally do. It's very difficult. Sometimes it is really frustrating, because, you know, I get invited to go out and have something to eat or have dinner with someone one night, and I have got training at night. And then I think then what should I go to? And then I think I should go to gym, and then I say we'll do it another time. And then they ask me again. It is the same thing. You know, I've got training that night. I can't do it. . . . It is not really depressing, but it's sad, because I always just have to say no (P11).

However, not all of these prioritizations were made reluctantly. When the athletes perceived that they were sacrificing an unfavourable activity, or sacrificing activities for the greater good they experienced minimal, or no reluctance, "Growing up now, it's turning into a lot of mates going out drinking and smoking and all that sort of stuff. . . . I don't see anything beneficial in it, so sacrificing those sort of social occasions has been good" (P11). Conflict was, to a lesser extent, also experienced distinct from overload. The cause of these distinct experiences of conflict included the athletes' unwillingness to practice a certain drill, to study a certain subject at school or to do house chores. As such, these experiences of conflict related to conflict of wishes between the elite junior athlete and the role sender (coach, teacher, parent of peers).

Being misunderstood. Some elite junior athletes experienced a different type of discrepancy which could not be classified as conflict as it did not appear to relate to feelings of sacrifice, reluctance, or generally not wanting to do something. Rather, some athletes reported that others did not understand the full set of demands that were placed on them. This included a negative attitude from some schoolteachers because they did not appear to understand why the athletes were 'only in school half of the time', as well as non-athlete peers and relatives who did not appear to understand the athlete's responsibilities and commitments. 'Being misunderstood' was reported by 20 percent of the athletes in our sample.

Ambiguity. Three quarters of the interviewed athletes mentioned experiences of a lack of clarity of what was expected of them. Frequently this lack of clarity was associated with getting different and conflicting instructions from multiple role senders. "You know like the club team might want you to do one thing and the school team might want you to do another thing and they might be complete opposites and you do get confused sometimes" (P3). In previous literature the different opinions of multiple external role senders were considered instances of conflict (Fenzel 1989a; Hecht, 2001), yet our findings indicate that these experiences of conflict are intertwined with ambiguity, as they caused a lack of clarity regarding the role demands. Experiences of ambiguity were most frequent in the sport role, only two athletes reported experiencing ambiguity in the school role.

Underload. Only one experience of underload was mentioned by one ARF player. As such, experiences of underload appear to be uncommon amongst junior athletes. This particular instance of underload occurred in the sport role. The ARF player

considered the competition at his age level was too easy, and thought that his physical abilities were being under-utilized by his football team. To alleviate this experience of underload, this athlete decided to join a higher age level team, despite his coach's advice against this decision.

Role strain as a whole. Overall, the interviews provided evidence for the four components of role strain in a sample of elite junior athletes. From the perspectives of competing resources, overload (especially the resource time) and conflict (especially sacrificing) appear symbiotic. However, these two role stressors also existed independent of each other. In addition, experienced of conflict caused by conflicting demands of two or more different role senders were a contributor to experiences of ambiguity amongst the junior athletes. Further, we observed interactions between the role strain experienced in different life domains. As such, the role strain experienced in one role or between roles could potentially lead to role strain in another role . Therefore, correlations between the different components of role strain would be expected. In addition to the role strain concept, the interview transcripts of this study were used in study 2 to create items from verbatim quotes, which increased the items' credibility and face validity (Dawis, 1991).

Taken together, the results of Study 1 indicate that role strain is a relevant framework to investigate the difficulties elite junior athletes experience in their dual careers. Although only one experience of underload was mentioned in the interviews, it was decided to keep this factor as previous research has indicated that experiences of underload are associated with boredom, decreased passion, and increased stress (Fredricks, Alfeld, & Eccles, 2010). Study 2 aims to develop a questionnaire which can be used to assess the role strain that junior athletes experience.

Study 2

The purpose of Study 2 was twofold. First, an item pool capturing the role strain experienced by junior athletes was created. Second, the factorial structure of the RSQ-JA was analyzed using exploratory factor analysis.

Method

Participants. The sample consisted of 296 adolescents who participated in at least one competitive sport and who were enrolled in a secondary school at the time of measurement. The participants were recruited from year levels 7, 9 and 11 of a sport school (N=116), a private school (N= 51), and year level 7 of a public school (N=68) in [redacted], Australia. Further, junior national level soccer players (N=10) and ARF players (N=51) were recruited from the Australian Institute of Sport.

Our sample consisted predominantly of male (213 male, 83 female) team sport players (see Table 2). The mean age of the participants was 14.4 years (*SD* = 1.8). The sample included 16 athletes who were injured at the time of measurement. There were 89 athletes who competed at a basic junior competition level (local club/school competition), 106 competed at an advanced junior competition level (regional or state level), 27 competed in national junior competitions and 57 athletes competed at international junior events.

Procedure. Support for this study was provided by 3 local secondary schools and 2 national talent development centers affiliated with the Australian Institute of Sport. Ethical approval was granted from the Department of Education and Early Childhood Learning of Victoria and relevant institutional research ethics committees. Parental consent was provided by parents of the adolescent participants.

Data collection procedures varied based on the preferences of the school and sporting organizations. When the junior athletes had access to the internet during data collection they completed the questionnaire online using laptops or tablets (N=170). When access to the internet and/or electronic devices was not available the participants completed a paper version of the questionnaire (N=126). Two schools agreed for the completion of the questionnaire to be scheduled during class time (i.e. slots reserved in either health or English), at the private school the adolescents were asked to complete the questionnaire as part of their homework. The participants recruited via the sporting organizations completed the questionnaire at a sport site. A researcher was present to help athletes with any queries they had at all school and sport sites where data collection took place.

Measures.

The Role Strain Questionnaire for Junior Athletes (RSQ-JA). The RSQ-JA was developed for this study. The initial item pool consisted of 65-items. Items consisted of statements and participants were asked to indicate to what extent they thought these statements were 'true for me' over the past month. A 5-point Likert scale measured 'how true' the statements were for the participants ('not at all true', 'a little true', 'somewhat true', 'mostly true' and 'very true'). The item pool reflected the four components of role strain as per Fenzel's (1989a) role strain model. Consistent with the findings of Study 1, some items were created to capture 'feeling misunderstood'. The interview transcripts of Study 1 were used in Study 2 to inform the themes that the items should cover. Further, as recommended by Dawis (1991), the interview transcripts were used to create items from verbatim quotes to increase the items' credibility and face validity. Finally, the Role

Ambiguity Scale (Beauchamp, Bray, Eys, & Carron, 2002) and the Early Adolescent Role Strain Inventory (Fenzel, 1989a) were used for wording of some items and instructions to the questionnaire.

No reverse scored items were employed in our initial pool because 'the disadvantages of items worded in the opposite direction outweigh any benefits' (DeVellis, 2003, p. 70). Following the guidelines of the Delphi Method (Dalkey & Helmer, 1963), two external experts in psychological scale development and one external expert in adolescent role strain were consulted. These consultations were completed to improve face and content validity of the item pool. Based on their suggestions some items were rephrased or removed.

To explore the face and content validity of the questionnaire for an adolescent sample, two methods were used (Vogt, King, & King, 2004). First, the item pool was piloted by two early adolescents. They were asked to read the items out loud to the researcher and explain how they interpreted the items. Some minor changes in the wording were made on the basis of adolescent piloting. Second, a Flesch-Kincaid Grade Level Test was conducted to estimate the reading proficiency needed to understand the items. This test was conducted in Microsoft Office Word (version 2010) and used a formula which considers the difficulty of each sentence in a document based on sentence length (SL) and the average number of syllables per word (SW). Items that required a high reading proficiency level were rephrased. The final 65 item pool is, according to the The Flesch-Kincaid Grade Level score, suitable for children in grade 4, which corresponds with children who are about 10 years of age. As the participants of this study were between 12 and 18 years old, the item pool was deemed appropriate for our

participants' reading levels. The final themes of the questionnaire were extracted using explanatory factor analysis.

The Early Adolescent School Role Strain Inventory – R3 (EASRSI-R3). Role strain in school was assessed using the EASRSI – R3 (Fenzel, 1993). The EASRSI – R3 is a third generation version of the previously developed EASRSI (Fenzel, 1989a) and designed to address issues with the response format of the original EASRSI. The EASRSI-R3 measures school role strain on four subscales similar to those of the EASRSI: peer influences, school demands, parent control and teacher relations. The 32 items of the EASRSI-R3 are rated on a 4-point Likert-type scale anchored at 1 = *none* to 4 = *extreme*. The EARSRSI – R3 had an overall Cronbach's Alpha value of .90, and a test-retest reliability of .78 over a 15 month period in a sample of 8 to 16 year old children (Fenzel, 1993). Example items of the EASRSI-R3 include '*Teachers give too much homework*', '*Kids ignore me at school*' and '*I don't get enough time in school to spend with my friends*'. In personal communication with Fenzel (February 7, 2013), he recommended the use of the EARSRSI-R3 over the use of the original EASRSI. This EASRSI-R3 was used to assess the construct validity of the RSQ-JA.

The stress thermometer. The stress thermometer (Stanton, 1991) is a single item scale which is used as an indicator of stress intensity. The item (*How much stress did you experience last month?*) is answered on an 11 point scale, where 0 is anchored at 'no stress at all' and 10 is anchored at 'extreme stress'. The stress thermometer was used to assess the construct validity of the RSQ-JA.

Data Analysis. Exploratory factor analysis was conducted on the 65 items of the RSQ-JA using principal components analysis to extract the factors. The suitability of the

data for factor analysis is confirmed by the presence of many coefficients of 0.30 and above in the correlation matrix, as well as the Kaiser-Meyer-Oklin value of 0.91 (Kaiser, 1974) and a highly statistical significant score on the Bartlett's Test of Sphericity (Bartlett, 1954).

Principle components analysis revealed 16 components in the RSQ-JA exceeding an eigenvalue of 1, explaining 65.1% of the variance in total, and 27.4% to 1.6% individually. Breaks in the scree plot were apparent after the fourth and fifth component. These fourth and fifth factors explained 40.6% and 43.3% of the cumulative variance respectively. A four factor solution was supported by the Parallel Analysis, with four eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (65 items x 269 respondents). Four and five factor solutions were examined, and ultimately a five factor solution was preferred. As it is expected that the factors encapsulating role strain correlate, oblique (oblimin) rotation was used (Tabachnick & Fidell, 2007). Incremental validity was calculated correlating the results of the RSQ-JA to the EASRSI-R3 (Fenzel, 1993).

Results

In the first two iterations of the exploratory factor analysis requesting 5 factors, a total of 17 items were eliminated because they failed to meet the minimum criteria of having a primary factor loading of .30 or above, and no cross-loading of .30 (Tinsley & Tinsley, 1987). The face validity of each factor was examined by interpreting the role strain dimension that each factor captured. To improve face validity, another 20 items were removed, after which a subsequent iteration was requested. In the following iteration, 2 further items with a factor loading under .30 were removed. As well, at this

stage, a further item was removed as its content reduced the face validity of the factor. Following this, a last iteration was requested and, here, 2 items were deemed too similar to stronger loading items on the same factor and, finally, a third item did not conceptually fit on its loaded sub-scale.

The final, 25 item, 5-factor solution explained 54% of the variance in total, in which each of the factors explained 29%; 9%; 7%; 5% and 5% of variance respectively. The anti-image correlation matrix showed one correlation of .65 ('*I am not challenged at school*'), all others were ≥ 0.84. Additionally, the Kaiser-Meyer Olkin measure of sampling was excellent (0.88) and the Bartlett's test of sphericity highly significant (χ^2 (300) = 2429.9; p = 0.001). Interpretation of these results indicated that the 5 factors were underload, ambiguity, overload in sport and between roles, school overload, and conflict.

Construct reliability of the RSQ-JA was tested by calculating composite reliability scores. Threshold values of 0.70 or more are indicative of acceptable composite reliability (Hair, Andersen Tatham & Black, 1998). All factors exhibited composite reliabilities exceeding .70 (see Table 3).

Correlational analyses. The construct validity of the 25-item RSQ-JA was assessed by comparing the scale to an existing measure (Kilne, 1986). Role strain measured by the RSQ-JA had a large positive correlation with role strain measured by the EASRSI-R3 (r (294) = .64, p <.01), indicating that both scales measure a similar underlying construct (i.e., role strain), but that differences existed between both scales. Concurrent validity was assessed by examination of the correlation between role strain measured by the RSQ-JA and stress. A moderate positive association between role strain measured by the RSQ-JA and stress was found (r (294) = .45, p <.01), this correlation

was larger than the relationship between role strain measured by the EASRSI-R3 and stress (r (294) = .26, p <. 01).

Taken together the results from Study 2 indicate that the 25-item RSQ-JA has promising psychometric properties. As such, Study 3 will further validate this scale using confirmatory factor analysis with a different sample.

Study 3

The purpose of Study 3 was to cross-validate the findings of Study 2 by subjecting our 25-item RSQ-JA pool to a confirmative factor analysis to test the factorial structure of the RSQ-JA. Further, the concurrent validity of the RSQ-JA (as validated by confirmatory factor analysis) was explored.

Method

Participants. The sample consisted of 124 male elite junior ARF players who were enrolled in secondary school at the time of measurement. The players were recruited from the Australian Football League (AFL) talent academy (N=45) and the regional talent development program of five 'TAC cup' teams (N=79). These TAC cup teams were located in metropolitan, regional and rural Victoria and play in the peak competition for adolescent ARF players. The AFL talent academy recruits its athletes from across Australia. The mean age of the participants was 16.8 years (SD = 0.7). The participants were following education in either in year 10 (N= 13), year 11 (N=65), or 12 (N= 46) of secondary school.

Measures.

The RSQ-JA. The pool of 25-items emerging from the exploratory factor analysis in Study 2 was used as the RSQ-JA.

The stress thermometer. See Study 2 for a description of the stress thermometer. This scale was used to assess the construct validity of the RSQ-JA.

The Adolescent Coping Scale II (ACSII) short version. The short version of the Adolescent Coping Scale II (Frydenberg & Lewis, 2009a; Frydenberg & Lewis, 2009b) was used to measure coping strategies that were adopted by the adolescents. This scale consists of 20-items, each of which represents a specific coping strategy. The items of the ACS II are rated on a 5-point Likert-type scale anchored at 1 = *never* to 5 = *very often*. This short version of the ACS II consists of 2 main subscales; productive coping strategies (α = .71; Frydenberg & Lewis, 2009a), and non-productive coping strategies (α =.68; Frydenberg & Lewis, 2009a). In addition, 2 items measure a third dimension named 'other' coping strategies (using humour and seeking spiritual support). This scale was used to assess the construct validity of the RSQ-JA.

Procedure. Support for the current study was provided by the AFL and the Victorian Football League, as well as the five participating TAC cup clubs. Parental consent was provided by parents of participants under 18 years of age, participants who were 18 years of age at the time of measurement signed the consent form themselves. Data collection procedures varied based on the preferences of the participating football teams. Data from the AFL talent academy and the rural TAC cup team were collected using paper versions of the questionnaire (N=64), data of the four other TAC cup teams was collected using an online version of the questionnaire (N=60).

Data Analysis. The factorial structure of the 25-item RSQ-JA was examined with confirmatory factor analysis using IBM SPSS Amos 20 (Arbuckle, 2011). One item from each of the 5 factors was fixed to 1.0 for the purposes of latent variable scaling. There is

some debate regarding the statistics that should be used for the assessment of model fit. Recently, it has been argued that the overall fit of the model should be assessed using values of several fit indices, rather than focusing on one statistic (Williams, Vandenberg & Edwards, 2009). Furthermore, the cut-off values of these fit indices should be used as guides rather than absolute values as these statistics are prone to misspecification, dependent upon the sample size (Heene, Hilbert, Draxler, Ziegler, & Buhner, 2001). Since the current study had a relatively low sample size, fit indices that are reasonably robust to low sample size issues were selected.

The traditional measure for evaluation the overall model fit is the χ^2 value (Hu & Bentler, 1999). A good model fit would be indicated by a non-significant χ^2 at a 0.05 threshold (Barrett, 2007). However, χ^2 is sensitive to sample size, and does not compensate for model complexity. Hence, we relied upon other indices of model fit alongside the χ^2. First, the Root Mean Square Error of Approximation (RMSEA) was used to estimate how well the model implied covariance matrix replicates the population covariance matrix (Byrne, 1998). Second, the Comparative Fit Index (CFI; Bentler, 1990), which provides an estimate of improvement in fit over the independence (null) model, was used because it performs well with low sample sizes (Tabachnick & Fidell, 2007). Finally, the Standardized Root Mean Square Residual (SRMR) was used to estimate the mean residual of the sample covariance matrix and the hypothesized covariance matrix. Model fit was deemed adequate when; CFI > .90 and RMSEA and SRMR < .10 (Marsh, Hau & Wen, 2004).

Results

Preliminary analyses. Only 0.003% of the possible data points were missing. As such, the missing data was assumed to be missing at random. The expectation maximization algorithm was used to impute missing values in SPSS. The univariate skewness of the 25-items ranged from -.09 to 3.13 and the univariate kurtosis ranged from -.92 to 9.4. Mardia's normalized coefficient indicated significant multivariate kurtosis (kurtosis = 106.358, critical ratio = 16.117). To address the non-normality, all confirmatory factor analyses were conducted using the maximum likelihood (ML) estimation with parameter estimate derived from 5,000 bootstrap resamples (Nevitt & Hancock, 2001).

Confirmatory factor analysis. The initial confirmatory factor analysis, using the 5 factor structure, suggested that modifications to the 25-item RSQ-JA were required: χ^2 (265) = 452.24, p =.07; RMSEA = .08; CFI = .82; SRMR = .08. In a sequence of confirmatory factor analyses, 3 problematic items were removed as they either cross-loaded on another factor, or did not load on any of the factors (see Table 3). The removal of these items increased the model fit: χ^2 (193) = 267.06, p =.32; RMSEA = .06; CFI = .91; SRMR = .08. These values indicate that the model is acceptable fit in accordance with the guidelines described above. The 5 factor structure of the RSQ-JA can be found in Figure 1.

Construct reliability of the RSQ-JA was tested by calculating composite reliability scores. Composite reliability values for overload in school (ρ = .88), overload in sport and between roles (ρ = .84), ambiguity (ρ = .83) underload (ρ = .73) and conflict scales (ρ = .79) indicated acceptable construct reliability. Subscale inter-correlations ranged from

.17 to .59 and were all positive. Except for the correlation between underload and overload in sport and between roles, all correlations were significant ($p < .05$).

Some alternative models were run to assess whether the 5 factor 22 item RSQ-JA was the best fit to the observed data (Byrne, 2006; Jackson, Gillaspy & Parc-Stephenson, 2009). Firstly, consistent with Fenzel's (1989)'s research on role strain, a four factor structure was tested on all 25-items of the RSQ-JA, in which 'overload in school' and 'overload in sport and between roles' were encompassed in one 'overload' factor. The fit of this four factor model was worse than the five factor model: χ^2 (269) = 538.50, p =.003, RMSEA = .09, CFI = .73, SRMR = .09). Secondly, a hierarchical model was tested in which the 5 factor model was represented by one higher order 'role strain' factor (with the 22-items). The fit of this hierarchical measurement was adequate: χ^2 (199) = 297.74, p =.183, RMSEA = .06, CFI = .88, SRMR = .08, with a low CFI score, indicating that this model could have potential, but is not as good as the 5 factor first-order model. Finally, a 1-factor model was tested (with the 22-items), which produced a very poor fit to the data: χ^2 (204) = 419.81, p =.007, RMSEA = .09, CFI = .74, SRMR = .09.

Correlational Analyses. Concurrent validity was assessed by examining the correlations of the 5-factor first-order RSQ-JA model with stress and coping strategies. The results indicated that role strain measured by the RSQ-JA was positively associated with stress (r (123) = .50, p <.01). Furthermore, the scores on the RSQ-JA were also positively associated with the use of non-productive coping strategies (r (123) = .55, p <.01).

Discussion

Across 3 studies, we sought to use role strain as a framework to develop and validate an instrument assessing the role strain experienced by junior athletes. The first study investigated the strain junior athletes experience from managing the concurrent demands of their multiple life domains in 20 semi-structured interviews. Consistent with the Lifespan Model, all junior athletes mentioned fulfilling school, sport, friend and family roles (Wylleman & Lavallee, 2004). Results supported the applicability of the role strain framework (Fenzel, 1989a, Holt, 1982) to investigate the stressors junior elite athletes' experience. Guided by these findings, Studies 2 and 3 focused on the second aim of this paper: the development of the RSQ-JA, a measure to assess the levels of role strain that elite junior athletes experience.The second and third study demonstrated that the 22-item RSQ-JA exhibited good psychometric properties and concurrent validity with regards to stress and coping strategies of (a predominantly male sample of) junior athletes.

The RSQ-JA measures role strain using five subscales: (a) overload in sport and between roles, (b) conflict, (c) ambiguity, (d) underload, and (e) overload in school. The components conflict, ambiguity and underload were consistent with previous conceptualizations of role strain (Fenzel, 1989a; Holt 1982) as well as with the interviews conducted in Study 1. In an extension to the existing literature, perceived overload separated into two subcomponents, namely; overload in school, and overload in sport and between roles. These findings indicate that overload in school causes a different kind of strain in junior athletes than overload in sport and between roles. More research is needed to investigate this.

The fifth component of role strain 'being misunderstood', which emerged in Study 1, did not appear in the subsequent questionnaire validation via exploratory factor analysis. The items that were created to measure 'being misunderstood' did not cluster together, rather they appeared to be randomly distributed over several factors in the exploratory factor analysis, and mostly loaded low on these factors (< 0.30). The reason for this might be the difference in samples of Studies 1 and 2. Study 1 featured a high proportion of (inter)national athletes in gymnastics and tennis compared to Study 2. It might be that 'being misunderstood' is not as common in team sport players. Similarly, it might be junior athletes at sport schools are less likely to feel 'misunderstood' by teachers and peers compared to others. We would encourage future research aimed at better understanding the prevalence of, and strain associated with being misunderstood'.

The concurrent validity of the RSQ-JA was assessed by examining its correlations with stress. A significant correlation was found for both total role strain, and all 5 subscales. Overload in sport and between roles correlated strongly with stress (r >.50) while the relationship between underload and stress was small (r <.30). This finding is consistent with research by Shultz, Wang and Olsen (2010) that indicated significant relationships between overload and underload and stress, where the relation between underload and stress was weaker compared to the relationship between overload and stress. Broadly, this finding indicates that overload is a greater contributor to stress compared to underload. Further empirical research is needed to investigate the relationship between the components of role strain and associated stress experienced by elite junior athletes, as well as the associations between underload and boredom (Fredricks et al., 2010). Due to the limitations of a single item stress measure, we

encourage future research to further examine the relationship between role strain and stress using a different stress measure, and we would like to encourage research on the relationship between role strain and well-being of junior athletes.

The incremental validity of the scale was assessed by correlating the RSQ-JA and the EASRSI-R3 with stress. Both scales significantly correlated with stress, however the correlation between the EASRSI-R3 and stress was weaker. This suggests that stress experienced by adolescent athletes is better predicted by a scale that considers all of the roles elite junior athletes fulfil, compared to a scale that only measures role strain in school. The RSQ-JA also correlated significantly with the use of non-productive and productive coping strategies of the adolescent athletes. Specifically, higher levels of role strain were associated with increased use of non-productive coping strategies. These findings are congruent with past literature that suggest that adolescent athletes are not able to increase the use of productive coping strategies when role strain increases, and resort to coping strategies which are non-productive in dealing with the underlying issue (Ebata & Moos, 1991; Galaif, Sussman, Chou, & Wills, 2003). Future studies could explore how coping interventions might help adolescent athletes to better deal with role strain and how such interventions might help functioning and performance in their different roles.

Although this study successfully produced a measure of role strain in adolescent athletes, some limitations need to be addressed. First, further validation of the RSQ-JA is required. Additional validation studies should address the underrepresentation of female athletes in the current sample. Based on the current series of studies, the RSQ-JA is validated for a specific (AFL) sample of male Australian athletes. Future research is

encouraged to contain a wider array of sports, and to investigate possible gender effects on experiences of role strain and the RSQ-JA. Additional validation studies are also encouraged to further develop the 'underload' scale of the RSQ-JA, as the present three item scale is considered a little brief.

Second, this research relied solely on self-report data. Although this provides insight in the adolescents' perception of role strain, self-report of stressors can be confounded (Spector, 1994). For instance, the 'mental toughness' culture that is prevalent in ARF, could cause talented adolescent football players to indicate low scores on the RSQ-JA, as admitting vulnerability and emotions is perceived as 'weak' (Tibbert, Andersen & Morris, 2014). As a preventive measure, all participants were informed that no individual responses would be reported. Additionally, research has suggested that the AFL operates under the assumption that a balanced sport and off-field life will ensure not only their players' well-being, but also facilitates the players' on-field performance (Pink, Saunders & Stynes, 2014). All junior elite Australian rules football players received support in their dual careers from 'talent development managers' who were specifically appointed by the AFL to assist players with their pursuits outside of sport. This support might decrease the role strain experienced by the players. As such, the findings of this study might underestimate the amount of role strain experienced by a wider population of junior elite athletes. Future research investigating the role strain experienced by elite junior athletes in a wide range of sports should address this limitation.

Third, although role strain appears to be a suitable framework to assess the relationship between stressors and their respective consequences, other strain theories could also potentially be used. For example, General Strain Theory - which suggests that

people experience strain when they lose something of value, when they are being treated in a negative manner, or when they are unable to achieve certain goals (Agnew, 2001) could also be used to interpret the stressors talented athletes experience. However, we deem the applicability of role strain greater than General Strain Theory, as the latter does not emphasize the different roles individuals occupy. For elite junior athletes it is crucial to consider all roles they fulfil, therefore the role strain approach appears particularly suitable for them.

Finally, like most research on expertise, issues with sample sizes were a recurrent constraint in this series of studies. In particular, the sample size used in Study 3 was considered low (N = 124). It was therefore decided to use fit indices that are reasonably robust to issues with low sample size. Therefore, the sample sizes assembled for the studies in this article were deemed adequate for the statistical analyses conducted. Nonetheless, we would encourage future research to obtain larger sample sizes when further validating the RSQ-JA.

To conclude, the current research confirmed the utility of role strain as a framework to explain important variability in junior athletes' lived experiences in the difficulties they faced in fulfilling the concurrent demands of their dual careers, and showed promising psychometric properties for the RSQ-JA. However, continued validation should be conducted to confirm the factorial structure of the RSQ-JA. Further, this research provided some preliminary evidence for the importance of measuring role strain experienced by adolescent athletes in their sport, school, family and friend life domains by showing that role strain correlates with stress. From an applied perspective, the RSQ-JA may be a helpful tool for coaches and teachers to identify high and low strain

periods, by tracking and monitoring role strain over time. Going forward, we hope that the RSQ-JA will be used to advance our understanding of the effect of role strain on the performance and well-being of junior athletes. Experiences of role strain in secondary school have already been associated with decreased school performance, life satisfaction, global self-worth, self-esteem and perceived competence in high school students (De Bruyn, 2005; Fenzel, 1989a, 1989b, 1992, 2000). It is thus important to understand how experiences of role strain in dual careers affect the well-being and school and sport performance of junior athletes so that these youngsters can be better supported.

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