

**EXAMINING THE ANTECEDENTS OF SOCIAL SUPPORT AND
PERFORMANCE, APPLYING GENERALISABILITY THEORY**

Submitted by Adam Howard Coussens to the University of Exeter as a thesis for the degree of Doctor of Philosophy in Sport and Health Sciences in May 2015.

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Signature:

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Abstract

Social support plays an important role in our physical and mental health, and is also recognised as a key factor for the success and well-being of athletes. It would be of significant interest for researchers and practitioners to identify the components of perceived and received social support, support antecedents, and subsequent consequences of support. The first aim of this thesis was to apply a univariate generalisability theory approach to examine the components of perceived and received support. The second aim was to apply a multivariate generalisability theory approach to identify the antecedents and consequences of perceived and received support across different levels of analysis. Four studies were conducted applying either a fully crossed or partially nested design to examine components of social support when athletes rated coaches or their most important support providers within their existing social networks. Further, in Studies 3 and 4, participants also completed a performance task in the presence of support providers. Univariate analyses demonstrated that consistently across all studies the relational and social components accounted for the largest amount of variance in both perceived and received support. These findings suggest that perceivers rated certain providers to be particularly supportive, in comparison to how they rated other providers. Across all studies multivariate analyses revealed that provider personality and social identity related to perceptions of support at the relational and social level. In Studies 1 and 4, coach competency also related to perceptions of support at the relational and social level. When athletes perceived certain providers to exhibit specific personality traits, particularly the trait of agreeableness, felt certain coaches were highly competent, and shared a common identity with providers, those providers were also perceived to be particularly supportive. Studies 3 and 4,

however, were unable to identify antecedents of received support at any level of analysis, suggesting that perceived and received support have distinct antecedents. Further, in Studies 3 and 4, perceived and received support had unique relationships with self-confidence and performance across the different components. At the perceiver and trait level, when athletes felt they generally received support from providers, they generally felt more confident. In comparison, at the relational and social level, if athletes perceived certain providers to be particularly supportive, they performed better in their presence. The support received from those providers was also beneficial through enhancing self-confidence and, in turn, performance. The findings from the current thesis significantly further conceptual understanding of perceived and received support by identifying their correlates at the different levels of analysis. The current thesis also offers evidence based recommendations for social support interventions.

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PREFACE

In this thesis, Chapter 2 has been published in a peer-reviewed journal (see reference below). The data from Chapter 2, 4, and 5 have been presented at institutional and national conferences and have benefitted from the input of fellow academics. Chapters 3, 4, and 5 will be submitted as manuscripts to international peer-reviewed journals. Each study in the current thesis is written up in the style of a journal manuscript, with its own introduction, methods, results, and discussion, and, therefore, there may be some repetition in theories and literature. These four empirical chapters are preceded by a general introduction and followed by a general discussion.

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Chapter One: Literature Review

1.1 Introduction

Athletes have often cited the important role of significant others and social support in their development and success. Across a number of media interviews athletes pay tribute to the supportiveness of significant others. For instance, in 2012 following her Olympic success Jessica Ennis cited the importance of social support “I am just so happy. I want to thank everyone who has supported me, they have been amazing. Obviously Tony, Ali, and Derry and everyone who has worked with me for the past few years. I am so thankful that everyone has helped me all this way.” (“Jessica Ennis: Tears of joy for heptathlete winner”, 2012). Following his second World Championship title, Formula One driver Lewis Hamilton said “When I say we win and we lose together I mean it, it’s not just a saying. I feel that I’ve come with a huge group of people who have helped me and boosted me throughout the season”. (“Lewis Hamilton: Second championship doesn’t feel real”, 2014). These quotes and many more offered by athletes provide an insight into the influential role that social support plays in sport and the impact it has upon performance.

In addition to anecdotal evidence from athletes, social support is a major research topic across a range of contexts. Social support has been linked with a number of physical outcomes, including general health (Cohen & Janicki-Deverts, 2009; Ertel, Glymour, & Berkman, 2009), morbidity and mortality rates (Treiber et al., 2003; Uchino, 2006), and cardiovascular disease (Berkman, Leo-Summers, & Horwitz, 1992; Brummett et al., 2001; Frasure-Smith et al., 2000; Hernandez, Reitzel, Wetter, & McNeil, 2014; Rutledge et al., 2004). Social support has also been associated with positive mental health outcomes, such as reduced rates of depression (Brewin, Andrews, & Valentine, 2000;

Revenson, Schiaffano, Majerovitz, & Gibofsky, 1991; Stephenson, DeLongis, Esdaile, & Lehman, 2014), post-traumatic stress disorder (Lakey & Cronin, 2008), enhanced coping (Holahan, Holahan, Moos, & Brennan, 1997; Thoits, 1986), and psychological well-being (Sarason, Sarason, & Gurung, 2001; Thoits, 1985).

In sport, Sarason, Sarason, and Pierce (1990) argued for the need to examine in finer detail how social support influences the psychological processes of athletes, as this would further conceptual understanding and provide a basis for the development of effective social support interventions. The beneficial effects of social support for athletes have become increasingly well documented. A number of studies have examined the positive role that social support plays in the prevention of, and rehabilitation from, injuries. Social support was cited as a potential coping strategy to aid the prevention of injury, with further research reinforcing the role of social support as a preventative measure (Bianco & Eklund, 2001; Wadey, Evans, Evans, & Mitchell, 2011). Athletes high in hardiness experienced positive growth following injury with athletes crediting the supportiveness of their extended social network in contributing to their rehabilitation from injury (Wadey, Evans, Hanton, & Neil, 2012). Athletes perceptions of coach support have been associated with successful career transitions and self-determined approaches (Alvarez, Balaguer, Castillo, & Duda, 2009; Stambulova, Alfermann, Statler, & Côté, 2009). Social support has also been linked with positive development and well-being in athletes (DeFreese & Smith, 2013; Fletcher & Sarkar, 2012; Kristiansen & Roberts, 2010; Rees & Hardy, 2000), self-confidence (Freeman & Rees, 2010; Hays, Maynard, Thomas, & Bawden, 2007; Rees & Freeman, 2007; Vealey, Hayashi, Garner-Holman, & Giacobbi, 1998), psychological

resilience (Morgan, Fletcher, & Sarkar, 2015), flow states (Bakker, Oerlemans, Demerouti, Slot, & Ali, 2011), and improved performance (Freeman & Rees, 2009; Rees & Freeman, 2010; Rees & Hardy, 2004; Rees, Hardy, & Freeman, 2007). The emergence of such research highlights the wide ranging benefits of athletes feeling supported and the importance of developing positive social ties.

Despite the evidence for the importance of social support in sport, a number of fundamental questions need to be answered. For example, are support providers viewed as being supportive by all athletes, or do athletes disagree over the supportiveness of others? How do athletes judge the supportiveness of providers? If individuals are rated as being supportive, do athletes perform better in their presence? What mediates the relationship between social support and performance? These questions will be addressed in this thesis, which seeks to significantly advance the social support literature by providing a more detailed understanding of the components underpinning social support, the effects of support, and contribute to a stronger evidence base on which to develop social support interventions.

1.2 What is Social Support?

Early social support was conducted in the 1970s (Cassell, 1976; Cobb, 1976; Moss, 1973). For instance, Cobb (1976, p 300) suggested social support consists of “(i) Information leading the subject to believe that he/she is cared for and loved. (ii) Information leading the subject to believe that he/she is esteemed and valued. (iii) Information leading the subject to believe that he/she belongs to a network of communication and mutual obligation.” Shumaker and Brownell (1984) defined social support as “An exchange of resources between at least two individuals, which is perceived by the provider or the recipient to enhance the well-being of the recipient” (p11). Sarason et al. (1990) offered an

explanation of the social support process, as “Although mentors, parents, and friends may differ in their ability to provide specific types of support, knowing that one is loved and that others will do all they can when a problem arises may be the essence of social support” (p119). Social support is now recognised as a complex concept consisting of structural, perceptual, and functional factors (Cauce, Manson, Gonzales, Hiaga, & Lui, 1994; Cohen, 1988; Holt & Hoar, 2006; Vaux, 1992). These three support constructs are considered to be conceptually distinct yet are interrelated concepts that underpin social support (Holt & Hoar, 2006).

1.3 Structural Concept

Structural elements of social support include the degree to which individuals are socially integrated in their support network (Vangelisti, 2009). A higher frequency and wider range of social ties reflects a deeper level of social integration (Gottlieb & Bergen, 2010). The majority of research has suggested there are a number of physical and psychological health benefits of individuals feeling socially integrated and having a large social network. For example, studies have found that individuals who considered themselves part of their community and felt they had strong social ties also had better mental health (Bell, LeRoy, & Stephenson, 1982), and negative interpersonal interactions, such as mistrust, hassles, and criticism, are more strongly related to negative mood (Fleishman et al., 2000), and depression (Cranford, 2004). When individuals experience low levels of social integration, this is a predictor of high mortality rates (Brummett et al., 2001). In a study examining the support structures of women with breast cancer it was found that participants felt socially isolated prior to diagnosis had an elevated chance of mortality (Kroenke, Kubzansky, Schernhammer, Holmes, & Kawachi, 2006). Other

research suggests that social integration is not consistently linked to psychological health (Barrera, 1986; Finch, Okun, Pool, & Ruehlman, 1999).

1.4 Perceptual Dimension

The perceptual dimension of social support generally focuses on how individuals appraise the amount and quality of support available (Vangelisti, 2009; Vaux, 1992). Researchers have also alluded to the meaning of supportive behaviours, such that perceptual processes of the provider and perceiver influence ratings of support (Barnes & Duck, 1994; Cohen & Syme, 1985; Cohen & Wills, 1985). The meaning of support perceptions is subject to individual differences and idiosyncrasies as different memory and judgment processes may result in individuals perceiving the same supportive acts or events differently (Lakey & Drew, 1997). The current thesis focuses on perceptions of available support and support received, rather than examining the meanings attached with ratings of support.

1.5 Functional Dimension

The functional dimension of social support generally focuses on support exchanges and the functions served by interpersonal relations (Cohen, 1988; Holt & Hoar, 2006). The functional dimension of social support is typically referred to as *received support* or *enacted support*. Although received support and enacted support are sometimes used interchangeably, Vangelisti (2009) described *received support* as an individual's perception of the type or amount of support that they obtain from social networks. In contrast, *enacted support* was described as the verbal and nonverbal behaviors that people engage in when they are intending to provide someone with help (Vangelisti, 2009). The studies in the current thesis favour the term received support, rather than enacted support, because assessments were based on athletes' judgments of

support rather than either the providers' assessments or more objective assessments of support exchanges. Received support has been found to be associated with improved psychological health (Finch et al., 1999).

Cutrona and Russell (1990) further partitioned social support into four separate dimensions including: *emotional support*, which refers to someone being there for comfort and security, leading to a person feeling loved or cared for; *esteem support*, which refers to others bolstering an individual's sense of competence or self-esteem; *informational support*, which refers to others providing advice or guidance; *tangible support*, which refers to others providing concrete instrumental assistance. Rees and Hardy (2000) found evidence for these four dimensions in sport, with a range of behaviours reflecting each dimension. An example of these behaviours could include someone showing care (*emotional support*), providing compliments to try and boost one's sense of belief and confidence (*esteem support*), the provision of tactical advice (*informational support*), or helping to provide travel to training and matches (*tangible support*).

Wills and Shinar (2000), however, proposed that although theoretically there are several dimensions, it is common for empirical evidence to report significant correlations among them. For example, support providers often intend to provide beneficial information or assistance to individuals in several ways, so these dimensions are not necessarily independent of one another (Brookings & Bolton, 1988). Throughout the present thesis, overall measures of social support constructs are used rather than focusing on different functional dimensions, consistent with previous research in sport (Rees et al., 2012; Rees & Freeman, 2009).

1.6 Measures of Perceived and Received Support

A number of different measures have been used to examine perceptions of available support, for example, the Social Support Questionnaire (Sarason, Levine, & Basham, 1983) and Social Support Inventory (Timmerman, Emanuels-Zuurveen, & Emmelkamp, 2000). Concerns have been expressed over the specificity of measures used to assess perceived support across health (Haber, Cohen, Lucas, & Baltes, 2007; Vaux, 1992) and sporting contexts (Holt & Hoar, 2006), with recommendations to ensure that measures of support are situation specific (Bianco & Eklund, 2001; Wills & Shinar, 2000). As such, sport psychology researchers have sometimes created context-specific measures for particular studies. For instance, Rees and Freeman (2009) constructed a measure of perceived support by drawing upon qualitative research examining the social support experiences of elite athletes (Rees & Hardy, 2000), the measure was adapted in later research to examine perceptions of coach support (Rees et al., 2012). Further, the Perceived Available Support in Sport Questionnaire (PASS-Q; Freeman, Coffee, & Rees, 2011) was recently developed to assess athletes' perceptions of available support across a range of sporting contexts. The PASS-Q provides a tool that accounts for the specific support needs of athletes with the potential to facilitate the comparison of findings across studies (Freeman et al., 2011).

Self-report measures of received support ask participants to recall or rate specific instances of support behaviors, rather than general perceptions of support that could be provided, and is an opportunity for an accurate reflection of the support offered (Barrera, 1986). Barrera goes on to argue that these received support measures assess 'perceived-received' support rather than just individuals receipt of support, as it requires an evaluation or judgment of

support. Self-report measures in sport often mirror the questions asked regarding perceived support, although the question stems reflect support received (Freeman & Rees, 2008; Rees & Freeman, 2007).

1.7 Comparing Perceived and Received Support

Perceived and received support are distinct but related concepts (Haber, Cohen, Lucas, & Baltes, 2007; Schwarzer, Dunkel-Schetter, & Kemeny, 1994). Haber et al. (2007) conducted a meta-analysis to examine the relationship between perceived and received support and found the two support constructs were weakly related, with 12% shared common variance. Given the theoretical and empirical distinction between perceived and received support, researchers should examine each construct to gain a comprehensive understanding of how these constructs relate to other variables (Bianco & Eklund, 2001; Winemiller, Mitchell, Sutcliff, & Cline, 1993). Perceived and received support may have different correlates because appraisals of available support are based on individual perceptions shaped by personality and experiences, whereas received support judgments are centered on situation and the context of support exchanges (Uchino, 2009).

Perceived support has been shown to have strong and consistent links to positive psychological health and low rates of psychological disorder (Lakey, 2010), lower rates of major depression (Lakey & Cronin, 2008), and enhanced self-efficacy to overcome challenging demands (Benight & Bandura, 2004). Other research has reinforced these findings as perceived support is more consistently related to beneficial health outcomes in comparison to received support (Barrera, 2000; Uchino, 2004; Wills & Shinar, 2000). Uchino (2009) suggested that individuals develop positive psychosocial profiles, based on

certain personality traits, individual differences, and feelings of personal control, which determine perceptions of support and foster proactive coping.

Perceived support has also been linked to a number of positive outcomes in sport. For example, when athletes perceived support to be available, they appraised demanding situations as a challenge rather than a threat (Freeman & Rees, 2009). Perceived support has consistently been associated with athletes' feeling in a flow state and identified as a predictor of positive performance (Bakker et al., 2011; Rees, Ingledew, & Hardy, 1999). Perceived support is also positively associated with self-confidence and performance (Freeman & Rees, 2009; Rees & Freeman, 2007), although these will be discussed in more depth under the *stress-buffering* section of the Literature Review.

Theoretically, received support should aid individuals by facilitating effective coping (Lakey & Drew, 1997). In comparison to the positive effects of perceived support, however, received support has been shown to have an inconsistent relationship with a number of physical and psychological health outcomes. Empirical evidence in social psychology examining the effects of both perceived and received support suggests that perceived support is more consistently related to outcome variables in comparison to received support, such as symptoms of depression in relation to major life events (Cohen & Hoberman, 1983), and response to suffering a cardiac event (Helgeson, 1993). Perceived support has also been found to relate more strongly to emotional functioning than the receipt of support (Finch et al., 1999; Gottlieb, 1988).

In sport, received support has been more consistently related with positive outcomes, in comparison to research examining the link between social support with physical and mental health. Athletes high in hardiness use support

received to help them recover from potential debilitating experiences and use this experience as an opportunity for personal growth and development (Maddi, 2002; Wadey et al., 2012). Received support has been found to be associated with adolescents' positive beliefs about school sport (Lubans, Morgan, & McCormack, 2011) and athletes' use of self-talk (Zourbanos et al., 2011). When golfers received a one to one support intervention provided by an experienced sport psychologist, however, enhanced ratings of received support were associated with improved performance for one out of three participants (Freeman, Rees, & Hardy, 2009). As such, although there may be beneficial effects of receiving support, these effects may be far from universal.

1.8 Main Effects and Stress-buffering

A number of studies have examined the conditions under which perceived and received support are beneficial. Two key frameworks have been the main effect and stress-buffering models.

1.8.1 Main Effects

The main effects model proposes that social support helps regulate thoughts and behaviours irrespective of stress (Cohen, Gottlieb, & Underwood, 2000; Cohen & Wills, 1985). Empirical evidence suggests that main effects are primarily attributable to perceived support (Cohen et al., 2000; Freeman & Rees, 2008). Bianco and Eklund (2001) argued that individuals who perceived support to be available will appraise situations as less stressful and experience more favourable outcomes. The main effects model assumes that when support is perceived to be available these individuals feel they have the resources to cope and perceive the situation to be challenging (Holt & Hoar, 2006).

1.8.2 Stress-buffering

The stress-buffering model suggests that social support acts as a resource to help individuals cope with the potentially negative effects of stress (Cohen, 1988; Cohen & Syme, 1985; Cohen & Wills, 1985). Stress-buffering is present when support moderates the relationship between stress and outcomes (Cohen et al., 2000; Cohen & Wills, 1985; Freeman & Rees, 2010). Evidence for the stress-buffering effects of social support, however, is equivocal.

When both perceived and received support were examined simultaneously, only received support was associated with stress-buffering effects on self-confidence (Rees & Freeman, 2007) and performance (Freeman & Rees, 2008). Further, a review of social support and depressive disorders found that the majority of studies provide evidence for main effects of support, but not stress-buffering (Lakey & Cronin, 2008).

1.9 Relational Regulation Theory

Relational regulation theory (RRT) was developed in response to the inconsistent evidence for the stress-buffering effects of social support on mental and physical health, as many of the effects of stress-buffering theory have been unable to be consistently reproduced (Lakey & Orehek, 2011). Initially the theory accounted for how perceived support and mental health are rooted in social interaction (Lakey & Orehek, 2011). A strength of applying a RRT approach is that standard approaches are unable to distinguish whether main effects reflect trait differences of the individual perceiver or social influences reflecting the perceiver and provider (Lakey & Orehek, 2011). RRT has previously focused on the beneficial effects of perceiving support to be available, as received support is not consistently related to mental health outcomes (Barrera, 1986; Finch et al., 1999). RRT can be integrated as part of

a generalisability theory approach that permits researchers to examine the different components of social support.

1.10 Generalisability Theory

Initially developed as a statistical tool to measure reliability, generalisability theory permits observed scores of a variable to be generalised from the measurement by accounting for multiple sources of error (Cronbach, Gleser, Nanda, & Rajaratnam, 1972; Lakey, 2010; Lakey & Rhodes, 2015). Generalisability theory has subsequently been applied to understand sources of variation in variables such as stressors in police officers (Lucas, Weidner, & Janisse, 2012). Different workers and specific stressors could account for stress in workers, although applying a generalisability theory approach found that individuals appraise stressful sources differently. Generalisability theory has also been applied in social and sporting contexts to understand what leads individuals to judge others as supportive. It is a theory that has been applied to provide an in-depth understanding of social support and is vital to the development of conceptual theory as both individual and social factors can be accounted for (Lakey & Orehek, 2011). Applying such an approach is pivotal to understand how individuals judge available support and whether support appraisals are consistent across different providers. These developments will permit researchers to provide a theoretical underpinning for effective social support interventions. Applying a univariate generalisability theory approach permits the examinations of the amount of variance accounted for by different components of perceived and received support, and can be applied using fully crossed or partially nested designs (Lakey, 2010).

1.10.1 Fully Crossed Designs

A fully crossed design requires all perceivers to rate the same support providers (Lakey, 2010; Lakey, Lutz & Scoboria., 2004; Neely et al., 2006; Rees et al., 2012). In these designs, generalisability theory can be applied to partition variance in support judgments into three primary components: perceiver (support perceiver), provider (e.g., coach, family member, etc.), and relational components. The *perceiver* component reflects a trait-like tendency for support perceivers to vary in how they perceive providers. For example, perceiver A may rate all providers to be supportive, whereas perceiver B may rate all providers to be unsupportive. The *provider* component reflects the extent to which perceivers agree in their ratings of the supportiveness of certain providers. For example, all perceivers may agree that one provider is more supportive than another provider. The *relational* component reflects perceivers' personal taste in rating certain providers to be supportive. For example, one perceiver may rate provider A to be more supportive than provider B, whereas another perceiver may rate provider B to be more supportive than provider A.

In a review paper of five social support studies that applied generalisability theory within social psychology, the relational component accounted for 62% of variance in ratings of perceived support, in comparison to 27% for the perceiver component and only 7% for the provider component (Lakey, 2010). In these studies participants were asked to rate perceptions of support of individuals within their existing support network, including graduate students rating faculty members or sorority sisters (Lakey, McCabe, Fiscaro, & Drew, 1996), graduate students rating medical professionals (Giblin & Lakey, 2010), or participants rating family members (Branje, van Aken, & van Lieshout, 2002). Other studies have also examined the components of perceived support

but with participants rating the supportiveness of symbolic providers, used in this context for well-known providers that participants have not actually interacted with previously. For example, participants have been asked to rate the support that would be available from characters in well-known TV programmes (Lakey et al., 2004) or well-known TV personalities (Lakey, Cooper, Cronin, & Whitaker, 2014). Similar to previous findings, the relational component accounted for the highest amount of variance in perceived support, although the perceiver component was also significant (Lakey et al., 2004; Lakey et al., 2014). When perceivers were asked to rate the supportiveness of a number of potential psychotherapists, the relational component accounted for the largest proportion of variance, although the perceiver component was again significant (Lakey, Cohen, & Neely, 2008).

In sport, a generalisability theory approach has been applied to examine perceptions of coach support (Rees et al., 2012). Rees and colleagues (2012), in three independent samples, asked athletes to rate the supportiveness of five well-known managers from the English Premier League (Study 1), five coaches who described their coaching philosophy through two-to-three minute videos (Study 2), or five coaches participants had worked with on a gifted and talented program (Study 3). Consistent with research in social psychology, across each of the three samples the relational component accounted for the largest and a significant amount of variance in perceived coach support (29% - 41%), in comparison to the provider component (10% - 29%) and perceiver component (20% - 22%). These findings across social and sporting contexts suggest that perceivers may systematically disagree in their perceptions of the supportiveness of providers. Currently research has not examined the components of received support with a fully crossed design, although research

has adopted a partially nested design to examine the components of both perceived and received support.

1.10.2 Partially Nested Design

A limitation with fully crossed designs is that the perceivers do not necessarily rate their most important support providers as all participants are required to rate the same set of providers. A partially nested design requires participants to rate a different set of providers, therefore, providers are considered nested within perceivers (Lakey, 2010). In partially nested designs, variance in support judgments is partitioned into two primary components: trait and social components. The trait component is akin to the perceiver component in fully crossed designs and reflects the differences among perceivers in rating support, averaged across providers (Lakey, 2010). For example, perceiver A might have a disposition to rate all providers as generally supportive, whereas perceiver B might have a disposition to see all providers as generally unsupportive. The social component reflects the extent to which perceivers systematically differ in their ratings of support across providers, in that certain providers are rated as particularly supportive. For example, perceiver A may rate a certain provider to be particularly supportive in comparison to how they rate other providers. The social component corresponds to a combination of the perceiver and relational component in fully crossed designs; these components cannot be distinguished in partially nested designs because each perceiver rates a different set of providers (Kenny, 1994; Lakey, 2010). The magnitude of the social component has been proposed to primarily represent relational influences as research adopting a fully crossed design has more consistently produced significant relational components and

much lower and non-significant provider components (Lakey et al., 1996; Lakey et al., 2004; Rees et al., 2012; Veenstra et al., 2011).

Previous research applying a partially nested design asked participants to rate the supportiveness of key attachment figures, such as a romantic partner, mother, and father, and found only social influences accounted for a significant amount of variance in perceived support (Barry, Lakey, & Orehek, 2007). Other research has asked participants to assess their four most important relationships (Lakey & Scoboria, 2005) or four people within their social networks who they interact with regularly (Lakey & Rhodes, 2015). The social component accounted for the highest amount of variance in perceived support, although the trait component was also significant (Lakey & Scoboria, 2005; Lakey & Rhodes, 2015). When participants were asked to rate perceived and received support from different family members and close peers, the trait and social components accounted for a significant amount of variance for both perceived and received support (Lakey, Orehek, Hain, & van Vleet, 2010). No research has used partially nested designs to examine the support judgments of athletes.

1.11 Social Relations Model

Univariate generalisability theory is a conceptual development of the Social Relations Model (SRM) that focuses on person by person situations (Kenny, 1988). SRM accounts for the variance attributable to the preferences of the person being rated, the persons giving the rating, and the effects of these dyads (Zimmer-Gembeck, Waters, & Kindermann, 2010). A *round robin* design for a social support study involves each support perceiver rating every other member in the study (Kenny, 1994). A *half block* design involves each support perceiver rating all of the same providers (Kenny, 1994). Generalisability theory

and the SRM share some theoretical similarities, in that variance is partitioned into components reflecting differences among participants, differences among stimuli (e.g., providers, items, or time) and the interactions between participants and stimuli. There are some differences, however, as generalisability theory requires each perceiver to rate a separate group of providers on supportiveness. In comparison the SRM requires each participant to rate every other person within a group, or participants are split in two groups and rate every member within their group (Lakey & Orehek, 2011).

1.12 Multivariate Generalisability Theory

Applying a multivariate generalisability theory approach permits researchers to examine the relationship between variables and, importantly, distinguishes whether these relationships apply across all components. That is, within a generalisability theory framework components are conceptually distinct so the links between support judgments and potential antecedents and consequences may differ across components (Lakey, 2010; Uchino, 2009). Relational influences have been found to be the largest determinant of perceived and received support, although this does not necessarily mean that relational influences are related to support antecedents or outcomes of support (Lakey, 2010). It could be that although the perceiver and provider components account for a smaller amount of variance in perceived and received support, one of these influences could account for the relationship between support constructs and their correlates.

1.13 Potential Antecedents of Social Support

1.13.1 Provider Personality

Previous findings have found that provider personality influences support judgments (Lakey et al., 2004; Lutz & Lakey, 2001). For example, when

participants rated well-known TV characters, all of the Big-5 personality dimensions were significantly correlated with perceived support at the perceiver and relational levels (Lakey et al., 2004). In a similar study, the personality of symbolic providers, particularly agreeableness, was associated with perceptions of support at the relational level (Lakey et al., 2014). Research using a partially nested design also found that agreeableness and openness were related to perceptions of support at the social level (Lutz & Lakey, 2001). Further, in sport, Smoll and Smith (1989) argued that coaches' personalities might influence how they are viewed by athletes, but research has not explored whether this relationship applies to certain components.

1.13.2 Coach Competency

A potential antecedent of perceived and received support specific to athletes is the competency of the coach. To date, however, the link between athletes perceptions of coach competency and social support has not been fully examined. According to Manley, Greenlees, Thelwell, Filby, and Smith (2008), experience, reputation, and qualifications are amongst the most important factors that an athlete considers when making judgments about a coach. Further, Manley et al. (2008) found that coach competency plays an important role in developing a successful coach-athlete relationship. The expertise of the support provider has also been shown to influence judgments of support (Gottlieb, 2000; Rosenfeld et al., 1989).

1.13.3 Social Identity

A common social identity between the perceiver and provider may underpin judgments of support as individuals' thoughts and behaviours are influenced by their membership to relevant social groups (Haslam, Jetten, Postmes, & Haslam, 2009). Social identity has been defined as "knowledge

that [we] belong to certain social groups together with some emotional and value significance to [us] of this group membership” (Tajfel, 1972, p. 31). Group memberships can be a lens through which judgments regarding social interactions and demanding situations are made (Tajfel & Turner, 1979). Social support has been noted as contextual in nature (Uchino, Carlisle, Birmingham, & Vaughn, 2011), therefore, the efficacy of a given instance of support is very much dependent on who provides it and the context in which it occurs.

Perceptions of support are enhanced when an individual shares a salient social identity with the provider (Haslam, Jetten, O’Brien, & Jacobs, 2004; Levine, Cassidy, Brazier, & Reicher, 2002). Similarities between perceivers and providers primarily reflect relational influences because the characteristics that make a perceiver and provider similar may vary across unique dyads (Lahey, 2010). These shared characteristics between the perceiver and provider may underpin appraisals of social support.

1.14 Consequences of Social Support

Previous research applying generalisability theory has identified a link between perceived and/or received support with negative and positive affect. For example, when participants were asked to rate perceptions of support and support received from their mother, father, and a close peer, it was found that both support constructs were significantly related to negative and positive affect at both the trait and social level (Lahey et al., 2010). To date, no research has examined the association between perceived and received support with performance outcomes in achievement contexts using a generalisability theory approach. Such research would shed further light on the correlates of support constructs and whether these reflect trait or social influences.

1.14.1 Self-confidence

Social support has consistently been cited as a determinant of self-confidence (Hays et al., 2007; Vealey et al., 1998). The team-mates and coaches of athletes have been found to be key providers of support, and when athletes perceived support to be available and felt they received support from these providers athletes also felt confident (Freeman & Rees, 2010; Hays et al., 2007). Previous research has not examined whether the relationship between social support and self-confidence reflects certain components, and applying a multivariate generalisability theory approach would help explain the association between social support and self-confidence in greater detail.

1.14.2 Performance

As previously mentioned in the *Main Effects and Stress-buffering* subsection, perceived and received support has been found to relate to performance in sport (Freeman et al., 2009; Freeman & Rees, 2008). Further, in organisational psychology enhanced perceptions of available support was associated with improved academic performance of college students (Malecki & Demaray, 2006), and the performance of employees (Shanock & Eisenberger, 2006). To date no research has examined the relationship between social support and performance at different levels of analysis.

1.14.3 Mechanisms between Support and Performance

A number of studies have examined the association between support with outcomes, including performance. Sarason and Sarason (2009) noted that although we know that social support 'works' we don't know the nature of the mechanisms involved and their effectiveness. Previous research has also referenced the need to test proposed mechanisms as this is one of the most pressing issues in the social support literature, as it may greatly develop our

understanding of the beneficial effects of social support (Thoits, 2011; Uchino, 2004).

There are some inconsistencies in terms of mediating factors underpinning social support processes. For instance, research found that depression and stress failed to account for links between social support and physiological outcomes (Baron, Cutrona, Hicklin, Russell, & Lubaroff., 1990; Kiecolt-Glaser, Dura, Speicher, & Trask, 1991; Uchino, Holt-Lunstad, Uno, Betancourt, 1999). In sport, there is some evidence that self-efficacy mediates the relationship between social support and performance (Rees & Freeman, 2009). Further research, however, is needed that examines the mechanisms between support judgments and performance. Applying a generalisability theory approach may be able to offer a more thorough understanding of potential mediators, as these relationships may reflect certain components.

1.15 Aims of Thesis

In light of the preceding literature review, the main aims of the current thesis were to: (i) Apply a univariate generalisability theory approach to examine the components of perceived and received support. (ii) Apply a multivariate generalisability theory approach to identify antecedents of perceived and received support across different levels of analysis. (iii) Examine whether perceived and received support predict self-confidence and performance across different levels of analysis. (iv) Examine whether self-confidence is a mechanism through which perceived or received support influence performance across different levels of analysis.

Study 1 consisted of two studies conducted simultaneously that adopted fully crossed designs to examine the perceiver, provider, and relational components of perceived coach support, and whether coach personality, coach

competency, and shared social identity predicted perceived coach support across the different components.

Study 2 consisted of two studies conducted simultaneously that adopted partially nested designs to examine the trait and social components of perceived support, and whether provider personality, and shared social identity predicted perceived support across the different components. Further, both studies examined whether perceived support predicted self-confidence, and whether perceived support mediated the relationship of provider personality and social identity with self-confidence.

Study 3 adopted a partially nested design to examine the trait and social components of perceived and received support, and whether provider personality, and shared social identity predicted perceived and received support across the different components. Further, the study examined whether perceived and received support predicted self-confidence and performance, and whether self-confidence mediated the relationship between both perceived support and received support with performance.

Study 4 adopted a fully crossed design to examine the perceiver, provider, and relational components of perceived and received coach support, and whether coach personality, coach competency, and shared social identity predicted perceived and received coach support across the different components. Further, the study examined whether perceived and received coach support predicted self-confidence and performance, and whether self-confidence mediated the relationship between both perceived coach support and received coach support with performance.

Chapter 2: Applying Generalisability Theory to Examine the Antecedents of Perceived Coach Support

2.1 Introduction

Social networks are crucial to our health, well-being, and the learning and transfer of skills (Bolger, Foster, Amiram, & Ng, 1996; Chiaburu, van Dam, & Hutchins, 2010; Cohen & Janicki-Deverts, 2009; Ertel, Glymour, & Berkman, 2009; Thoits, 2011; Uchino, 2004; Umberson & Montez, 2010). It is, therefore, not surprising that social support has been recognised as a key factor for the success and well-being of athletes (Bianco & Eklund, 2001; Connaughton, Wadey, Hanton, & Jones, 2008; DeFreese & Smith, 2013; Fletcher & Sarkar, 2012; Kristiansen & Roberts, 2010; Rees & Hardy, 2000). Social support is also integral to the coaching process (Antonini Philippe & Seiler, 2006; Chelladurai & Saleh, 1980; Kristiansen & Roberts, 2010; Mageau & Vallerand, 2003), and coaches are key providers of support (Bianco, 2001; Rosenfeld, Richman, & Hardy, 1989). Thus, examining the antecedents of perceptions of coach support is vital for sport psychology. At present, we have only a limited understanding of this process. The current research addresses this lacuna in two studies conducted simultaneously that examine the influence of coach personality, coach competency, and shared identity on perceptions of coach support.

Social support is comprised of three key constructs: social integration, perceived support, and received support (Lakey, 2010). Social integration refers to the structure and quantity of social relationships (Schwarzer & Knoll, 2007), perceived support refers to appraisals of support availability (Vangelisti, 2009), and received support refers to the type or amount of support obtained from social networks (Vangelisti, 2009). Perceived and received support are

distinct but related concepts (Haber, Cohen, Lucas, & Baltes, 2007), and can have different effects on athlete outcomes. Indeed, while effects for received support are inconsistent (e.g., see Uchino, 2004, 2009), those for perceived support suggest that this type of support is consistently associated with positive outcomes, such as performance (Freeman & Rees, 2008; Freeman & Rees, 2009; Gillet, Vallerand, Amoura, & Baldes, 2009), self-confidence (Rees & Freeman, 2007), and flow states (Bakker, Oerlemans, Demerouti, Slot, & Ali, 2011; Rees, Ingledew, & Hardy, 1999). Further, supportive coaches have been found to help athletes during career transitions (Stambulova, Alfermann, Statler, & Côté, 2009), injury rehabilitation (Judge et al., 2012), and to promote self-determined behaviours in their athletes (Alvarez, Balaguer, Castillo, & Duda, 2009). Given this evidence, it is vital to understand what influences perceptions of coach support.

2.2 Generalisability Theory

One way to understand the determinants of perceived coach support is to draw on generalisability theory. Generalisability theory was developed as a statistical method to examine the reliability of behavioural measurements, and extends classical test theory by accounting for multiple sources of error (Cronbach, Gleser, Nanda, & Rajaratnam, 1972). Conceptually, generalisability theory is similar to the Social Relations Model (Kenny, 1994), and it has subsequently been applied to provide vital insight into the extent to which perceptions of support are influenced by individual and social factors (Lahey & Orehek, 2011). Such insight is crucial to advance understanding of how support perceptions are formed, the consistency of individuals' support perceptions across different providers, and will ultimately contribute to the development of social support theory and the design of effective support

interventions. Applied to the present context, *univariate* generalisability theory provides a method that partitions variance in perceived coach support into three such components: perceiver, provider, and relational. The *perceiver* component reflects a trait-like tendency for athletes to vary in how they perceive coaches. For example, athlete A may perceive all coaches as very supportive, whereas athlete B may perceive all coaches as unsupportive. The *provider* component reflects the extent to which athletes agree in their perception of the supportiveness of certain coaches. For example, all athletes may agree that one coach is more supportive than another coach. The *relational* component reflects athletes' personal taste in rating certain coaches as supportive. For example, one athlete may rate coach A to be more supportive than coach B, whereas another athlete may rate coach B to be more supportive than coach A.

Rees and colleagues (Rees, Freeman, Bell, & Bunney, 2012) recently used a generalisability theory approach to examine perceptions of coach support. In three independent samples, athletes rated the supportiveness of five well-known managers from the English Premier League (Study 1), five coaches who described their coaching style in brief videos (Study 2), or five coaches who they had worked with on a gifted and talented program (Study 3). Regardless of whether athletes had actually interacted with the coaches (Study 3) or not (Studies 1 and 2), the relational component consistently accounted for the greatest amount of variance in perceived coach support (29% - 41%), in comparison to the provider component (10% - 29%) and perceiver component (20% - 22%). This evidence suggests that athletes may systematically disagree in their perceptions of the supportiveness of coaches. Such findings mirror those from social psychology (Lahey & Orehek, 2011). A recent review of five studies in which perceivers from non-athletic samples judged the

supportiveness of members of their own social networks found that the relational component was the key component of perceived support, accounting on average for 62% of the variance in perceived support, in comparison to 27% for the perceiver component, and 7% for the provider component (Lakey, 2010).

Although this evidence speaks to the importance of understanding that perceptions of coach support are far from universal, it raises the question as to what underpins these effects. That is, why do some athletes disagree on the supportiveness of certain coaches? What influences athletes' support perceptions? These questions are important for a full understanding of the coach-athlete support process, and can be answered with an extension to the previous analyses. In the present research, therefore, in addition to re-examining the components of perceived coach support in two new samples using univariate generalisability theory, we extended this work by examining antecedents of perceived coach support across the three components using *multivariate* generalisability theory. As an extension of univariate generalisability theory, multivariate generalisability theory allows an examination of the relationships between hypothesised predictors and perceived coach support at perceiver, provider, and relational levels. To our knowledge, this approach has not been applied before to examine these effects in sport. As perceiver, provider, and relational components are conceptually distinct, the links between perceived coach support and its antecedents could differ across components (Lakey, 2010). For example, Lakey, Cohen and Neely (2008) found that perceived similarity and perceived support were significantly correlated at the relational level, but not at the perceiver or provider levels. In the present research, we focused on the influence of coach personality, coach

competency, and a shared social identity as potential antecedents of perceived coach support.

Intuitively it might be assumed that perceptions of support are derived from the quantity and quality of support received from a provider (Lakey, Drew, & Sirl, 1999; Rees et al., 2012), but perceived and received support are only moderately related (Haber et al., 2007). In contrast, social-cognitive explanations suggest that individuals base perceptions of support on either generic evaluations of the providers or their specific traits (Lakey & Drew, 1997). Indeed, empirical evidence in social psychology suggests that the personality of providers is an important predictor of perceived support (Lakey et al., 1999; Lakey et al., 2004; Lutz & Lakey 2001). This relationship appears robust regardless of whether providers and perceivers are long-standing dyads (Lakey et al., 2002) or have never interacted (Lakey et al., 2004). For example, Lakey et al. (2004) asked participants to rate popular television characters as potential support providers and found significant correlations between ratings of the providers' personalities and perceived support at the provider and relational level of analysis. In sport, Smoll and Smith (1989) also argued that coaches' personalities might influence how they are viewed by athletes. It, therefore, seems reasonable to examine whether coach personality is associated with perceived coach support.

Coaches' experience, reputations, and qualifications are among the most important factors that athletes consider when making judgments about them (Manley, Greenlees, Thelwell, Filby, & Smith, 2008), and coach competency plays an important role in the development of coach-athlete relationships (Horn, 2002; Thelwell, Weston, Greenlees, Page, & Manley, 2010). Similarly, the knowledge and expertise of support providers underpins the effectiveness of

support (Gottlieb, 2000; Rosenfeld et al., 1989). As such, the competency of a coach may be a key concept from which athletes form perceptions of coach supportiveness, with highly competent coaches being viewed as well qualified to provide support if it is required.

The development of supportive relationships may also be influenced by the extent to which perceiver and provider share a common social identity (Haslam, O'Brien, Jetten, Vormedal, & Penna, 2005). A common social identity can be derived from viewing another person as a member of one's social group, and can be a lens through which judgements about individuals, social interactions, and demanding situations are made (Haslam, Jetten, O'Brien, & Jacobs, 2004). A shared sense of social identity between perceiver and provider has been shown to underpin the giving, receiving, and interpretation of support (Haslam et al., 2004; Haslam et al., 2005), and thus might be a key antecedent of perceived coach support. For example, a coach who is perceived to be from a common social group or who possesses similar values may be viewed by an athlete as someone who will understand their situation and is able to provide appropriate support. Indeed, Lakey, Ross, Butler, and Bentley (1996) found that similarity in attitudes and values between perceivers and providers influenced judgements of support.

2.3 Aims and Hypotheses

The first aim of this research was to adopt a univariate generalisability theory approach to provide further evidence of the magnitude of perceiver, provider, and relational components of perceived coach support¹. The second aim was to adopt a multivariate generalisability theory approach to examine whether coach personality, coach competency, and shared social identity predicted perceived coach support at the perceiver, provider, and relational

level of analysis. To isolate perceiver, provider, and relational components in generalisability theory studies, all participants are required to rate the same support providers. Such scenarios can be difficult to find in naturally occurring environments, as it is rare to find contexts in which a significant number of coaches are all well known by all athletes (Rees et al., 2012). We therefore conducted two studies simultaneously with different designs, but with the same measures. The studies were carried out concurrently, rather than the results of Study 1a influencing the design of Study 1b. In Study 1a, participants rated a selection of well-known soccer coaches. In Study 1b, participants rated coaches after watching videos of those coaches discussing their coaching style. As the measures and analyses were the same for both studies, we present all our interpretations in an overall Discussion rather than discussing the results of each study separately. For the univariate analyses, it was hypothesised that we would replicate the findings of Rees et al. (2012) and the relational component would account for a significant amount of variance in perceived coach support. In social psychology, provider agreeableness has been found to be consistently related to perceived support at the relational level (Lakey et al., 2004; Lutz & Lakey, 2001). It was, therefore, hypothesised that agreeableness would positively predict perceived coach support at the relational level, and that coach competency and shared social identity would positively predict additional variance over and above personality.

Study 1a

2.4 Method

2.4.1 Participants

The sample was 56 male university soccer players ($M_{\text{age}} = 20.5$ years, $SD = 2.5$). Each player currently worked with a coach, and on average trained

for four hours per week ($SD = 1.7$), played two matches per week ($SD = 0.6$), and had played soccer for 14.4 years ($SD = 2.7$).

2.4.2 Materials and Procedures

The study was approved by an institutional ethics review committee and participants provided informed consent. Participants rated five coaches from the English soccer Premier League as potential support providers (cf. Rees et al., 2012)². Participants also completed measures of coach personality, coach competency, and social identity (see Appendix 1). Participants reported a moderate knowledge ($n = 18$) or a detailed knowledge ($n = 38$) of the coaches³.

The five coaches ($M_{age} = 60.0$ years, $SD = 8.5$) were of different nationalities, had managed in the English Premier League for at least three years, and had all won at least one major domestic trophy in England. Even though the participants had no direct interaction with the coaches, this method of rating perceived support of well-known individuals has been applied in previous research in both social (Lakey et al., 2004) and sport (Rees et al., 2012) psychology. Using well-known individuals as hypothetical support providers has similar characteristics to asking participants to rate members of their own social networks because perceivers will have observed support providers in different situations and displaying various supportive behaviours (Lakey et al., 2004). Indeed, Lakey, Cooper, Cronin, and Whitaker (2014) recently demonstrated that empirical findings are very similar when participants rate symbolic providers (known only through the media or from watching video clips) as to when participants rate support providers from their own network.

To maintain anonymity and confidentiality, we implemented a similar procedure to previous research (Lakey, McCabe, Fiscaro, & Drew, 1996; Rees et al., 2012). Participants were presented with a photograph and name of each

coach, alongside a unique code which was created by a research assistant. This information was in a separate booklet to the questionnaires. Upon completion, questionnaires were returned in a sealed envelope. The research assistant removed the codes and consent forms before returning the collated questionnaires to the investigators. The investigators were therefore unaware of the support ratings of each coach or which participants provided the ratings. The research assistant was not involved in any other aspect of Study 1a. The order in which the coaches were presented to participants was balanced using a Latin square design.

2.4.2.1 Perceived Coach Support. Perceived coach support was assessed by a nine-item measure (Rees et al., 2012). Rees et al. provided evidence for the content validity and internal consistency of the measure. Participants rated how supportive each coach would be if the participant actually worked with that coach. The measure asked “To what extent do you feel . . . [coach’s code] . . . would . . .” and sample items included “listen to your concerns?” and “give you moral support?” Participants responded on a 5-point scale from 0 (*not at all*) to 4 (*extremely*). In the present study, internal consistency coefficients for the perceiver, provider, and relational components of perceived coach support, respectively, were .99, .99, and .94, calculated from formulae presented by Cardinet, Tourneur, and Allal (1976)⁴.

2.4.2.2 Coach Personality. Coach personality was assessed using the Ten-Item Personality Inventory (Gosling, Rentfrow, & Swann Jr., 2003). Gosling et al. demonstrated that this measure has acceptable convergent and discriminant validity, test-retest reliability, and is a good alternative to longer personality inventories. Two items measured each of the Big-5 personality dimensions: extraversion, agreeableness, conscientiousness, emotional

stability, and openness to experience. For each item, two personality characteristics were presented concurrently and participants rated the extent to which the characteristics applied to the coach, even if one applied more strongly than another. Participants responded on a 7-point scale from 1 (*disagree strongly*) to 7 (*agree strongly*).

2.4.2.3 Coach Competency. The Coach Competency Scale (Myers, Feltz, Maier, Wolfe, & Reckase, 2006) was developed as a multidimensional measure to assess technical, motivational, game strategy, and character building competency. Myers et al. provided evidence for the factorial validity of the measure and internal consistency of each subscale. As participants in the present study had to complete measures in relation to each coach, only one subscale was included to minimise the risk of participant fatigue. The six-item technical competency scale was selected, because key roles of coaches are to teach skills and instruct their athletes on correct technique (Myers et al., 2006). The measure asked “To what extent do you feel the coach is competent in his ability to . . .” and sample items included “coach individual athletes on technique?” and “detect skill errors?” Participants responded on a 10-point scale from 0 (*not at all*) to 9 (*extremely*). Internal consistency coefficients for the perceiver, provider, and relational components of coach competency, respectively, were .99, .98, and .96.

2.4.2.4 Social Identity. Two items adapted from Doosje, Ellemers, and Spears (1995) were used to assess the extent to which participants felt they shared a common social identity with each coach. The measure has been noted to be suitable for use with real and ad-hoc groups (Haslam, 2004), and has been used in research examining the links between social identity and social support (Haslam et al., 2005). In the current study, the measure asked

“To what extent do you identify with the coach” and “To what extent do you feel a connection with the coach?” Participants responded on a 7-point scale from 0 (*do not agree at all*) to 6 (*agree completely*).

2.4.3 Statistical Analyses

Univariate generalisability theory focuses on estimating sources of variance. Although this can be achieved through different statistical methods, consistent with previous research (Lahey et al., 2004), we used variance components analyses with restricted maximum likelihood estimation to determine the magnitude of perceiver, provider, and relational components in all variables. A fully crossed design with random factors was employed. Questionnaire items and providers (coaches) were within-subjects factors, and perceivers (participants) constituted the between-subjects factor. As the perceived coach support and coach competency questionnaires had more than two items, measurement error was reduced by calculating the mean of odd items, and the mean of even items, which were used as two levels of the items factor (Barry, Lahey, & Orehek, 2007; Lahey et al., 2004; Lahey & Rhodes, 2015). As such, each variance components analysis had a 56 (participants) x 5 (coaches) x 2 (items) design.

The variance components, 95% confidence intervals, and percentages of variance were computed. The perceiver, provider, and relational components are the key components of interest, and thus the other components (items, perceiver x item, provider x item, and perceiver x provider x item) are not reported, although they were included when calculating the percentages of variance. Components were considered significant if their 95% confidence intervals did not include zero. The difference between components was considered significant if their 95% confidence intervals did not overlap.

Multivariate generalisability theory provides a framework to estimate the relationships between variables at the different levels of analysis. Previous research (e.g., Lakey et al., 2004; Veenstra et al., 2011) has often employed mGENOVA to conduct these analyses, but this doesn't lend itself to examining the incremental effects of multiple independent variables. As such, we followed the steps described by Lakey and Rhodes (in press). We first calculated perceiver, provider, and relational component scores for each variable using the formulae presented in Kenny's (1994) Social Relations Model. For each variable, a perceiver component score was a perceiver's mean score across all providers. A provider component score was a provider's mean score from all perceivers. A relational component score was the score given by a particular perceiver to a provider minus the corresponding perceiver and provider component scores plus the grand mean for that variable. Correlations between perceived coach support and the other variables for each component were then calculated using SPSS version 20.0⁵. Following Lakey and Scoboria's (2005) guidelines, however, where components were non-significant at the univariate level for any variable, multivariate analyses involving that component were not calculated. Multiple hierarchical regression analyses were conducted to examine whether coach personality, coach competency, and social identity predicted perceived coach support at the different levels of analysis. As previous generalisability research has demonstrated that provider personality is associated with perceived support (Lakey et al., 2004; Lutz & Lakey, 2001), coach personality was entered at step 1. Coach competency and social identity were entered at step 2 to examine whether these variables accounted for additional variance in perceived coach support, beyond provider personality. The unit of observations for perceiver, provider, and relational analyses differed,

and reflected the number of athletes, coaches, and athlete-coach dyads respectively.

As each participant rated the same five providers, the assumption of independent scores was violated for the relational component. Consistent with previous generalisability research, therefore, 95% confidence intervals were computed using percentile bootstrapping with 1000 resamples and used to determine statistical significance (Gross, Lakey, Edinger, Orehek, & Heffron, 2009; Lakey & Scoboria, 2005; Neely et al., 2006; Veenstra et al., 2011)⁶. Correlation and regression coefficients were considered significant if their 95% confidence intervals did not include zero.

2.5 Results

2.5.1 Univariate Analyses

The percentage of variance accounted for by the perceiver, provider, and relational components in all variables are presented in Table 2.1. The relational component accounted for the largest amount of variance in perceived coach support (38%), but the perceiver component was also significant (19%). The relational component, 95% CI [0.12, 0.25], did not, however, account for a significantly greater amount of variance in perceived coach support than the perceiver component, [0.03, 0.16]. The relational component accounted for a significant amount of variance in all of the other variables, except conscientiousness. The perceiver component accounted for a significant amount of variance in openness to experience, coach competency, and social identity. The provider component was not significant for any of the variables, although this may be because of a lack of statistical power given there were only five providers.

Table 2.1 Percentages of variance accounted for by each component in perceived coach support, coach personality, coach competency, and social identity.

Variable	Perceiver		Provider		Relational	
	Study	Study	Study	Study	Study	Study
	1a	1b	1a	1b	1a	1b
Perceived coach support	19.3*	8.3	16.0	27.4	38.2*	46.3*
Extraversion	6.5	1.3	11.8	22.2	17.5*	29.0*
Agreeableness	0.6	0.3	6.4	16.7	16.4*	29.8*
Conscientiousness	11.2	3.2	2.6	7.5	7.7	25.4*
Emotional stability	1.8	3.6	1.2	9.5	25.3*	11.8*
Openness	13.7*	0.0	0.4	22.7	17.3*	37.4*
Coach competency	46.2*	15.5*	1.3	19.6	36.7*	56.9*
Social identity	15.9*	13.1*	8.9	21.6	43.5*	46.6*

Notes. * Significant to $p < .05$.

2.5.2 Multivariate Analyses

Following the significant univariate results, multivariate analyses were only conducted at the perceiver and relational levels. At the perceiver level, coaches who were rated as competent and having a common social identity with the athletes were perceived as supportive (see Table 2.2). At the relational level, if a coach was rated as particularly agreeable, emotionally stable, open to experience, competent, and having a common social identity by an athlete, that coach was perceived as particularly supportive compared to how that athlete rated other coaches and how the coach was perceived by other athletes. The results from the hierarchical regression analyses are presented in Table 2.3. At the perceiver level, openness to experience did not account for a significant

amount of the variance in perceived coach support. Coach competency and social identity collectively accounted for a significant additional amount of variance in perceived coach support. Only social identity, however, contributed significantly to the final model, $b = 0.14$, 95% CI [0.06, 0.23].

At the relational level, extraversion, agreeableness, emotional stability, and openness to experience collectively accounted for a significant amount of variance in perceived coach support. Coach competency and social identity accounted for a significant additional amount of variance. Only agreeableness, coach competency, and social identity contributed significantly to the final model, $bs = 0.11 - 0.13$, 95% CI [0.05, 0.20].

Table 2.2 Correlations between the components scores of perceived coach support and coach personality, coach competency, and social identity.

Variable	Perceiver		Relational	
	Study 1a	Study 1b	Study 1a	Study 1b
Extraversion	-	-	.11	.41*
Agreeableness	-	-	.39*	.43*
Conscientiousness	-	-	-	.43*
Emotional stability	-	-	.29*	.31*
Openness	.26	-	.16*	.53*
Coach competency	.34*	-	.42*	.51*
Social identity	.45*	-	.48*	.59*

Notes. * Significant to $p < .05$ using percentile bootstrapping with 1000 resamples. Correlations were not calculated for components that were non-significant in the univariate analyses. The provider component was not included due to non-significant univariate results for all variables.

Table 2.3 Hierarchical regression analyses for predicting perceiver and relational components of perceived coach support.

Study	Component	Step	Variable	ΔR^2	<i>b</i>	95% CI
1a	Perceiver	1	Openness	.07	0.06	[-0.04, 0.16]
		2	Competency	.20*	0.08	[-0.04, 0.15]
			Social identity		0.14*	[0.06, 0.23]
1a	Relational	1	Extraversion	.22*	0.05	[-0.01, 0.09]
			Agreeableness		0.13*	[0.07, 0.19]
			Emotional stability		0.03	[-0.01, 0.08]
			Openness		0.00	[-0.05, 0.06]
		2	Competency	.17*	0.13*	[0.05, 0.20]
			Social identity		0.11*	[0.07, 0.15]
1b	Relational	1	Extraversion	.52*	0.08*	[0.04, 0.13]
			Agreeableness		0.20*	[0.15, 0.24]
			Conscientiousness		0.11*	[0.04, 0.17]
			Emotional stability		-0.01	[-0.07, 0.05]
			Openness		0.06*	[0.01, 0.11]
		2	Competency	.07*	0.09*	[0.05, 0.14]
			Social identity		0.08*	[0.02, 0.14]

* Significant to $p < .05$ using percentile bootstrapping with 1000 resamples. *b* = unstandardized beta value. Hierarchical regression analysis was only conducted with the components that were significant in the univariate analyses.

Study 1b

2.6 Method

2.6.1 Participants

Fifty university athletes (27 females, 23 males; $M_{age} = 20.6$ years, $SD = 0.9$), from a range of team sports participated in the study. On average,

participants trained for five hours per week ($SD = 3.6$), played one competitive match per week ($SD = 0.70$), and had played their sport for 10.1 years ($SD = 5.4$).

2.6.2 Materials and Procedures

The study was approved by an institutional ethics review committee and participants provided informed consent. We first created five two-to-three minute video clips, each consisting of a different coach describing his/her coaching style (cf. Rees et al., 2012). Coaches were asked to focus on their current approach with athletes, rather than any ideal coaching style or planned behaviour. An independent researcher then reviewed the videos to ensure that they were similar in terms of their length and focus. Participants subsequently viewed each video and completed the same measures as Study 1a, although the question stems were adapted so that they referred to the coach in the video participants had viewed. The order the coaches were presented to the participants was controlled for by applying a Latin square design.

The coaches ($M_{\text{age}} = 37.2$ years, $SD = 9.8$) had an average of 10.8 years ($SD = 5.8$) experience of coaching team sports and all held a nationally recognised coaching qualification. Thirty nine of the athletes reported having no prior knowledge of any of the coaches. Some participants, however, reported having a little ($n = 9$) or moderate ($n = 2$) knowledge of one coach. Internal consistency reliabilities for the perceiver, provider, and relational components of perceived coach support, respectively, were .99, .99, and .96; and .99, .99, and .98 for coach competency.

2.6.3 Statistical Analyses

Univariate and multivariate analyses replicated those conducted in Study 1a.

2.7 Results

2.7.1 Univariate Analyses

Only the relational component accounted for a significant amount of variance in perceived coach support (46%; see Table 2.1). The relational component also accounted for a significant amount of variance in all of the other variables. The perceiver and provider components were not significant for any variables.

2.7.2 Multivariate Analyses

Following the significant univariate results, multivariate analyses were only conducted at the relational level. If an athlete rated a coach as being particularly extraverted, agreeable, conscientious, emotionally stable, open to experience, competent, and having a common social identity, that coach was perceived as highly supportive (see Table 2.2).

In the hierarchical regression analysis (see Table 2.3), the Big-5 personality dimensions collectively accounted for a significant amount of variance in perceived coach support at the relational level. Coach competency and social identity accounted for a significant additional amount of variance in perceived coach support. Extraversion, agreeableness, conscientiousness, openness to experience, coach competency, and social identity all contributed significantly to the final model, $bs = 0.06 - 0.20$, 95% CI [0.01, 0.24].

2.8 Discussion

The purpose of the present research was to apply univariate and multivariate generalisability theory to examine perceived coach support and its antecedents at perceiver, provider, and relational levels of analysis. As hypothesised, the univariate analyses demonstrated that the relational component accounted for a significant amount of variance in perceived coach

support. This result highlights that the athletes systematically disagreed in their ratings of the supportiveness of the different coaches. The multivariate analyses demonstrated that there was consistent evidence across the two studies that agreeableness, coach competency, and social identity significantly predicted perceived coach support at the relational level. That is, when athletes perceived specific coaches to be highly agreeable, competent, and sharing a common identity, they also perceived those same coaches to be particularly supportive in comparison to how those athletes rated other coaches and how those coaches were perceived by other athletes.

Consistent with evidence from both sport (Rees et al., 2012) and social (Branje, Van Aken, & Van Lieshout, 2002; Lakey et al., 2004) psychology, the findings from the current studies highlight the importance of the relational component of perceptions of support suggesting that athletes systematically disagreed in their perceptions of coach support. That is, a particularly supportive coach was perceived more favourably by an athlete compared to how that athlete rated other coaches and how that coach was perceived by other athletes. The relational component was also significant for perceptions of coach personality, competency, and social identity. In Study 1a, a behavioral mechanism could potentially explain these findings. Athletes may have disagreed on the personality, competency, social identity, and supportiveness of the coaches because they had seen different media coverage and therefore observed unique behaviors from the coaches. The findings, however, were replicated in Study 1b, which suggests that a cognitive explanation for the significant relational components may be more plausible (Lakey, 2010). Even when all athletes are exposed to the same coach behaviors in Study 1b, they may have interpreted those behaviors differently and formed diverse

perceptions of the coaches. For example, one athlete may have viewed a coach's behaviors as friendly, and perceived this coach to be agreeable and supportive. In contrast, another athlete may have viewed the same coach's behaviors as insincere, and perceived the coach to be disagreeable and unsupportive.

Beyond the univariate analyses, our aim was to extend understanding by examining antecedents of perceived coach support. Indeed, the present research is the first to employ a multivariate generalisability theory approach to examine these effects in sport. Congruent with previous research in social psychology (Lakey et al., 1999; Lutz & Lakey, 2001), the multivariate analyses demonstrated that the personality of the support provider (in particular agreeableness), was related to perceived coach support at the relational level. Such evidence is consistent with social cognitive explanations for how perceptions of support are formed. Lakey and Drew (1997) argued that perceptions of supportiveness are derived from generic evaluations of the providers or their specific traits.

Unique to this study, we also demonstrated that coach competency and a common social identity were significantly associated with perceptions of support at the relational level, over and above the effect of coach personality. The importance of coach competency complements research which has demonstrated that coaches' experience, reputations, and qualifications are important factors that influence athletes' judgments about them (Manley et al., 2008), and that provider knowledge and expertise are key factors in influencing perceptions of support (Gottlieb, 2000; Rosenfeld et al., 1989). Our results also build on previous work in social psychology that has noted the importance of social identity in influencing judgments of support (Haslam et al., 2004; Haslam

et al., 2005). Levine et al. (2005) examined the role of identity in emergency helping and found that supportive acts were interpreted in the intended way when perceivers and providers shared a common social identity. By applying a generalisability theory approach, the current research extends understanding by demonstrating that athletes systematically disagreed in their perceptions of coach competency and social identity, and that these disagreements were associated with athletes having different perceptions of coach support. Importantly, these findings were robust regardless of whether all athletes had been exposed to the same coach behaviours (Study 1b) or not (Study 1a).

The results highlighted in the previous paragraph are important for at least two key reasons. First, the present results highlight the utility of employing multivariate generalisability theory as a framework for exploring factors that are related to perceived coach support. A distinct advantage of applying multivariate generalisability theory is that these correlates of perceived coach support can be partitioned into perceiver, provider, and relational components (Lakey & Orehek, 2011), and the relationships between perceptions of support and its correlates can vary across the different components (Lakey, 2010). For example, in the present studies, openness to experience was significantly correlated with perceived coach support at the relational level but not at the perceiver level. Applying multivariate generalisability theory thus enables a more fine-grained conceptual understanding of the correlates of perceived coach support. Second, the significant relational results imply systematic disagreement and that the effects for predictors of support in large sample studies may be far from universal. This implies that when studies are conducted without taking into account perceiver, provider, and relational components, they are likely to risk losing valuable information.

In terms of the application of this work to practice, the comments raised in the previous paragraph may shed light on the apparent inconsistencies observed when interventions attempt to increase perceptions of support (Brand, Lakey, & Berman, 1995; Hogan, Linden & Najarian, 2002), normally by introduction of one professional provider. For example, the introduction of a single supportive community staff worker to all elderly women in a ten week support intervention did not lead to increased perceived support (Heller, Thompson, Trueba, Hogg, & Vlachos-Weber, 1991). In sport, the current findings suggest that if one new coach is introduced to a team, members of that team will disagree over the supportiveness of the coach. The relational effects observed in the present research suggest that interventions with the goal to optimise perceptions of coach support might consider matching athletes with coaches whom they perceive as agreeable and competent, and with whom they identify (Lakey, 2010; Veenstra et al., 2011). This matching approach, however, could be time consuming and may not be feasible in all sports or contexts, such as where a team has only one coach.

An alternative to this matching approach would be to attempt to enhance athletes' perceptions of coach agreeableness, competency, or common social identity. As all of these variables predicted perceived coach support at the relational level, it would seem reasonable to target any of these variables for intervention. We would argue, however, that a focus on social identity may be more likely to yield the most beneficial impact. Both the personality (Branje, van Lieshout, & Gerris., 2007; McCrae & Costa Jr., 1994) and the competency (Manley et al., 2008) of the coach are relatively stable constructs, offering limited opportunity for change. In contrast, by harnessing an understanding of social identity, coaches could help cultivate a common social identity between

them and their athletes, which could help to promote their athletes' perceptions of them as supportive coaches. For example, coaches could work with athletes on an individual basis to emphasise values that they share or groups to which they both belong. If coaches foster a strong common identity with individual athletes, it could underpin supportive coach-athlete dyads.

Against the backdrop of the contributions this paper makes to understanding the support process in sport, potential limitations of the current research should be noted. First, as all variables were assessed contemporaneously, causality cannot be inferred. Second, perceiver, provider, and relational effects were derived from different numbers of observations due to unequal number of athletes, coaches, and dyads. These differences may have influenced the findings, particularly the power to detect a significant provider component. Third, participants were asked to rate either well-known coaches (Study 1a) or unknown coaches in two-to-three minute video clips (Study 1b). The participants did not rate support providers from their own social network. Although the practice of using well-known providers and videos has been successfully applied in previous social support research (Rees et al., 2012; Veenstra et al., 2011), this approach could be criticised on grounds of ecological validity. However, the ability to isolate perceiver, provider, and relational components, requires all participants to rate the same providers. This leads to difficulty in finding naturalistic contexts in which a sufficient number of providers are well known to all participants (Lakey et al., 2004), which may limit the wider use of generalisability theory approaches with fully crossed designs. A potential future avenue is to ask athletes to focus upon support from coaches within their existing support network. What this design brings in terms of ecological validity, it loses, however, in terms of specificity. In this design,

termed partially nested, each participant would rate different providers and the provider and relational components could not be separated. Despite its limitations, we believe this approach may offer a useful avenue for future research.

In conclusion, the present research provides further evidence of the importance of examining the relative contribution of perceiver, provider, and relational components of perceived coach support, as well as a novel insight into the factors which are related to perceived coach support at each of those levels. The key contributor to both perceptions of coach support and its correlates was the relational component. This suggests that not only do athletes differ in their perceptions of the same coach as being more or less supportive than other coaches, they also differ in the extent to which they perceive those same coaches to be agreeable, competent, and sharing of a common social identity. Importantly, the findings demonstrate that athletes differ in perceiving certain coaches as highly agreeable, competent, and sharing a common identity with them, and predict their perceptions of those same coaches as being more supportive than others. Thus, by applying a multivariate generalisability theory approach, these studies have been able to provide a more detailed understanding of factors which are associated with perceived coach support.

2.9 Footnotes

¹ Perceived coach support was our primary interest for univariate analysis, therefore, no specific hypotheses were made regarding the variance components of coach personality, coach competence, and social identity.

² There was no overlap in the participants of Study 1a and 1b, or with those who participated in Rees et al. (2012). Further, two of the five coaches used in Study 1a were included in Rees et al. (2012).

³ To examine whether knowledge of coaches influenced the amount of variance accounted for by perceiver, provider, and relational components in all variables, the univariate analyses for Study 1a were repeated including only participants who had a detailed knowledge of all coaches. Similarly, the univariate analyses in Study 1b were repeated including only participants who had no prior knowledge of any coaches. These additional analyses found a similar pattern of results to those which included all of the participants.

⁴ According to Yu (2001) a reliability coefficient should only be calculated when using measures consisting of three or more items, so a reliability coefficient was not calculated for coach personality and social identity.

⁵ To determine the consistency of our approach with that used in previous studies, we also calculated the correlations between perceived coach support and the other variables reported in Study 1a using mGENOVA. An intraclass correlation coefficient of .96 suggested a high level of absolute agreement between the two approaches. Full details of these analyses can be obtained from the first author.

⁶ Given the existence of different methods of bootstrapping, we reran the relational analyses (correlations and hierarchical regression) using a block bootstrapping approach. The standard errors produced were very similar to those reported in the manuscript and did not alter the significance of any statistic in Study 1a or 1b. Full details of these additional analyses can be obtained from the first author.

Chapter 3: Trait and Social Influences of Perceived Support from Existing Social Networks, and the Links with Support Antecedents and Self-confidence.

3.1 Introduction

Social support is an important contributor to developing strong coach-athlete relationships (Antonini Philippe, & Seiler, 2006; Bianco, 2001; Mageau & Vallerand, 2003), self-confidence (Freeman & Rees, 2010; Rees & Freeman, 2007), and overall performance (Gould, Grenleaf, Chung, & Guinan, 2002; Rees & Hardy, 2004). Enhanced perceptions of support have also been found to positively relate to both physical and psychological outcomes in general social psychology. For example, perceiving providers within one's own social network as supportive is related to improved mental health (Barrera, 1986; Cohen & Wills, 1985; Lakey & Cronin, 2008) and lower rates of morbidity and mortality (Treiber et al., 2003; Uchino, 2006). Based on such findings, interventions may look to improve individuals' social support but previous interventions have been unable to consistently enhance perceptions of support (Heller, Thompson, Trueba, Hogg, & Vlachos-Weber, 1991; Hogan, Linden & Najarian, 2002). The development of effective interventions would benefit from understanding support antecedents and the extent to which enhanced perceptions of support are associated with processes underpinning performance, and whether these relationships reflect a trait disposition of the perceiver or social influences between the perceiver and provider.

Social support is comprised of three constructs: social integration, perceived support, and received support, with the constructs being only moderately related (Barrera, 1986). Social integration is centred on the

structure and quantity of social relationships (Schwarzer & Knoll, 2007). There are a number of different key support providers including family members, close peers, coaches, and team-mates (Barry et al., 2007; Corbillon et al., 2008; Lakey et al., 2010; Merlo & Lakey, 2007). Perceived support refers to appraisals of available support, and received support refers to the type or amount of support obtained from providers in social networks (Vangelisti, 2009). Perceptions of support from existing support members, such as team-mates and coaches, have the greatest influence on injured athletes' rehabilitation and psychological well-being (Clement & Shannon, 2011). Perceived support has also consistently been found to relate to a number of different psychological outcomes, whereas received support has been associated with relatively inconsistent findings (Barrera, 1986; Lakey & Cohen, 2000; Rees & Freeman, 2007; Uchino, 2009). It is, therefore important to understand what influences athletes perceptions of support from members of their support network, and if these perceptions of support relate to key performance indicators such as self-confidence.

Applying a generalisability theory approach offers a novel insight into the extent to which trait and social factors influence perceptions of support. The trait influences reflect the differences among athletes in perceiving support, averaged across providers (Lakey, 2010), reflecting a general disposition for perceivers to rate all providers as supportive or unsupportive. For example, perceiver A might have a disposition to see all providers as characteristically supportive, whereas perceiver B might have a disposition to see all providers as unsupportive. Lakey and Scoboria (2005) suggested that such perceptions stem from either biological dispositions or are acquired through learning. Social influences reflect the extent to which perceivers systematically differ in their

perceptions of support across providers. For example, perceiver A may rate a certain provider to be particularly supportive in comparison to how they perceive other providers. When each perceiver rates individuals that are unique to themselves, the social component corresponds to a combination of the perceiver and relational components identified in a fully crossed generalisability design, as these components cannot statistically be separated (Kenny, 1994; Lakey, 2010).

A number of social psychology studies examining perceptions of support have applied a fully crossed design, in which all support perceivers rate the supportiveness of the same set of providers (Lakey, Cohen, & Neely, 2008; Lakey, Lutz, & Scoboria, 2004; Veenstra et al., 2011). Two studies in sport have applied a generalisability theory approach to examine perceptions of coach support, both using a fully crossed design, (Chapter 2; Rees, Freeman, Bell & Bunney, 2012). A common limitation with fully crossed designs is that the perceivers' most important support providers are not necessarily included in the study, as the participants are required to rate the same set of providers. For instance, a fully crossed design could fail to include an athlete's family members, team-mates, and so on. A partially nested design allows perceivers to rate individuals within their own social network, and therefore the athletes' most important providers can be included in the study. Rees and colleagues (2012) proposed that studies should adopt partially nested designs to better understand athletes' perceptions of support. The present studies are the first to apply a partially nested design within sport.

Research adopting a partially nested design in social psychology has found that both the trait and social components account for a significant amount of variance in perceived support (Lakey, Orehek, Hain, & Van Vleet, 2010;

Lakey & Scoboria, 2005). This evidence suggests that perceivers partially have a disposition to be consistent in how they rate providers, but that individuals do perceive certain providers to be particularly supportive. When athletes rated perceptions of coach support the findings of Rees et al. (2012) and Study 1a of Chapter 2 reported both the perceiver and relational components accounted for a significant amount of variance in perceived coach support. It would be worthwhile to determine the extent to which athletes perceptions of support from their most important providers reflect trait or social processes.

By adopting a multivariate generalisability theory approach, researchers can get a more detailed understanding of the trait and social influences on the relationships between perceived support and other variables. This is important because relationships between variables can have different patterns across distinct components (Eastwick, Finkel, Mochon, & Ariely, 2008; Kwan, John, Kenny, Bond, & Robins, 2004; Lakey et al., 2010). Feeling a sense of attachment with the provider has been found to relate to perceptions of support at the social level (Barry, Lakey & Orehek, 2007). When perceivers were asked to rate perceptions of support of their Mother, Father, and closest peer, perceptions of similarity between perceiver and provider was shown to reflect social influences (Shorey & Lakey, 2011). In addition to examining antecedents of support, studies have shown perceived support is related to psychological outcomes, including positive affect at the social level (Barry et al., 2007; Lakey et al., 2010; Lakey & Scoboria, 2005). The present studies are the first in sport to apply such an approach to understand athletes' perceptions of support from their most important providers, and potential antecedents and consequences of perceived support for the trait and social components. Specifically, we

examined the antecedents of provider personality and social identity, and self-confidence as an outcome.

Evidence in social psychology, adopting a partially nested design, has found that the personality traits of agreeableness and openness are related to perceptions of support at the social level (Lutz & Lakey, 2001). Research examining the components of perceived support and provider personality with a fully crossed design has found all of the Big-5 personality dimensions are related to perceptions of support at the perceiver and relational level (Lakey et al., 2004). In Chapter 2 extraversion, openness, and emotional stability predicted perceived coach support at the relational level. Further, the findings of Chapter 2 found that a shared social identity predicted additional variance in perceived coach support. A salient social identity has also been found to be associated with enhanced ratings of support in social psychology (Haslam, Jetten, O'Brien, & Jacobs, 2004; Haslam, O'Brien, Jetten, Vormedal, & Penna, 2005). Haslam (2004) highlighted the importance of the actions and views of in-group members in influencing how people perceive social situations. It would be worthwhile to examine whether the relationship between a common shared identity and perceptions of support reflect trait or social influences.

The relationship between perceptions of support and key indicators of performance outcomes, such as self-confidence (Feltz, 2007; Hays, Thomas, Maynard, & Bawden, 2009), have yet to be examined with a generalisability theory approach. Such an approach would provide a novel method of measuring the extent to which perceiving important existing providers as supportive relates to psychological outcomes. Perceptions of support from teammates has been linked with self-confidence (Freeman & Rees, 2010), perceived support has been positively associated with flow states (Bakker,

Oerlemans, Demerouti, Slot, & Ali, 2011; Rees, Ingledew, & Hardy, 1999) and performance (Freeman & Rees, 2008). Rees et al. (2012) proposed research is needed to ascertain whether perceiving certain support providers as particularly supportive is related to key performance outcomes, and using a multivariate generalisability approach would provide finer detail into whether such a relationship is attributable to specific components. Such knowledge could help inform future interventions aimed at enhancing perceptions of support and self-confidence.

3.2 Aims and Hypotheses

The first aim of the current studies was to adopt a univariate generalisability theory approach to measure the amount of variance in perceived support accounted by trait and social components. It was hypothesised that the trait and social components would account for a significant amount of variance in perceived support (Hypothesis 1). The second aim was to examine the correlates of support at the trait and social level. It was hypothesised that extraversion, agreeableness, conscientiousness, emotional stability, openness to experience, and social identity would predict perceived support at the social level (Hypothesis 2). It was also hypothesised that perceived support would positively predict self-confidence at the social level (Hypothesis 3). Additionally, it was hypothesised that perceived support would mediate the relationships of personality and social identity with self-confidence at the social level (Hypothesis 4). Two studies were conducted concurrently with different designs, but with the same measures. In Study 2a participants were asked to rate the four most important people to them as an athlete. In Study 2b participants were asked to rate four specified providers.

Study 2a

3.3 Method

3.3.1 Participants

The sample was 91 athletes ($M_{age} = 31.6$ years, $SD = 12.9$), 37 males and 54 females, from a range of team ($n = 65$) and individual ($n = 26$) sports. Participants competed at club/university ($n = 76$), regional/county ($n = 6$), national ($n = 7$), or international level ($n = 2$). On average, the athletes trained for four hours per week ($SD = 4.2$), competed once per week ($SD = 0.9$), and had played their sport for 15.7 years ($SD = 11.2$).

3.3.2 Materials and Procedures

The study was approved by an institutional ethics review committee and participants provided informed consent. Following previous research applying a partially nested design (Lakey & Rhodes, 2015; Lakey & Scoboria, 2005), participants were asked to rate the four most important people to them as an athlete, regardless of whether the participant considered this relationship to be positive or negative (see Appendix 2). Of these relationships, 31.8% of providers were reported as a romantic partner, 28.6% a coach, 13.2% a father, 12.1% a closest peer, 5.5% a mother, 5.5% a team-mate, and 3.3% a sibling.

The anonymity and confidentiality of participants and their ratings of providers was maintained by using a similar procedure to previous generalisability theory studies (Lakey, McCabe, Fiscaro, & Drew, 1996; Rees et al., 2012). After participants listed their most important relationships, they were prompted to rate these support providers according to a predetermined balanced Latin square design. When rating each provider, participants were instructed to print the initials of the provider at the top of the page of the set of questionnaires. This was done to help ensure that participants held the correct

provider in mind when answering the questions that followed. For each provider, participants completed measures of perceived support, provider personality, social identity, and self-confidence. Participants repeated this sequence of writing initials and completing measures until each provider had been rated. Upon completion, questionnaires were returned in a sealed envelope.

3.3.2.1 Perceived Social Support. Provider supportiveness was assessed using the Perceived Available Support in Sport Questionnaire (PASS-Q; Freeman, Coffee, & Rees, 2011). Freeman et al. demonstrated that the PASS-Q has good internal and test re-test reliability and concurrent validity. The measure consists of 16 items, which were preceded by the question stem “If needed to what extent would. . . [support provider]. . .” Sample items included “Reinforce the positives?” and “Give you advice when you’re performing poorly?” Participants responded on a 5-point scale from 0 (*not at all*) to 4 (*extremely so*). Internal consistency coefficients were calculated from formulae presented by Cardinet, Tourneur, and Allal (1976)¹, and were .99 and .98 for the trait and social components respectively.

3.3.2.2. Provider Personality. Provider personality was assessed using the Ten-Item Personality Inventory (Gosling, Rentfrow, & Swann, 2003). The TIPI has been recommended as a brief measure of assessing the Big-5 personality dimensions, and has been found to have good test-retest reliability and validity (Gosling et al., 2003). Two items measured each of the Big-5 personality dimensions: extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience. For each item, two personality characteristics were presented concurrently and participants rated the extent to which the characteristics applied to each of the providers, even if one applied

more strongly than another. Participants responded on a 7-point scale from 1 (*disagree strongly*) to 7 (*agree strongly*).

3.3.2.3 Social Identity. A three item measure adapted from Doosje, Ellemers, and Spears (1995) was used to assess the extent to which participants shared a common social identity with each of their support providers. Haslam (2004) suggested that this measure of social identity is suitable to use with real and ad-hoc samples. The measure asked “To what extent do you. . .” and sample items included “Identify strongly with this person?” and “Feel a solidarity with this person?” Participants responded on a 7-point scale from 0 (*do not agree at all*) to 6 (*agree completely*). Internal consistency coefficients for the trait and social components were .99 and .79, respectively.

3.3.2.4 Self-Confidence. Self-confidence was assessed using the five item scale from the revised version of the Competitive State Anxiety Inventory-2 (CSAI-2R) (Cox, Martens, & Russell, 2003). The self-confidence scale of the revised CSAI-2R has been used in previous social support research (Freeman & Rees, 2010; Rees et al., 2007), and has good reliability and validity (Cox et al., 2003). Participants were asked “In the presence of this person...?” and sample items included “I would be confident about performing well?” and “I would be confident I could meet the challenge?” Participants responded on a 4 point Likert scale ranging from 1 (*not at all*) to 4 (*very much so*). Internal consistency coefficients for the trait and social components were .98 and .94, respectively.

3.3.3 Statistical Analyses

To calculate the magnitude of the trait and social components in all variables, variance components analyses were conducted in SPSS version 21

applying maximum likelihood estimation. Following previous research (Merlo & Lakey, 2010; Shorey & Lakey, 2011), a partially nested design with random factors was employed. Perceivers were considered a between-subject factor, providers and questionnaire items were considered within-subject factors. As each perceiver rated different providers, providers were considered nested within perceiver. To reduce measurement error, the questionnaire factor consisted of two levels: the means of odd items and the means of even items (Shorey & Lakey, 2011).

The variance components, 95% confidence intervals, and percentages of variance were computed. The trait and social components are the key components of interest, and thus the other components (items, perceiver x item, provider (perceiver) x item) are not reported, although they were included when calculating the percentages of variance. Components were considered significant if their 95% confidence intervals did not include zero. The difference between components was considered significant if their 95% confidence intervals did not overlap.

Multivariate analyses were conducted to examine the relationships of perceived support with provider personality, social identity, and self-confidence at each level of analysis. First, the trait and social component scores for each variable were calculated following the formula presented by Kenny (1994). A trait component score is a perceiver's mean score on a variable across all providers. A social component score is the score given by a perceiver to a particular provider minus the corresponding trait component score. These scores were then used to calculate the correlations between perceived support and the other variables using SPSS version 21.0. Following Lakey and Scoboria's (2005) guidelines, however, if a component was non-significant at

the univariate level for a variable, multivariate analysis involving that component were not calculated for the variable(s).

Multiple hierarchical regression analyses were conducted to examine whether coach personality and social identity predicted perceived support at the trait and social level of analysis. Consistent with the procedure used in Chapter 2 provider personality variables were entered at step 1. Social identity was entered at step 2 to examine whether social identity accounted for additional variance in perceived support, over and above provider personality. Bivariate regression analysis was conducted to examine whether perceived support predicted self-confidence. To determine statistical significance in all of the correlations and regression analyses, 95% confidence intervals were computed using percentile bootstrapping with 1000 resamples. Correlation and regression coefficients were considered significant if their 95% confidence intervals did not include zero.

Mediation analysis was performed using *MEDIATE* SPSS custom dialogue (Hayes & Preacher, 2011) to determine if perceived support mediated the relationship of provider personality and social identity with self-confidence. Provider personality and social identity were entered simultaneously.

3.4 Results

3.4.1 Univariate Analyses

The percentages of variance accounted for by the trait and social components in all variables are presented in Table 3.1. The trait (41%) and social (39%) components accounted for a significant amount of variance in perceived support, the primary variable of interest. The trait component, σ^2 (variance estimate) = 0.34, 95% CI [0.21, 0.46], did not, however, account for a significantly larger amount of variance in perceived support than the social

component, $\sigma^2 = 0.32$, 95% CI [0.26, 0.38]. The trait and social components accounted for a significant amount of variance in self-confidence. The social component also accounted for a significant amount of variance in extraversion, agreeableness, conscientiousness, emotional stability, openness to experience, and social identity.

Table 3.1 Percentages of variance accounted by each component in perceived social support, provider personality, social identity, and self-confidence.

Variable	Trait		Social	
	Study 2a	Study 2b	Study 2a	Study 2b
Perceived social support	41.4*	33.1*	39.3*	49.7*
Extraversion	0.0	11.3*	26.4*	9.9*
Agreeableness	0.0	0.0	14.4*	12.6*
Conscientiousness	0.0	0.0	18.9*	10.6*
Emotional stability	0.0	0.0	21.9*	17.3*
Openness to experience	0.0	5.7	21.9*	12.0*
Social identity	1.5	0.1	54.2*	85.8*
Self-confidence	44.1*	46.3*	38.9*	37.8*

Notes. * Significant to $p < .05$.

3.4.2 Multivariate Analyses

Following the significant univariate analyses, multivariate analyses were conducted to examine the relationship of perceived support with provider personality, social identity, and self-confidence at the social level of analysis, and between perceived support and self-confidence at the trait level of analysis. The results for the multivariate correlations between perceived support and the other variables are reported in Table 3.2. At the trait level, when athletes had a

disposition to perceive providers to be supportive, they reported higher levels of confidence. At the social level, when athletes perceived certain providers to be extraverted, conscientious, emotionally stable, open to experience, and someone with a common shared identity, they also perceived these certain providers to be particularly supportive. Additionally at the social level, when athletes perceived certain providers to be particularly supportive they also reported greater confidence.

The results for hierarchical regression analyses for antecedents of perceived support, at the social level, are presented in Table 3.3. Extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience collectively accounted for a significant amount of variance in perceived support, $\Delta R^2 = .19$. Social identity accounted for a significant additional amount of variance, as $\Delta R^2 = .22$. Only extraversion, agreeableness, conscientiousness, and social identity contributed significantly to the final model, $bs = 0.05 - 0.22$, 95% CIs [0.01, 1.00].

Bivariate regression analysis revealed that perceived support accounted for a significant amount of variance in self-confidence, $R^2 = .25$, $b = 0.36$, 95% CI [0.20, 0.54], at the trait level. Perceived support also accounted for a significant amount of variance in self-confidence, $R^2 = .11$, $b = 0.23$, 95% CI [0.12, 0.35], at the social level.

Mediation analyses were conducted to explore whether antecedents of perceived support are associated with significant indirect effects on self-confidence via perceived support for the social component. Mediation analysis revealed a direct effect of extraversion, agreeableness, conscientiousness, and social identity on self-confidence at the social level. There were also significant indirect effects through perceived support for

extraversion, $ab = .01$, 95% CI [.01 - .02], agreeableness, $ab = .01$, 95% CI [.01 - .02], conscientiousness, $ab = .02$, 95% CI [.01 - .04], and social identity, $ab = .03$, 95% CI [.01 - .05] on self-confidence at the social level. Athletes who perceived certain members of their support network to be extraverted, agreeable, conscientious, and sharing a common identity, perceived these providers to be more supportive and in turn felt more confident.

Table 3.2 Correlations between the components scores of perceived social support and provider personality, social identity, and self-confidence.

Component	Trait		Social	
	Study 2a	Study 2b	Study 2a	Study 2b
Extraversion	-	-.05	.11*	.08
Agreeableness	-	-	.09	.19*
Conscientiousness	-	-	.39*	.18*
Emotional stability	-	-	.25*	.09
Openness	-	-	.20*	.12*
Social identity	-	-	.45*	.43*
Self-confidence	.50*	.43*	.34*	.44*

Notes. * Significant to $p < .05$ using percentile bootstrapping with 1000 resamples. Correlations were not calculated for components that were non-significant in the univariate analyses.

Table 3.3 Hierarchical regression analyses for predicting perceiver and relational components of perceived coach support.

Study	Component	Variable	<i>b</i>	95% CI
2a	Social	Extraversion	0.05*	[0.01, 1.00]
		Agreeableness	0.05*	[0.02, 0.09]
		Conscientiousness	0.16*	[0.09, 0.23]
		Emotional stability	0.04	[-0.01, 0.08]
		Openness	0.01	[-0.04, 0.07]
		Social identity	0.22*	[0.16, 0.28]
2b	Trait	Extraversion	-0.12	[-0.25, 0.01]
2b	Social	Extraversion	0.04	[-0.02, 0.10]
		Agreeableness	0.01	[-0.05, 0.08]
		Conscientiousness	0.11*	[0.04, 0.18]
		Emotional stability	0.02	[-0.04, 0.08]
		Openness	0.03	[-0.04, 0.10]
		Social identity	0.22*	[0.15, 0.28]

* Significant to $p < .05$ using percentile bootstrapping with 1000 resamples. b = Unstandardised beta coefficient. Hierarchical regression analysis was only conducted with the components that were significant in the univariate analyses.

Study 2b

3.5 Method

3.5.1 Participants

The sample was 89 athletes ($M_{age} = 24.1$ years, $SD = 5.5$), 55 males and 34 females, from a range of team sports. Participants competed at club/university level ($n = 61$), regional/county level ($n = 18$), national level ($n = 6$), or international level ($n = 4$). On average, athletes trained for five hours per

week ($SD = 2.7$), competed once per week ($SD = 0.4$), and had played their sport for an average of 9.5 ($SD = 6.3$) years.

3.5.2 Measures and Procedures

Similar to previous generalisability studies, each participant was asked to rate the supportiveness of four specific members of their existing social network: a coach, a team-mate, closest peer, and a family member (Barry et al., 2007; Lakey et al., 2010; Merlo & Lakey, 2007). The order in which participants rated individuals was counter-balanced using a Latin square design to rule out any potential order effects. These individuals have been noted as key support providers for athletes (Corbillon, Crossman, & Jamieson, 2008; Gould et al., 2002). Participants completed the same measures as Study 2a, although the question stems were phrased to focus on the specified support providers. In Study 2b, internal consistency coefficients for the trait and social components of perceived support were .99 and .98, respectively, .63 and .96 for social identity, and .98 and .96 for self-confidence.

3.5.3 Statistical Analyses

Univariate and multivariate analyses were consistent with Study 2a.

3.6 Results

3.6.1 Univariate Analyses

The percentages of variance accounted for by the trait and social components in all variables are presented in Table 3.1. The trait (33%) and social (50%) components accounted for a significant amount of variance in perceived support, the primary variable of interest. The social component, $\sigma^2 = 0.40$, 95% CI [31.50, 49.03], did not, however, account for a significantly larger amount of variance in perceived support than the trait component, $\sigma^2 = 0.27$, 95% CI [14.43, 39.22]. The trait component also accounted for a significant

amount of variance in extraversion and self-confidence. The social component accounted for a significant amount of variance in extraversion, agreeableness, conscientiousness, emotional stability, openness to experience, social identity, and self-confidence.

3.6.2 Multivariate Analyses

Following the univariate results, only extraversion, perceived support, and self-confidence were included in the multivariate analyses at the trait level. At the social level, multivariate analyses were conducted to examine the relationship of perceived support with provider personality, social identity, and self-confidence. The results for the multivariate correlations between perceived support and other variables of interest are reported in Table 3.2. At the trait level, when athletes had a general disposition to perceive providers to be supportive they also reported higher levels of confidence. At the social level, when athletes perceived certain providers to be agreeable, conscientious, open, and someone with a common shared identity, they also perceived these providers to be particularly supportive. Further, at the social level, when athletes perceived certain providers to be particularly supportive they reported greater confidence.

The results for hierarchical regression analyses for the antecedents of perceived support, at the trait and social level, are presented in Table 3.3. Extraversion did not account for a significant amount of variance in perceived support at the trait level. Extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience collectively accounted for a significant amount of variance in perceived support, $\Delta R^2 = .09$, at the social level. Social identity accounted for a significant additional amount of variance in perceived support, $\Delta R^2 = .22$, at the social level. Only conscientiousness and

social identity contributed significantly to the final model, $bs = 0.11 - 0.22$, 95% CIs [0.04, 0.28], at the social level.

Bivariate regression analyses revealed that perceived support accounted for a significant amount of variance in self-confidence, $R^2 = .18$, $b = 0.33$, 95% CI's [0.19, 0.46], at the trait level. Perceived support accounted for a significant amount of variance in self-confidence, $R^2 = .19$, $b = 0.31$, 95% CI's [0.25, 0.39], at the social level.

Mediation analysis revealed an indirect effect through perceived support for conscientiousness, $ab = .03$, 95% CI [.01 - .05], and social identity, $ab = .05$, 95% CI [.03 - .07] on self-confidence at the social level. Athletes who perceived certain members of their support network to be conscientious, and sharing a common identity, perceived these providers to be more supportive and felt more confident.

3.7 Discussion

The present research adopted a generalisability theory approach to examine perceived support and its correlates. In two studies, both trait and social components accounted for a significant amount of variance in perceived support. These results highlight that athletes have a general disposition to be consistent in perceptions of support across providers. Additionally, social processes influence perceptions of support, as athletes' perceived certain providers to be particularly supportive. There was also consistent evidence that conscientiousness, openness, and social identity significantly correlated with perceived support at the social level, and perceived support predicted self-confidence at the trait and social level. That is, when athletes perceived certain members of their existing support network to be conscientious and sharing a common identity, they also perceived those same members to be particularly

supportive. When athletes did perceive members of their support network to be supportive they also felt confident in the presence of those people.

The current paper is the first to adopt a generalisability theory approach to understand the components that underpin athletes' perceptions of existing support providers, and measure the relationship between perceived support and potential antecedents and self-confidence at the trait and social level.

Consistent with previous research that adopted a partially nested design in social psychology, the current studies found that trait and social components accounted for a significant amount of variance in perceived support (Lakey et al., 2010; Lakey & Scoboria, 2005; Shorey & Lakey, 2011). Such findings suggest that perceptions of support are comprised of both the specific dispositions of the perceivers and social processes between the perceiver and provider. Similarly, in comparison to the Rees et al. (2012) study and Study 1a of Chapter 2 the trait component and social component was significant across both studies, comparable to the perceiver and relational components of a fully crossed generalisability design.

The majority of social support research has applied a classical test approach that is unable to isolate the specific components of perceived support, and thus estimates of the link between perceived support and other variables of interest may have confounded trait and social influences (Lakey et al., 2010). These two components of support, however, can have different relationships with other constructs and have implications for the conceptual understanding of support judgements, and how athletes foster supportive relationships with existing members of their support network. In the present studies, multivariate generalisability theory demonstrated that the personality trait of conscientiousness and openness correlated with perceived support across at

the social level. Lutz and Lakey (2001) found that individuals perceived certain providers from within their existing support network to be agreeable and open, and these providers were also perceived to be particularly supportive. In comparison, extraversion, openness, and emotional stability were related to perceived coach support in Chapter 2, although the perceivers most important support providers may not have been included in those studies. It may be that when athletes rate existing providers, the personality traits of conscientiousness and openness are the most important influences on athletes' perceptions of support. It is not clear why conscientiousness and openness were related to perceptions of support in the current studies, but previous research has proposed that similarities between the perceiver and provider underpin perceptions of support (Lutz & Lakey, 2001; Neely et al., 2006). It could be that perceivers in the present studies considered themselves to be conscientious and open and when these traits were also perceived to be present in important providers this similarity influenced perceptions of available support.

A common social identity between the athletes and existing support providers predicted perceptions of support at the social level, over and above the effects of personality. These results were consistent across both studies, and in-line with the findings reported in Chapter 2. A shared common identity between individuals has been found to be a factor that influences judgements of others (Haslam, Jetten, O'Brien, & Jacobs, 2004; Haslam, O'Brien, Jetten, Vormedal, & Penna, 2005). The present studies further conceptual understanding, as the relationship between a common shared identity and perceptions of support has been shown to primarily reflect social influences. These findings suggest that athletes perceived certain individuals to share a

common identity, these individuals were also perceived to be particularly supportive.

Findings in both studies highlight the importance of social influences of support, which is consistent with the social-cognitive perspective of social support, suggesting that perceivers rate support providers on abstract representations of support rather than the recall of specific supportive actions (Lakey et al., 2002; Lutz & Lakey, 2001).

A limitation of previous research is that it is not known whether correlations reported between perceived support and other variables reflect specific components (Lutz & Lakey, 2001). The findings of the current studies provide a detailed theoretical base of perceived support relating to provider conscientiousness, a shared social identity, and that these relationships reflect social influences. By identifying these antecedents of perceived support at the social level, it helps provide a more nuanced understanding of how certain individuals are perceived to be particularly supportive beyond previous research designs.

Beyond exploring the antecedents of perceived support, the current studies were the first to use a multivariate generalisability framework to examine if perceptions of support from existing support providers predict self-confidence. In both studies, perceived support significantly predicted self-confidence at the trait and social level. The trait influence suggests that when athletes had a disposition to perceive providers as supportive they would also feel confident in the presence of supportive providers. Furthermore, the social influence suggests when athletes perceived a certain provider within their existing network to be particularly supportive they also felt more confident in the presence of this individual. Previous research has found perceived support to

relate to self-confidence (Freeman & Rees, 2010; Rees & Freeman, 2007), although the results from the current studies furthers conceptual understanding by identifying this relationship to be attributable to both trait and social influences. The relationships between perceived support and conscientiousness, social identity, and self-confidence found at the social level in the current studies could reflect either the provider or relational component. We would, however, argue relationships at the social level primarily reflect the relational component given that the relational component accounts for a larger amount of variance in perceived support than the provider component (Chapter 2, Lakey et al., 2008).

The present studies were the first to apply mediation analysis within a generalisability theory design and substantially furthers understanding by identifying the extent to which perceived support mediated the relationship between support antecedents and self-confidence at specific levels of analysis. Identifying such relationships goes beyond just descriptives and helps explain processes (Preacher & Hayes, 2008). Mediation analysis revealed provider conscientiousness and social identity had both direct effects on self-confidence, and indirect effects on self-confidence via perceived support. When athletes felt certain individuals were conscientious or sharing a common identity, these individuals were perceived to be particularly supportive which in turn led to athletes feeling more confident. The current findings offer a novel explanation for understanding perceptions of support and how these thoughts may regulate the relationships of provider personality and social identity with athletes' self-confidence.

As previous research has identified an athletes' coach, teammates, family members, and close peers as important providers to athletes (Barry et

al., 2007; Corbillon et al., 2008; Lakey et al., 2010; Merlo & Lakey, 2007), interventions that aim to elicit perceived support from these providers would be worthwhile. The findings from the current studies may have important implications in this regard. Previous research that has applied interventions aimed at enhancing perceptions of support have yielded inconsistent findings (Heller, Thompson, Trueba, Hogg, & Vlachos-Weber, 1991; Hogan, Linden & Najarian, 2002). The results from the current studies imply that such inconsistencies could in part be due to interventions not targeting specific antecedents and components of perceived support. In the current studies, perceived support related to provider personality, social identity, and self-confidence at the social level and interventions may want to target these social influences.

One potential intervention to enhance perceptions of available support could be to match athletes with certain providers who they perceive to be conscientious, or sharing a common identity (Lakey, 2010; Veenstra et al., 2011). Alternatively, one might attempt to encourage providers to be more conscientiousness and highlight to athletes the conscientious traits of the provider. Another approach could cultivate a common social identity between athletes and their existing support providers. Such an approach could promote any shared values or group memberships that exist between the athlete and provider. If a provider is already considered to be important to the perceiver there should be opportunities to highlight and promote a shared identity as they may already be members of the same in-groups.

The present studies offer a novel approach to help distinguish between the components of perceived support and its correlates. There are, however, some limitations that should be noted. Firstly, as correlation and regression

analyses were applied, causality cannot be inferred. Secondly, a drawback of partially nested designs is that the provider and relational components, which a fully crossed design would be able to provide, cannot be distinguished (see Literature Review for an overview). A fully crossed design, however, would not permit athletes to rate their most important providers as these would be different for each perceiver. In addition to examining the extent to which perceptions of support are related to self-confidence, research should explore whether perceiving certain providers as particularly supportive is related to improved performance.

In conclusion, the current studies build on previous generalisability theory research by highlighting the importance of both trait and social components in accounting for perceptions of support from providers within athletes' existing support network. The present research extends conceptual understanding by identifying provider personality, in particular conscientiousness, and social identity as key contributors to perceptions of support at the social level. These findings suggest that when athletes perceive certain providers within their existing network to be conscientious and sharing a common identity, they also perceive these providers to be particularly supportive. Importantly, the present studies also found that perceived support predicted self-confidence at the trait and social levels, suggesting that if athletes have a general disposition to perceive providers to be supportive, or if athletes perceive certain providers to be supportive, athletes will also feel confident. By applying a multivariate generalisability approach with a partially nested design, the current studies have identified the extent to which perceived support antecedents reflect social influences and the association between perceived support and self-confidence reflect trait and social components. Furthermore, perceiving individuals as

particularly supportive mediated the relationships of perceiving individuals to be conscientious and sharing a common identity with athletes feeling more confident.

3.8 Footnotes

¹ Internal consistency reliability formulas were $\alpha_r = \sigma^2_r / [\sigma^2_r + (\sigma^2_{rxi}/n_i)]$ for trait influences and $\alpha_s = \sigma^2_{p \text{ nested within } r} / [\sigma^2_{p \text{ nested within } r} + (\sigma^2_{p \text{ nested within } rxi}/n_i)]$ for social influences, in which r indicates perceivers of support, p indicates providers, i indicates items, and n_i indicates number of items.

Chapter 4: How Does Performance Change in the Presence of Providers that are Perceived to be Particularly Supportive? A Partially Nested Design.

4.1 Introduction

Social support has been linked with more favourable mental and physical health, including lower rates of depression (Brewin, Andrews, & Valentine, 2000), post-traumatic stress disorder (Lakey & Cronin, 2008), and mortality due to cardiovascular disease (Berkman, Leo-Summers, & Horwitz, 1992; Brummett et al., 2001; Frasure-Smith et al., 2000; Rutledge et al., 2004). When providers, such as friends and families, are deemed to be supportive, the recipients of support have better emotional well-being and have greater relationship satisfaction in comparison to those who feel this support is missing (Barrera, 1986; Cohen & Wills, 1985; House, Landis, & Umberson, 1988; Kaul & Lakey, 2003; Lakey & Orehek, 2011). Social support has also been associated with better performance in sporting (Freeman & Rees, 2009; Rees & Freeman, 2010; Rees & Hardy, 2004; Rees, Hardy, & Freeman, 2007) and organisational contexts (Malecki & Demaray, 2006; Shanock & Eisenberger, 2006). Considering the importance of social support, it is imperative to understand the antecedents of social support, the association between social support and performance outcomes, identify potential mediators, and to partition these effects.

Social support is comprised of three constructs: social integration, perceived support, and received support (Barrera, 1986; Haber, Cohen, Lucas, & Baltes, 2007). Social integration refers to the organisation and structure of social relationships (Schwarzer & Knoll, 2007). Perceived support refers to

assessments of available support (Vangelisti, 2009), and received support refers to the type or amount of support attained from social networks (Vangelisti, 2009). Perceived and received support are distinct concepts and can have different links with effects (Haber et al., 2007). For example, compared to perceived support, received support has less consistent relationships with health outcomes (Holt-Lunstad et al., 2010).

Within individuals' social networks, friends and family members are often key support providers (Barry, Lakey, & Orehek, 2007; Merlo & Lakey, 2007; Ommundsen, Roberts, Lemyre, & Miller, 2006). Thoits (2011) argued that research incorporating family members and close friends, deemed primary supporters, would be beneficial as these social ties are considered to be intimate and enduring. In sport, team-mates and coaches complement friends and family as vital members of athletes' social networks (Antonini Philippe & Seiler, 2006; Chelladurai & Saleh, 1980; Corbillon et al., 2008; Kristiansen & Roberts, 2010; Mageau & Vallerand, 2003).

Various theoretical approaches have been adopted in social support research (Lakey & Cohen, 2000). One key approach has focused on a stress and coping theoretical framework, which hypothesises that social support facilitates favourable situational appraisals and buffers the detrimental effects of stress (Bianco & Eklund, 2001; Cutrona & Russell, 1990; Lazarus & Folkman, 1984). Uchino et al. (2012) argued, however, that research should examine supportive relationships and interactions irrespective of stress to provide a better understanding of the psycho-social mechanisms associated with judgements of support. The current study adopts an alternative approach by applying generalisability theory, guided by the Relational Regulation Theory (RRT). Applying an RRT approach enables researchers to distinguish whether

ratings of a given variable reflect general dispositions of the perceiver or the social influences between the perceiver and provider (Lakey & Orehek, 2011). RRT proposes that emotional regulation of support is influenced by ordinary conversations, irrespective of stress (Lakey, Cooper, Cronin, & Whitaker, 2014; Lakey & Orehek, 2011), and generalisability theory is an analytical design that is able to distinguish between the specific components of support judgements and is underpinned by participants rating multiple providers. When individuals rate the supportiveness of multiple people within their own respective networks it is deemed to be a partially nested design, as providers are different for each perceiver (Lakey, 2010). A generalisability theory approach can partition judgements of support into trait or social components. The trait component reflects differences between perceivers in rating supportiveness, averaged across providers (Lakey, 2010). For example, athlete A might rate all members of his social network as highly supportive, but athlete B might rate all members of his social network as moderately supportive. The social component reflects the extent to which perceivers differ in their ratings of support within their social network. For example, athlete A may rate a certain provider to be particularly supportive compared with other members of his social network. The social component equates to a combination of the provider and relational components specified in a fully crossed design; as each athlete rates a different set of providers these components cannot be disentangled in partially nested designs (Kenny, 1994; Lakey, 2010).

Both trait and social components have been found to account for a significant amount of variance in perceived support when participants rated family members (Lakey & Scoboria, 2005). In a two-study design, included as part of the current thesis, athletes were asked to rate perceived support of their

most important support providers, with trait and social components accounting for a significant amount of variance. There is limited research that has used a generalisability theory approach with received support, but the evidence in social psychology suggests that both trait and social components play a role (Lakey, Orehek, Hain, & Van Vleet, 2010). It would be of interest to determine the extent to which athletes' perceptions of support and judgements of support received from individuals within their existing support network reflect trait or social influences.

In addition to understanding components of perceived and received support, it is vital to elucidate the relationship between both types of support and their correlates across trait and social levels (Lakey, 2010; Uchino, 2009; Uchino et al., 2012). A multivariate generalisability approach permits such an analysis (Lakey & Orehek, 2011). For example, Lakey et al. (2010) found that both perceived and received support correlated with positive and negative affect at trait and social levels of analysis. The present study focuses on provider personality and social identity as antecedents of perceived and received support, and self-confidence and performance as consequences of support.

Characteristics of support providers, particularly their personality traits, have been linked with how supportive individuals perceive them to be (Lakey et al., 2002; Lutz & Lakey, 2001). In the previous studies in the current thesis it was found that extraversion, agreeableness, and conscientiousness predicted perceptions of support at the social level. To the best of the author's knowledge no research has examined the relationship between provider personality and received support, and whether this reflects trait or social influences.

A central concept to social identity and self-categorisation theories is that when individuals' perceive themselves as sharing a common identity the receipt

and interpretation of support is enhanced (Haslam, Jetten, O'Brien, & Jacobs, 2004; Haslam, O'Brien, Jetten, Vormedal, & Penna, 2005). Research is needed, however, to identify specifically if social identity underpins judgements of both perceived and received support equally, and whether these relationships reflect trait or social processes. There is some evidence to suggest that when individuals perceive themselves and providers as sharing similarities, it is associated with enhanced perceptions of support at the social level (Lahey et al., 2002).

Beyond examining antecedents of perceived and received support, the present study explored the impact of these types of support on task performance. The perception that work supervisors are supportive has been associated with superior job performance (Shanock & Eisenberger, 2006). Both perceived and received support have also been positively related to cognitive performance (Sarason & Sarason, 1986) and performance in sport (Freeman & Rees, 2009; Rees & Freeman, 2010; Rees & Hardy, 2004; Rees, Hardy, & Freeman, 2007). Adopting a multivariate generalisability theory approach to explore support and performance is novel, and will permit a more nuanced understanding of the benefits of perceived and received support in achievement contexts. In other contexts, the relationship between perceived support and outcomes such as positive affect have been found to reflect social influences (Barry et al., 2007; Lahey & Scoboria, 2005).

To develop theory and assist the development of social support interventions, it is important to explore mechanisms through which support exerts beneficial effects (Hilmert, Christenfeld, & Kulik, 2002; Taylor et al., 2010; Uchino et al., 2012). A key mechanism underpinning the effects of support on performance could be self-confidence. Both perceived and received support

are related to self-confidence (Freeman & Rees, 2010; Rees & Freeman, 2007), and self-confidence has consistently been linked with superior performance (Jones, Hanton, & Connaughton, 2002; Woodman & Hardy, 2003). It would be of interest to examine the role of self-confidence as a potential mediator of the relationship between perceived and received support with performance.

Previous research has found that self-efficacy mediated the relationship between social support and performance (Rees & Freeman, 2009). The current study will examine the pathway from both perceived and received support to self-confidence and task performance at the trait and social level of analysis.

4.2 Aims and Hypotheses

The first aim of this study was to apply a univariate generalisability theory approach to examine the amount of variance trait and social components accounted for in perceived and received support. It was hypothesised that trait and social components would both account for a significant amount of variance in perceived and received support (Hypothesis 1). The second aim was to examine whether provider personality and a shared social identity predicted perceived and received support at trait and social level. It was hypothesised that extraversion, agreeableness, conscientiousness, emotional stability, openness, and social identity would predict perceived support for the social component (Hypothesis 2). The third aim was to examine whether perceived and received support predicted self-confidence and performance at trait and social level. It was hypothesised that perceived and received support would positively predict self-confidence for the social component (Hypothesis 3), and perceived support would predict performance for the social component (Hypothesis 4). The fourth aim of the study was to examine whether self-confidence mediated the relationship between both types of support and

performance. It was hypothesised that self-confidence would mediate the relationship between received support and performance for the social component (Hypothesis 5).

4.3 Method

The sample was 49 university hockey players ($M_{age} = 19.7$ years, $SD = 2.4$), 21 males and 28 females. On average the players trained for three hours per week ($SD = 1.1$), competed once per week ($SD = 0.5$), and had played hockey for an average of 8.7 ($SD = 3.7$) years.

4.3.1 Materials and Procedures

The study was approved by an institutional ethics review committee. Each hockey player was asked to attend a meeting area with three individuals who were important to them as athletes. The individuals who attended with the players were teammates ($n = 83$), close friends ($n = 55$), coaches ($n = 5$), siblings ($n = 2$), or romantic partners ($n = 2$). After an introduction to the study, the player and three colleagues provided informed consent. The colleagues were assigned a label A, B, or C, to determine the order in which the players completed the questionnaires and performance task, and rated providers in a random order. This ensured that participants did not choose the order in which they rated providers. When rating colleagues, participants were instructed to print the initials of the provider at the top of the first page of the questionnaire pack. This was done to help ensure that participants held the correct provider in mind when answering the questions that followed.

Players were taken to a separate testing room to complete measures of perceived support, provider personality, and social identity about their three colleagues in turn. Players were then shown a short video of the hockey dribbling and passing task that included a briefing of time penalties for making

errors. Meanwhile, in a separate room the colleagues were shown a two minute video of the hockey dribbling and passing task that the player would be asked to complete, and each support provider was asked to devise a short supportive message that they would shortly give to the player immediately prior to the task to help optimise performance. The colleagues were instructed not to confer. The players were asked to complete a warm-up and then complete the performance task once to help familiarise themselves with the procedure. Players were then reunited with their first colleague, who delivered his/her supportive message. Players then completed measures of received support and self-confidence before performing the performance task in the presence of their colleague. This process was then repeated for the next two colleagues in turn. Once the players had completed the task in the presence of their three colleagues and finished all the measures, everyone was debriefed and thanked for their participation.

4.3.1.1 Perceived Social Support. The Perceived Available Support in Sport Questionnaire (PASS-Q; Freeman, Coffee, & Rees, 2011) was used to assess the support typically available from each colleague. Freeman et al. (2011) provided evidence for reliability and validity of the PASS-Q. The measure asked “If needed to what extent would. . . [provider]. . .” and sample items included “Show concern for you?” and “Do things for you at competition/matches?” Participants responded on a 5-point scale from 0 (*not at all*) to 4 (*extremely so*). Internal consistency coefficients for the trait and social components for perceived support were both 1.00.

4.3.1.2 Provider Personality. Provider personality was assessed using the Ten-Item Personality Inventory (Gosling, Rentfrow, & Swann, 2003). The TIPI has been recommended as a brief measure for assessing the Big-5

personality dimensions, and has good test-retest reliability and validity (Gosling et al., 2003). Two items measured each of the Big-5 personality dimensions: extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience. For each item, two personality characteristics were presented concurrently and participants rated the extent to which the characteristics applied to each of the providers, even if one applied more strongly than another. Participants responded on a 7-point scale from 1 (*disagree strongly*) to 7 (*agree strongly*).

4.3.1.3 Social Identity. A three item measure from Doosje, Ellemers, and Spears (1995) was adapted to assess the extent to which participants felt they shared a common social identity with their specified support providers. The measure asked “To what extent do you. . .” and sample items included “Identify strongly with this person?” and “Feel a strong connection with this person?” Participants responded on a 7-point scale from 0 (*do not agree at all*) to 6 (*agree completely*). Internal consistency coefficients for the trait and social components for social identity were .99 and 1.00 respectively.

4.3.1.4 Received Social Support. Received support was assessed with a nine-item measure adapted from Rees et al. (2012). This followed the recommendation that social support measures should be relevant to the context in which they are being used (Bianco & Eklund, 2001). The question stem focused on the support received during the pre-task message, rather than support received over a longer period of time. The measure asked “In the pre-task discussion to what extent did the person ...?” and sample items included “Give you moral support?” and “Give you advice about what to do?” Participants responded on a 5-point scale from 0 (*not at all*) to 4 (*extremely*).

Internal consistency coefficients for the trait and social component of received support were .96, and .94 respectively.

4.3.1.5 Self-confidence. Self-confidence was assessed using the five item scale from the revised version of the Competitive State Anxiety Inventory-2, which has good reliability and validity (Cox, Martens, & Russell, 2003). Participants were asked “In the presence of this person...?” and sample items included “I feel confident I can meet the challenge?” and “I feel confident about performing well?” Participants responded on a 4-point scale ranging from 1 (*not at all*) to 4 (*very much so*). The internal consistency coefficients for the trait and social component of self-confidence were both 1.00.

4.3.1.6 Performance. Hockey performance was assessed using an adapted version of the slalom sprint and dribble task (Lemmink, Elferink-Gemser, & Visscher, 2004). Lemmink et al. demonstrated that the task had good reliability and validity in terms of measuring the passing, dribbling, and sprinting skills required in hockey. Participants were required to dribble a hockey ball around a set of twelve cones, totalling fifteen metres in length. Upon completion of the dribbling, participants passed a hockey ball through a set of target cones, spaced four metres apart and twenty metres away from a passing line. Participants then sprinted back to the start line and completed the dribbling and passing task a second time. The aim was to complete the task twice as quickly as possible, with a range of time penalties for errors made including two seconds for hitting the cone with the ball, for hitting the ball with the back of the stick, and for passing the ball beyond the passing line, and four seconds for missing the target zone.

4.4 Statistical Analyses

The magnitude of the trait and social components in all variables was calculated using variance components analyses with maximum likelihood estimation in SPSS version 21. Consistent with previous research (Merlo & Lakey, 2007; Shorey & Lakey, 2011), a partially nested design with fully random factors was employed. Perceivers were considered between-subject factors; providers and items were considered within-subject factors. Providers were nested within perceivers x items. The items factor for the self-report variables consisted of two levels: the mean of the odd items and the mean of the even items. For performance, the times of the two runs were treated as two levels of the items factor. The variance components, 95% confidence intervals, and percentages of variance were computed. The trait and social components are the key components of interest, and thus the other components (items, perceiver x item, provider (perceiver) x item) are not reported, although they were included when calculating the percentages of variance. Components were considered significant if their 95% confidence intervals did not include zero. Trait and social components were significantly different if their 95% confidence intervals did not overlap.

Multivariate analyses were conducted to examine the relationships of perceived and received support with provider personality, social identity, self-confidence, and performance, at the trait and social level of analysis. We first calculated trait and social component scores for each variable using the formulae presented by Kenny (1994). The scores were then used to calculate the correlation between the variables at the trait and social level using SPSS version 21.0. Following Lakey and Scoboria's (2005) guidelines, however, if a component was non-significant at the univariate level for any variable,

multivariate analyses involving that component were not performed for the variable(s).

Multiple hierarchical regression analyses were conducted to examine whether provider personality and social identity predicted perceived and received support at the trait and social level of analysis. Consistent with other chapters, personality was entered at step 1 and social identity was entered at step 2. Regression analyses measured the extent to which perceived and received support predicted self-confidence and performance. To determine statistical significance, 95% confidence intervals were computed using percentile bootstrapping with 1000 resamples. Correlation and regression coefficients were considered significant if their 95% confidence intervals did not include zero.

Mediation analyses were performed using *MEDIATE* SPSS custom dialogue (Hayes & Preacher, 2011). Mediation analysis was performed to determine if self-confidence mediated the relationship between both perceived support and received support (entered simultaneously) with performance.

4.5 Results

4.5.1 Univariate Analyses

The percentages of variance accounted for by the trait and social components in all variables are presented in Table 4.1. The trait (26%) and social (58%) components accounted for a significant amount of variance in perceived support, although the social component, $\sigma^2 = 0.24$, 95% CI [0.19, 0.36], did not account for a significantly larger amount of variance than the trait component, $\sigma^2 = 0.12$, 95% CI. [0.03, 0.21]. Only the social component (16%) accounted for a significant amount of variance in received support, although there was no significant difference in the magnitude of the social, $\sigma^2 = 0.10$, 95%

CI [0.01, 0.19], and trait, $\sigma^2 = 0.12$, 95% CI [-0.01, 0.25], components¹. Both the trait and social components accounted for a significant amount of variance in agreeableness, emotional stability, social identity, and self-confidence.

Additionally, the social component accounted for a significant amount of variance in extraversion, conscientiousness, openness to experience, and performance.

Table 4.1 Variance components, 95% CI, and percentage of variance accounted by each component in perceived social support, received social support, provider personality, social identity, self-confidence, and performance.

Variable	Component	Variance Component	95% CI	Percentage Variance
Perceived support	Trait	0.12	[0.03, 0.21]	26.0*
	Social	0.27	[0.19, 0.36]	58.3*
Received support	Trait	0.12	[-0.01, 0.25]	19.2
	Social	0.10	[0.01, 0.19]	15.6*
Extraversion	Trait	0.20	[-0.16, 0.57]	8.0
	Social	1.23	[0.76, 1.69]	48.5*
Agreeableness	Trait	0.80	[0.21, 1.40]	27.6*
	Social	0.81	[0.44, 1.19]	28.0*
Conscientiousness	Trait	0.14	[-0.45, 0.74]	14.5
	Social	0.69	[0.35, 1.03]	71.1*
Emotional stability	Trait	0.68	[0.18, 1.17]	26.2*
	Social	0.67	[0.30, 1.04]	26.0*
Openness	Trait	0.14	[-0.10, 0.38]	8.7
	Social	0.35	[0.11, 0.59]	22.5*
Social identity	Trait	0.25	[0.02, 0.48]	21.9*
	Social	0.52	[0.34, 0.69]	44.9*
Self-confidence	Trait	0.15	[0.07, 0.24]	39.9*
	Social	0.17	[0.11, 0.23]	43.8*
Performance	Trait	12.93	[6.98, 18.88]	58.2*
	Social	0.49	[-1.23, 2.20]	2.2

Notes. * Significant to $p < .05$.

4.5.2 Multivariate Analyses

Following the significant univariate analyses results, multivariate analyses were conducted at the trait and social level for perceived support, but only the social level for received support. At the trait level, perceived support was significantly correlated with social identity and self-confidence (see Table 4.2). At the social level, perceived support was significantly correlated with extraversion, conscientiousness, openness, social identity, self-confidence, and performance. Also at the social level, received support was significantly correlated with self-confidence.

The results for hierarchical regression analyses for the antecedents of perceived and received support are presented in Table 4.3. At the trait level, agreeableness and emotional stability did not significantly predict perceived support, but social identity did account for a significant amount of variance, $\Delta R^2 = .27$, $b = 0.31$, 95% CI [0.14, 0.46]. At the social level, extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience collectively accounted for a significant amount of variance in perceived support, $\Delta R^2 = .09$. Social identity accounted for a significant additional amount of variance, $\Delta R^2 = .40$. Only extraversion and social identity contributed significantly to the final model, $bs = 0.08 - 0.38$, 95% CIs [0.01, 0.51]. At the social level, extraversion, agreeableness, conscientiousness, emotional stability, openness to experience, and social identity did not account for a significant amount of variance in received support.

At the trait level, bivariate regression analyses found that perceived support accounted for a significant amount of variance in self-confidence (see Table 4.4) $R^2 = .19$, $b = 1.71$, 95% CI [-3.25, 6.15], but not in performance, $R^2 = .01$, $b = 0.42$, 95% CI [0.18, 0.68]. Further, mediation analysis found that

perceived social support was not associated with significant indirect effects on performance via self-confidence, $ab = 0.32$, 95% CI [-2.82, 3.36].

At the social level, hierarchical regression analysis found that perceived support accounted for a significant amount of variance in self-confidence, $R^2 = .05$, $p < .01$. Over and above this effect, received support accounted for a significant additional amount of variance in self-confidence, $\Delta R^2 = .14$, $p < .001$. Only received support contributed significantly to the final model, $b = 0.34$, 95% CI [0.19, 0.53].

Hierarchical regression analyses found that perceived support accounted for a marginally non-significant amount of variance in performance, $R^2 = .03$, $p = .06$, at the social level. Over and above this effect, received support did not account for a significant additional amount of variance in performance, $\Delta R^2 = .14$, $p = .15$. In the final model, however, when both types of support were included, perceived support made a unique and significant contribution to performance, $b = -0.44$, 95% CI [-1.70, -0.22].

Mediation analysis was conducted with perceived and received support entered simultaneously to see if they were associated with significant indirect effects on performance via self-confidence at the social level. Received support was associated with a significant indirect effect on performance via self-confidence, $ab = -0.34$, 95% CI [-0.64, -0.02]. When athletes reported receiving higher levels of support from a particular provider, they also experienced higher self-confidence in the presence of that individual and in turn executed the dribble and passing task more quickly. In contrast, the indirect effect of perceived support on performance via self-confidence was non-significant, $ab = -0.10$, 95% CI [-0.30, 0.04].

Table 4.2 Correlations between the components scores of perceived social support, received social support, and provider personality, social identity, self-confidence, and performance.

Variable	Trait		Social	
	PSS	RSS	PSS	RSS
PSS	-	-	-	.23*
RSS	-	-	.23*	-
Extraversion	-	-	.23*	-.06
Agreeableness	.24	-	.08	-.07
Conscientiousness	-	-	.17*	-.03
Emotional stability	.20	-	.06	-.14
Openness	-	-	.17*	-.07
Social identity	.46*	-	.59*	.05
Self-confidence	.44*	-	.22*	.41*
Performance	.11	-	-.16*	.07

Notes. * Significant to $p < .05$ using percentile bootstrapping with 1000 resamples. Correlations were not calculated for components that were non-significant in the univariate analyses. PSS= Perceived social support, RSS= Received social support.

Table 4.3 Hierarchical regression analyses for predicting trait and social components of perceived social support and received social support, with coach personality in step 1, coach and social identity in step 2.

Dep. Variable	Component	Step	Independent Variable	ΔR^2	<i>b</i>	95% CI
PSS	Trait	1	Agreeableness	.06	0.05	[-0.13, 0.27]
			Emotional Stability		0.06	[-0.18, 0.28]
		2	Social Identity	.27*	0.31*	[0.14, 0.46]
PSS	Social	1	Extraversion	.09*	0.08*	[0.01, 0.14]
			Agreeableness		-0.02	[-0.08, 0.04]
			Conscientiousness		0.06	[-0.03, 0.14]
			Emotional Stability		0.03	[-0.02, 0.09]
			Openness		-0.08	[-0.16, 0.01]
		2	Social Identity	.40*	0.38*	[0.27, 0.51]
RSS	Social	1	Extraversion	.03	-0.02	[-0.09, 0.08]
			Agreeableness		-0.02	[-0.09, 0.05]
			Conscientiousness		-0.01	[-0.08, 0.10]
			Emotional Stability		-0.04	[-0.11, 0.02]
			Openness		-0.04	[-0.15, 0.07]
		2	Social Identity	.03	0.06	[-0.06, 0.16]

* Significant to $p < .05$ using percentile bootstrapping with 1000 resamples.

Hierarchical regression analysis was only conducted with the components that were significant in the univariate analyses.

Table 4.4 Multiple regression analyses for predicting self-confidence, and performance, at the social level of analysis.

Dependent Variable	Component	Step	Independent Variable	ΔR^2	<i>b</i>	95% CI
Self-Confidence	Social	1	PSS	.05	0.11	[-0.06, 0.28]
		2	RSS	.14*	0.34*	[0.19, 0.53]
Performance	Social	1	PSS	.03*	-0.94*	[-1.67, -0.22]
		2	RSS	.01	0.67	[-0.19, 1.52]

* Significant to $p < .05$ using percentile bootstrapping with 1000 resamples.

Hierarchical regression analysis was only conducted with the components that were significant in the univariate analyses.

4.6 Discussion

The current study examined whether trait and social components accounted for a significant amount of variance in perceived and received support, and correlates of perceived and received support at the trait and social level. Univariate analyses demonstrated that both trait and social components accounted for a significant amount of variance in perceived support, and only the social component accounted for a significant amount of variance in received support. The multivariate analyses demonstrated that social identity predicted perceived support at the trait level. At the social level, extraversion and social identity predicted perceived support, but there were no significant predictors of received support. Received support, however, predicted self-confidence and was associated with a significant indirect effect on performance via self-confidence at the social level. In comparison, perceived support only had direct effects on performance but not self-confidence at the social level. The present study is the first to examine the antecedents and links to self-confidence and

performance of both perceived and received support and highlights the distinct pathways in which the two types of support operate, and that these effects primarily varied across significant others. Taken together, these suggest that perceived support had a direct effect on performance, whereas received support was associated with a significant indirect effect on performance via self-confidence at the social level.

Consistent with evidence in both sport (Chapter 3) and social psychology (Lakey et al., 2010; Lakey et al., 2014; Lakey & Scoboria, 2005), perceived support had significant trait and social components. The application of generalisability theory to examine athletes' judgements of received support is novel. The significant social component suggests that athletes differed in their judgements of support received from their three providers. Lakey et al. (2010) also found the social component accounted for a significant amount of variance in received support in a two study design as participants were asked to rate support received from their mother, father, and a close peer. In contrast, the trait component did not account for a significant amount of variance in received support. This may be due to the lower sample size involved in the calculation of the trait component (47 athletes) than the social component (141 athlete-provider dyads). Indeed, the trait and social components in received support did not significantly differ in magnitude.

Further to examining the components of perceived and received support, a multivariate generalisability theory approach was adopted to examine the correlates of perceived and received support. Congruent with previous evidence, perceived support was more consistently associated with correlates at the social level than the trait level (Lutz & Lakey, 2001). Research adopting fully crossed designs has found the provider of the personality related to

perceptions of support for the relational component (Lakey, Drew, & Sirl, 1999; Lakey et al., 2004; Lutz & Lakey, 2001). In the present study, extraversion was the only personality trait that significantly predicted perceived support at the social level. Social identity predicted perceptions of support, over and above the effect of personality, at the social level. A shared social identity between perceiver and provider has been shown to influence judgements of support, although the majority of social identity research has focused on received support (Haslam et al., 2004; Haslam et al., 2005). The present findings suggest that when athletes perceive certain individuals to be extraverted and share a common sense of identity they will also perceive these individuals to be particularly supportive. In contrast to perceived support, provider personality and social identity did not significantly predict received support. The different relationships of perceived and received support with personality and social identity add to the argument that they are distinct types of support (Goodwin, Costa, & Adonu, 2004; Haber et al., 2007). Further, the weak correlation between them at the social level was congruent with the relationship between them observed in a meta-analysis (Haber et al., 2007).

In addition to having different antecedents and a weak correlation at the social level, the findings from the current study emphasise the importance of support in performance contexts but that perceived and received support may operate via different pathways. Previous studies have found that both perceived and received support may be associated with self-confidence and performance (Freeman & Rees, 2008; Rees & Freeman, 2007). The current study found that perceived support did not significantly predict self-confidence at the social level but did have a direct effect on performance. Received support, however, was associated with a significant indirect effect on

performance via self-confidence. Previous research has noted perceived and received support can be linked with different mediators and outcomes in a health context (Uchino, 2009), with the present findings suggesting different pathways for performance outcomes in a sporting context. If athletes perceived individuals to be particularly supportive, they performed better in their presence. The support received from those individuals was also beneficial through bolstering self-confidence and, in turn, performance.

The present findings could be a vital step in shaping interventions seeking to enhance athletes' judgements of support, self-confidence, and performance. Previous interventions have failed to consistently enhance perceptions of available support (Heller, Thompson, Trueba, Hogg, & Vlachos-Weber, 1991), or ratings of support received (Hogan, Lindan, & Najarian, 2002). In the present study perceived and received support had stronger and more consistent relationships with their correlates when individuals were deemed to be particularly supportive and interventions need to reflect these social influences. Athletes could be matched with providers in their existing social network who they perceived to be extraverted and with whom they identify with to enhance perceptions of support. Alternatively, athletes' perceptions of provider extraversion and a shared identity could be enhanced by emphasising these characteristics in certain support providers. We would argue that it is possible to develop a common sense of identity, such that athletes and providers could promote shared values between themselves, and emphasise or further existing group memberships that athletes share with significant others. Such interventions could have significant beneficial effects for athletes in enhancing perceptions of support from certain providers and in turn performance would also improve.

Interventions may also seek to enhance received support as this could improve performance by bolstering self-confidence. Such an approach could involve providers who are rated as particularly supportive providing additional support in the build up to competition. Wing and Jeffrey (1999) found an improvement in adherence to a weight loss program and support received when this was provided by close friends, suggesting that significant others already well-known to perceivers are able to increase levels of support provided. The current findings, however, would suggest that individuals should look to certain individuals within their existing social network as potential support providers. As the results in the present study failed to identify antecedents of received support further research is needed to ascertain how athletes judge the support they receive.

The present study makes a significant contribution to understanding social support in achievement contexts but potential limitations should be noted. First, the trait and social components were derived from an unequal number of observations, therefore, the power to detect a statistically significant effect was higher for the social component. Second, athletes rated a small number of providers. Future research should consider including a greater number of providers. Third, the content of what providers said to athletes was not controlled or recorded as the aim was for providers to deliver a naturalistic support message. It could, therefore, be that certain participants had support providers that would be deemed objectively supportive by all participants. This is unlikely, however, considering previous studies have failed to provide evidence that certain support providers are considered universally supportive (Lakey, 2010; Rees et al., 2012). Future studies could look to video supportive messages and ask independent observers to view the videos and rate them as

providers (cf. Neely et al., 2006). Such an approach would be able to measure whether certain perceivers characteristically elicit greater levels of support from providers and would help explain social influences in greater detail.

To conclude, when athletes rated support providers within their existing social network both trait and social components contributed to perceptions of support, although only the social component significantly contributed to judgements of received support. Both perceived and received support were more strongly and consistently associated with correlates at the social level than the trait level. When athletes perceived individuals to be extraverted, and sharing a common identity, they also perceived these individuals to be particularly supportive. If athletes perceived individuals to be particularly supportive, they performed better in their presence. The support received from those individuals was also beneficial through bolstering self-confidence and, in turn, performance. The findings emphasise the importance of support in performance contexts but that effects varied across significant others.

Chapter 5: The Effects of Perceived and Received Coach Support on Performance, Applying a Generalisability Theory Approach.

5.1 Introduction

Social support plays an important role in our physical health, mental health, and overall well-being (Haslam, Jetten, Postmes, & Haslam, 2009; Sarason, Sarason, & Gurung, 2001; Thoits, 2011). Social support is also influential in the development of athletes (Bianco & Eklund, 2001; Hassell, Sabiston, & Bloom, 2010) and the recovery from injury (Bianco, 2001, Robbins & Rosenfeld, 2001; Wadey, Evans, Evans, & Mitchell, 2011; Wadey, Evans, Hanton, & Neil, 2012). A number of studies in both social and sport psychology have found that social support is associated with self-confidence and performance (Freeman & Rees, 2008; Freeman, Rees, & Hardy, 2009; Gould, Guinan, Greenleaf, Medbery, & Peterson, 2002; Malecki & Demaray, 2006; Shanock & Eisenberger, 2006). Previous research suggests that provider personality, and a perceived similarity between the recipient and provider of support are antecedents of support judgements (Lakey, Lutz & Scoboria, 2004; Lutz & Lakey, 2001). To date no research has examined the antecedents of support and the association between support and performance outcomes concurrently in the same study. Such research would significantly advance our understanding of how athletes judge providers to be supportive and how this relates to performance.

Social support is multidimensional in nature and consists of three distinct concepts: social integration, perceived support, and received support. Social integration makes reference to the structure and quantity of our social relationships (Schwarzer & Knoll, 2007). Perceived support refers to appraisals

of support availability, and received support refers to perceptions of the amount of support obtained from social networks (Vangelisti, 2009). Perceived and received support are distinct but related concepts, with a meta-analysis estimating a shared variance of 12% (Haber, Cohen, Lucas, & Baltes, 2007). Although perceived and received support have also been suggested to have distinct relationships with other variables, further research is needed to examine the antecedents of both perceived and received support (Bianco & Eklund, 2001; Sarason, Pierce, & Sarason, 1990; Uchino, 2009).

Generalisability theory provides an innovative approach to better understand both perceived and received support because it accounts for multiple sources of error that classical test theory approaches are unable to provide (Cronbach, Gleser, Nanda, & Rajaratnam, 1972; Kenny, 1994; Lakey & Orehek, 2011). Variance can be partitioned into three key components: perceiver, provider, and relational (Lakey, 2010). These components reflect differences in how athletes' rate providers (perceiver), how athletes objectively rate the features of all providers (provider), and athletes' disagreements in rating certain providers as supportive (relational). The majority of research applying a generalisability theory approach has focussed on perceived rather than received support, possibly due to perceived support being more consistently associated with psychological health (Barrera, 1986; Finch, Okun, Pool, & Ruehlman, 1999). When participants were asked to rate a range of psychotherapists, or coaches, both the perceiver and relational components accounted for a significant amount of variance in perceived support, although the relational component accounted for the largest proportion of variance (Lakey, Cohen, & Neely, 2008; Rees et al., 2012). To the best of the authors' knowledge, the present study is the first to apply a fully crossed design to

examine the variance components of both perceived and received coach support.

Applying generalisability theory would be a novel way to explore both the antecedents and consequences of perceived and received support (Lakey, 2010; Rees et al., 2012). Empirical evidence has consistently shown the personality of providers, particularly their agreeableness, is a predictor of perceived support at the relational level. This finding is robust across both sport (Chapter 2) and social psychology (Lakey, Cooper, Cronin, & Whitaker, 2014; Lakey et al., 2004; Lutz & Lakey, 2001). Our previous research has also identified that a shared social identity and coach competency are associated with perceptions of support, over and above the effects of provider personality, at the relational level (Chapter 2). Indeed, the expertise of the support provider has been found to underpin judgements of support (Gottlieb, 2000; Rosenfeld et al., 1989) and judgements of coaches are influenced by the coaches' reputation and experiences (Manley, Greenlees, Thelwell, Filby, & Smith, 2008). Equally, the giving and receiving of support has been found to be influenced by a shared social identity between the perceiver and provider (Haslam, Jetten, O'Brien, & Jacobs, 2004; Haslam, O'Brien, Jetten, Vormedal, & Penna, 2005). The present study, however, is the first to examine the relationships between the personality, competency and social identity of the provider and received coach support. It would be of interest to examine the antecedents of received coach support, and whether these are consistent with antecedents of perceived support. For example, Uchino (2009) argued that antecedents of perceived and received support differ substantially, and perceived support has been more consistently associated with mental health outcomes (Lakey & Orehek, 2011).

In addition to examining the antecedents of coach support, this study extends previous work by adopting a generalisability theory framework to explore the effects of perceived and received support in a sport performance context. Research within a classical test theory framework has found that both perceived and received support positively predict self-confidence (Freeman & Rees, 2010; Rees & Freeman, 2007). Equally, both types of support have been linked with performance in sport (Freeman & Rees, 2009; Rees & Freeman, 2010; Rees & Hardy, 2004; Rees, Hardy, & Freeman, 2007) and in non-sporting contexts, including organisational psychology (Park, Wilson, & Sun, 2004), academic performance (Malecki & Demaray, 2006), and relationships with supervisors (Shanock & Eisenberger, 2006). Rees et al. (2012) found the relational level accounted for the highest proportion of variance in perceived coach support and proposed further research is needed to determine whether athletes perform better in the presence of a coach who they perceive to be particularly supportive. There is, however, a lack of research that measures the extent to which perceived and received support are related to performance outcomes at perceiver, provider, or relational levels.

Perceived and received support have been found to relate to the objective performance of golfers during competition, albeit through distinct pathways (Freeman & Rees, 2008). Uchino (2009) proposed that separate constructs of social support are developed due to salient antecedent processes and these different pathways help explain different outcomes between perceived and received support. There is some evidence that self-esteem and perceived control mediate the relationship between perceived support and mental health (Atienza, Collins, & King, 2001; Symister & Friend, 2003). Uchino, Bowen, Carlisle, and Birmingham (2012) suggested, however, that

there is currently insufficient evidence using mediation analysis to examine the mechanisms responsible for the relationship between social support and outcomes. Further research is needed to ascertain whether mediators differ for perceived and received coach support, and whether mediation occurs at the perceiver, provider, and relational levels of analysis.

5.2 Aims and Hypotheses

The first aim of this study was to adopt a univariate generalisability theory approach to measure the amount of variance perceiver, provider, and relational components account for in both perceived and received coach support. It was hypothesised that the perceiver and relational component would account for a significant amount of variance in perceived and received coach support (Hypothesis 1). The second aim of the study was to adopt a multivariate generalisability theory approach to examine whether coach personality, coach competency, and shared social identity predict perceived and received coach support at the different levels of analysis. It was hypothesised that agreeableness, coach competency, and social identity would predict perceived and received coach support at the relational level (Hypothesis 2). The third aim of the study was to examine whether perceived and received coach support predict self-confidence and performance at the different levels of analysis. It was hypothesised that perceived and received coach support would positively predict self-confidence and performance at the relational level (Hypothesis 3). The fourth aim of the study was to examine whether self-confidence is a mechanism through which perceived or received coach support influence performance. It was hypothesised that self-confidence would mediate the relationship between perceived and received coach support and performance at the relational level (Hypothesis 4).

5.3 Method

5.3.1 Participants

The sample was 50 university soccer players (36 males, 14 females; $M_{age} = 20.4$ years, $SD = 2.3$). On average, each player trained for three hours per week ($SD = 1.4$), played two matches per week ($SD = 0.6$), and had played soccer for 12.9 years ($SD = 3.8$).

5.3.2 Materials and Procedures

The study was reviewed and approved by an institutional ethics committee and participants provided informed consent. We first created four two-to-three minute video clips, each consisting of a different male soccer coach describing his coaching style. The coaches ($M_{age} = 20.8$ years, $SD = 3.5$) all held a nationally recognised coaching qualification and had an average of 4.5 years ($SD = 2.1$) experience of coaching soccer. All participants had some prior knowledge of all four coaches. Similar to previous research (Chapter 2, Rees et al., 2012) coaches were seated in an interview suite and asked to describe their current approach with their athletes, rather than any ideal coaching style or planned behaviours. The content of the videos were checked by an independent researcher to ensure the duration of the videos were of a similar length and the content addressed the aims of the study.

On completion of these videos, the coaches were shown a two minute video of the Loughborough Soccer Passing Test (LSPT; Ali et al., 2007), and asked to devise a short supportive message that they would give to a player immediately prior to the task to help optimise performance. Coaches were free to decide upon the content of this message, but were asked to not to confer. These messages were delivered to the participants in a later stage of the study.

Data was collected from the soccer players in two stages. First, participants attended a sport psychology laboratory in groups of 6-10, and were asked to watch the videos of each coach. After each video, participants completed measures of perceived coach support, coach personality, coach competency, and social identity. The coaches were not present in this initial stage of data collection. Second, approximately one week later, participants individually attended a sports hall. In this session, the participants rotated around the four coaches. The first coach delivered his supportive message to the participant, who then completed measures of received coach support and self-confidence prior to performing the LSPT in the presence of the coach. This process was then repeated with the other coaches in turn, on the same day. Once the participants had completed the task in the presence of all coaches, participants were debriefed and thanked for their participation. The same investigator timed the performance task for each participant, and a separate investigator recorded the time penalties for each participant. The order in which the participants viewed videos and received the supportive message from the coaches was balanced using a Latin square design to counter any potential order effects.

5.3.2.1 Perceived Coach Support. Perceptions of coach supportiveness was assessed using the same measure as Rees et al., (2012) and Chapter 2. The measure asked “To what extent do you feel ... [coach’s name] ... would ...” and sample items included “Reinforce the positives for you?” and “Give you constructive feedback?” Participants responded on a 5-point scale from 0 (*not at all*) to 4 (*extremely*). In the present study, internal consistency coefficients for the perceiver, provider, and relational components were 1.00, .99, and .94, respectively.

5.3.2.2 Coach Personality. Coach personality was assessed using the Ten-Item Personality Inventory (Gosling, Rentfrow, & Swann, 2003), used in Chapters 2, 3, and 4. Two items measured each of the Big-5 personality dimensions: extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience. For each item, two personality characteristics were presented concurrently and participants rated the extent to which the characteristics applied to each of the coaches, even if one applied more strongly than another. Participants responded on a 7-point scale from 1 (*disagree strongly*) to 7 (*agree strongly*).

5.3.2.3 Coach Competency. Coach competency was assessed using the six item technical competency subscale of the Coach Competency Scale (Myers, Feltz, Maier, Wolfe, & Reckase, 2006) used in Chapter 2. The measure asked “To what extent do you feel the coach is competent in his ability to...” and sample items included “Develop an athlete’s abilities?” and “Coach individual athletes on technique?” Participants responded on a 10-point scale from 0 (*not at all*) to 9 (*extremely*). In the present study, internal consistency coefficients for the perceiver, provider, and relational components were 1.00, .90, and .71, respectively.

5.3.2.4 Social Identity. A three item measure from Doosje, Ellemers, and Spears (1995) was adapted to assess the extent to which the participants felt they shared a common identity with each coach, consistent with Chapters 2, 3, 4. The measure asked “To what extent do you ...” and sample items included “Identify strongly with this person?” and “Feel a solidarity with this person?” Participants responded on a 7-point scale from 0 (*do not agree at all*) to 6 (*agree completely*). In the present study, internal consistency coefficients

for the perceiver, provider, and relational components were .81, .1.00, and .89, respectively.

5.3.2.5 Received Coach Support. Received coach support was assessed using a nine-item measure adapted from Rees et al. (2012) and in Chapter 2. The question stem was modified so that participants rated the support received from the coach during the pre-task discussion. The measure asked “In the pre-task discussion, to what extent did the coach ...?” and sample items included “Encourage you?” and “Express belief in you?” Participants responded on a 5-point scale from 0 (*not at all*) to 4 (*extremely*). The internal consistency coefficients for the perceiver, provider, and relational components were 1.00, .94, and .85, respectively.

5.3.2.6 Self-Confidence. Self-confidence was assessed using the five item scale from the revised version of the Competitive State Anxiety Inventory-2 (Cox, Martens, & Russell, 2003) as used in Chapter 3. Participants were asked “In the presence of this coach...?” and sample items included “I feel self-confident?” and “I feel confident I can meet the challenge?” Participants responded on a 4-point scale ranging from 1 (*not at all*) to 4 (*very much so*). In the present study, internal consistency coefficients for the perceiver, provider, and relational components were .97, 1.00, and .90, respectively.

5.3.2.7 Performance. Soccer performance was assessed using the LSPT (Ali et al., 2007). The LSPT consists of 16 passes to four different benches that are placed around a control and passing zone (Figure 1.1). Participants were required to pass the ball from the passing zone to a corresponding target bench called out by the experimenter. Following each pass, the ball was required to return to the control zone and the process was repeated until the 16 passes were completed. The aim of the task was to

complete the passes as quickly as possible. A range of time penalties were awarded for errors: 5 seconds for missing a bench or passing to an incorrect bench, 3 seconds for missing the target area or handling the ball, 2 seconds for passing the ball outside the passing zone or if the ball touched any cone, and 1 second for every second over the allocated 43 seconds to complete the LSPT. One second was deducted from the overall time if the ball hit the middle strip of the target.

5.4 Statistical Analyses

Consistent with Chapter 2 variance component analyses were conducted to assess the amount of variance perceiver, provider, and relational components accounted for in all variables. This was conducted in SPSS version 21 using maximum likelihood variance estimation. Items and coaches (providers) were within-subject factors, and athletes (perceivers) were the between-subject factor. For the variables measured with questionnaires, measurement error was reduced by calculating the mean of odd items, and the mean of even items, which were used as two levels of the item factor (Lahey et al., 2004). For performance, the time taken to complete 8 passes was classed as one item and the time taken to complete the second 8 passes was classed as the second item for performance. The variance components, 95% confidence intervals, and percentage variances were calculated. Perceiver, provider, and relational were the key components of interest and subsequently other components are not reported. Components were considered significant if their 95% confidence intervals did not include zero, and significantly different from other components if their 95% confidence intervals did not overlap.

Multivariate analyses were conducted to examine the relationship between perceived and received coach support and other variables at each

level of analysis. Initially, the perceiver, provider, and relational scores were calculated using the formulae presented in Kenny's (1994) Social Relations Model (see Chapter 2). Correlations between both perceived and received coach support and the other variables for each component were calculated using SPSS version 21. Following Lakey and Scoboria's (2005) guidelines, however, if a component was non-significant at the univariate level for a variable, multivariate analyses involving that component were not performed for the variable.

Multiple hierarchical regression analyses were conducted to examine whether coach personality, coach competency, and social identity predicted perceived and received coach support at the different levels of analysis. Consistent with studies 1a and 1b (Chapter 2), coach personality was entered at step 1 and coach competency and social identity were entered simultaneously at step 2. Hierarchical regression analyses examined the extent to which perceived and received coach support predicted self-confidence and performance, with perceived coach support entered at step 1 and received coach support at step 2. To determine statistical significance, 95% confidence intervals were computed using percentile bootstrapping with 1000 resamples. Correlation and regression coefficients were considered significant if their 95% confidence intervals did not include zero.

To examine if self-confidence mediated the relationships between both perceived and received coach support (entered simultaneously) and performance, mediation analyses were performed at each level of analysis using *MEDIATE* SPSS custom dialogue (Hayes & Preacher, 2011).

5.5 Results

5.5.1 Univariate Analyses

The perceiver component accounted for a significant amount of variance in perceived coach support, received coach support, coach competency, self-confidence, and performance (see Table 5.1). The provider component did not account for a significant amount of variance in any variable except self-confidence. The relational component accounted for a significant amount of variance in perceived coach support, received coach support, extraversion, agreeableness, conscientiousness, emotional stability, openness to experience, coach competency, social identity, and self-confidence. For perceived coach support, the relational component, $\sigma^2 = 0.16$, 95% CI [0.10, 0.22], was significantly larger than the perceiver component, $\sigma^2 = 0.05$, 95% CI [0.05, 0.05]. For self-confidence, the perceiver component, $\sigma^2 = 0.20$, 95% CI [0.11, 0.28], was significantly larger than the relational component, $\sigma^2 = 0.10$ 95% CI [0.10, 0.10]. For all other variables, there was no significant difference between the significant perceiver and relational components. The provider components are not included as they were non-significant for all variables, except self-confidence.

Table 5.1 Percentages of variance accounted by each component in perceived coach support, received coach support, coach personality, coach competency, social identity, self-confidence, and performance time.

<i>Variable</i>	Perceiver	Provider	Relational
Perceived coach support	12.0*	19.5	43.3*
Received coach support	15.1*	17.8	18.8*
Extraversion	2.7	6.2	35.6*
Agreeableness	0	25.5	28.7*
Conscientiousness	7.7	0	22.8*
Emotional stability	2.0	10.6	27.5*
Openness to experience	0	0.1	39.5*
Coach competency	14.3*	24.2	12.9*
Social identity	5.5	11.1	66.8*
Self-confidence	48.8*	5.5	23.8*
Performance	31.4*	0	4.7

Notes. * Significant to $p < .05$.

5.5.2 Multivariate Analyses

Following the significant perceiver and relational components in perceived and received coach support in the univariate analyses, multivariate analyses were conducted for these components. At the perceiver level, perceived coach support, received coach support, and self-confidence were all significantly correlated (see Table 5.2). At the relational level, perceived coach support correlated with extraversion, agreeableness, conscientiousness, emotional stability, openness, coach competency, social identity, and performance. Received coach support correlated with self-confidence at the relational level.

The results for the hierarchical regression analyses for the predictors of perceived and received coach support are presented in Table 5.3. At the relational level, extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience collectively accounted for a significant amount of variance in perceived coach support. Coach competency and social identity collectively accounted for a significant additional amount of variance in perceived coach support. Only agreeableness and social identity significantly contributed to the final model, $bs = 1.00 - 1.62$, 95% CIs [0.04, 0.22]. Coach personality (step 1), and coach competency and social identity (step 2) did not significantly predict received coach support at the relational level.

The results of the hierarchical regression analyses for perceived and received coach support predicting self-confidence and performance are presented in Table 5.4. At the perceiver level, perceived coach support accounted for a significant amount of variance in self-confidence. Received coach support accounted for a significant additional amount of variance in self-confidence. Perceived (step 1) and received (step 2) coach support did not significantly predict performance at the perceiver level.

At the relational level, perceived coach support did not account for a significant amount of variance in self-confidence, but received coach support did account for a significant amount of additional variance in self-confidence. In contrast, perceived coach support accounted for a significant amount of variance in performance, but received coach support did not account for a significant additional amount of variance in performance.

Mediation analyses were conducted to explore if perceived and received coach support were associated with significant indirect effects on performance via self-confidence at the perceiver or relational level. At the perceiver level,

received support was associated with a significant indirect effect on performance via self-confidence, $ab = -2.57$, 95% CI [-5.75, -0.18]. Athletes who had a general disposition to report higher levels of received support from the coaches, reported higher self-confidence and executed the LSPT task more quickly on average across all of the coaches. In contrast, the indirect effect of perceived support on performance via self-confidence was not significant at the perceiver level, $ab = -2.83$, 95% CI [-7.83, 0.07]. At the relational level, although received coach support was significantly associated with self-confidence ($b = 0.36$, $p < .01$) and perceived coach support was associated with a direct effect on performance ($b = -2.29$, $p = .03$), there was no significant indirect effects from either perceived, $ab = 0.03$, 95% CI [-0.16, 0.33], or received coach support, $ab = 0.41$, 95% CI [-0.74, 1.53], on performance through self-confidence.

Table 5.2 Correlations between the components scores of perceived coach support, received coach support, and provider personality, coach competency, social identity, self-confidence, and performance, at the perceiver, provider, and relational level.

Component	Perceiver		Provider		Relational	
	PCS	RCS	PCS	RCS	PCS	RCS
PCS	-	.46*	-	-	-	.05
RCS	.46*	-	-	-	.05	-
Extraversion	-	-	-	-	.22*	-.06
Agreeableness	-	-	-	-	.45*	.05
Conscientiousness	-	-	-	-	.18*	.06
Emotional stability	-	-	-	-	.20*	-.04
Openness	-	-	-	-	.24*	.02
Coach competency	.31*	.34*	-	-	.19*	.06
Social identity	-	-	-	-	.47*	.04
Self-confidence	.46*	.51*	-	-	.07	.56*
Performance	.09	.13	-	-	-.15*	-.01

Notes. * Significant to $p < .05$ using percentile bootstrapping with 1000 resamples. Correlations were not calculated for components that were non-significant in the univariate analyses. PCS= Perceived coach support, RCS= Received coach support.

Table 5.3 Hierarchical regression analyses for predicting perceived and received coach support at the relational level, with coach personality in step 1, coach competency and social identity in step 2.

Dep. Variable	Component	Step	Independent Variable	ΔR^2	<i>b</i>	95% CI
PCS	Relational	1	Extraversion	.29*	0.05	[-.05, .04]
			Agreeableness		0.16	[.10, .22*]
			Conscientiousness		0.02	[-.05, .09]
			Emotional stability		0.01	[-.05, .06]
			Openness		0.01	[-.03, .06]
		2	Coach Competency	.09*	0.06	[-.01, .14]
		Social Identity		0.10	[.04, .16*]	
RCS	Relational	1	Extraversion	.01	-0.01	[-.12, .04]
			Agreeableness		0.03	[-.04, .11]
			Conscientiousness		0.03	[-.09, .15]
			Emotional stability		-0.05	[-.14, .03]
			Openness		0.01	[-.07, .08]
		2	Coach Competency	.01	0.05	[-.09, .16]
		Social Identity		0.10	[-.07, .11]	

* Significant to $p < .05$ using percentile bootstrapping with 1000 resamples.

Hierarchical regression analyses were only conducted for variables that were included for multivariate correlations.

Table 5.4 Hierarchical regression analyses for predicting self-confidence and performance, at the perceiver and relational levels of analysis, with perceived coach support in step 1 and received coach support in step 2.

Dependent Variable	Component	Step	Independent Variable	ΔR^2	<i>b</i>	95% CI
Self-confidence	Perceiver	1	PCS	.21*	0.42	[0.02, 0.82*]
		2	RCS	.12*	0.39	[0.14, 0.67*]
Performance	Perceiver	1	PCS	.01	1.05	[-8.04, 9.21]
		2	RCS	.01	1.97	[-3.39, 7.56]
Self-confidence	Relational	1	PCS	.00	0.03	[-0.08, 0.13]
		2	RCS	.31*	0.36	[0.28, 0.45*]
Performance	Relational	1	PCS	.02*	-2.25	[-4.20, -0.21*]
		2	RCS	.00	0.08	[-1.35, 1.52]

* Significant to $p < .05$. Bootstrapped at 1000 resamples. PCS = Perceived coach support, RCS = Received coach support. Further analysis is not calculated when univariate results are non-significant.

5.6 Discussion

The purpose of this study was to apply a generalisability theory approach to examine the components of perceived and received coach support, their potential antecedents, and also their relationships with self-confidence and performance. The univariate analyses demonstrated that perceiver and relational components accounted for a significant amount of variance in both perceived and received coach support. The multivariate analyses found that perceived and received coach support had different correlates, and that these correlates differed across perceiver and relational components. Coach agreeableness and social identity predicted perceived coach support at the relational level, but coach personality, competency, and social identity did not

predict received coach support. At the perceiver level, both perceived and received coach support predicted self-confidence, and received coach support was associated with a significant indirect effect on performance via self-confidence. At the relational level, received coach support predicted self-confidence, whereas perceived coach support predicted performance. The current study is the first to examine the antecedents and effects of both perceived and received support applying a generalisability theory approach, with the findings highlighting an association between perceived and received coach support and performance outcomes, albeit through distinct pathways.

Consistent with Hypothesis 1 and previous research (Chapter 2; Rees et al., 2012), the current findings demonstrate the importance of the relational component in perceived coach support. This evidence suggests that athletes systematically disagreed in their perceptions of the support available from the coaches. Fewer studies have examined components of received support, and none in a coaching context. Using a partially nested design, with perceivers rating the supportiveness of family members, Lakey et al., (2010) found the trait and social components (comparable to the perceiver and relational components, see *Literature Review*), accounted for a significant amount of variance in received support. Similarly, the current study found that both the perceiver and relational components accounted for a significant amount of variance in received coach support. The significant perceiver component suggests that athletes had a general disposition to be consistent in the levels of support they felt they received from all coaches. Additionally, the relational component suggests that athletes systematically disagreed in the support they felt they received from coaches. These two components are both able to account for a significant amount of variance as they are considered statistically

distinct (Lakey, 2010), and offers a conceptual explanation of how athletes judge the supportiveness of coaches.

The current study adopted a multivariate generalisability theory approach to explore the antecedents of perceived and received coach support. Our previous studies (Chapter 2) examined the antecedents of perceived coach support employing a multivariate generalisability theory approach, and the present study is the first to apply this methodology to received coach support. Such an approach provides vital insight into how judgments about both the availability and receipt of support are formed. To aid clarity for the reader we will discuss the findings at the perceiver level initially, followed by the relational level.

At the perceiver level, coach competency was significantly related to both perceived and received coach support. Manley et al. (2008) found athletes' perceptions of coaches were influenced by the coaches' level of experience, reputation, and observable cues. The present results reinforce these previous findings, and demonstrate that coach competency influenced how athletes made judgements about coaches and furthers understanding by identifying the specific component related to judgements of support and their correlates. The current findings suggest that if athletes have a general disposition to rate coaches as competent then they also perceive those coaches to be supportive and feel they receive support from those coaches.

Beyond the antecedents of perceived and received support, and unique to this study, we examined whether perceived and received support predicted athletes' self-confidence and performance across different components. At the perceiver level, perceived and received coach support predicted self-confidence. When athletes, on average, judged that coaches would provide

high levels of support or that they had received high levels of support, they also reported, on average, higher levels of self-confidence before performing.

Previous research has found an association between perceived and/or received support and self-confidence (Cutrona, Cole, Colangelo, Assouline, & Russell, 1994; Freeman & Rees, 2010; Rees & Freeman, 2007). In contrast, neither perceived nor received coach support were associated with direct effects on performance at the perceiver level. Consistent with Hypothesis 4, however, received coach support was associated with indirect effects on performance via self-confidence. Such findings suggest that when athletes had a general tendency to feel they received support from coaches they also felt confident and performance was superior.

Focussing on the relational level, consistent with Hypothesis 2, and previous research in both sport (Chapter 2) and social psychology (Lakey, McCabe, Fisicaro, & Drew, 1996; Lakey et al., 2004, Lutz & Lakey, 2001), the personality of the provider (in particular agreeableness) predicted perceived coach support. Beyond the effects of personality, social identity was also an important predictor of perceived coach support. These findings suggest that athletes systematically disagreed on their perceptions of coaches' agreeableness and coaches with whom they felt they shared a common identity with, and these disagreements were associated with how supportive coaches were perceived to be. Previous studies in social psychology have also demonstrated the key role of social identity in influencing support judgements (Haslam et al., 2004; Haslam et al., 2005). Applying a multivariate generalisability theory approach permits research to attribute this association specifically to the relational level.

In contrast to the findings for perceived coach support, coach personality, competency, and social identity did not account for significant amount of variance in received coach support at the relational level. Previous research has found a low amount of common variance between perceived and received support (Haber, Cohen, Lucas, & Baltes, 2007), and Uchino (2009) suggested that the two concepts of support may also have distinct antecedents. The current findings suggest that the antecedents of perceived and received coach support for specific components are also separate, further emphasising the distinctness of these support constructs. Previous research has noted that the personality of the provider is associated with perceptions of support and can influence psychosocial profiles (Gallo & Smith, 1999; Pinguart & Sorenson, 2001), although this has not been as widely reported for received support (Uchino, 2009). Received support has been noted as being a situational factor and thus antecedents may differ from perceived support at the relational level (Barrera, 2000; Uchino, 2009). For instance, it has been proposed that stress influences the perceiver's judgement of support received (Uchino, 2009), whereas RRT suggests that perceptions of support providers are made irrespective of stress, particularly for the relational component (Lahey & Orehek, 2011).

The current findings provide further evidence of the beneficial role of perceived and received support in performance contexts. Previous research in sport has demonstrated that perceived and received support are associated with both self-confidence (Freeman & Rees, 2010; Rees & Freeman, 2007) and performance (Freeman & Rees, 2008), but the present results offer additional insight into these relationships. Consistent with Hypothesis 3, both perceived and received coach support were associated with performance outcomes, but

the findings emphasise that perceived and received coach support are conceptually distinct and have unique relationships with performance outcomes. At the relational level, perceived coach support directly predicted performance. In contrast, received coach support predicted self-confidence and performance. The current findings suggest that athletes perceived certain coaches to be supportive and performed better in the presence of this coach. Consistent with Hypothesis 4, when athletes generally felt they received high levels of support from all coaches, this bolstered self-confidence and performance was also superior. Self-confidence, however, did not mediate the relationship between perceived coach support and performance.

Applying a multivariate generalisability theory provides a useful framework for exploring the relationship between different types of support and their correlates. A key benefit is that relationships between variables can be identified at the different levels of analysis. Using a classical test theory approach would not identify whether the link between support judgements and other variables reflect trait or relational influences (Lakey & Orehek, 2011). Previous research, therefore, is unable to offer a full conceptual explanation of relationships between perceived and received support with other variables as the specific components cannot be distinguished between. The results at the relational level suggest that when athletes perceived certain coaches to be particularly supportive this was related to superior performance, but results at the perceiver level suggest if athletes had a disposition to elicit support from coaches they generally felt more confident and performed better. The current study is the first study to examine the association between perceived and received coach support with performance outcomes using a multivariate generalisability approach. The mediation analysis results offer an explanation

of the pathway between perceived support and performance. The current findings suggest if athletes' perceive certain coaches to be particularly supportive this is associated with feeling confident and ultimately improves performance.

Unique to this study, we identified that both perceived and received coach support predict self-confidence and performance, which highlights the importance of developing supportive coach-athlete dyads. The current findings could have important implications for applied contexts. Previous interventions that focussed on the provider component have had mixed success (Hogan et al., 2002). When a ten week social support intervention was provided by one supportive community staff worker to elderly women this intervention failed to increase perceived support (Heller, Thompson, Trueba, Hogg, & Vlachos-Weber, 1991). The results of the current study suggest interventions should consider targeting the perceiver or relational components. Interventions that target the perceiver component may not be very effective, however, as attempting to change the perceptual biases of athletes could be difficult (Brand, Lakey & Berman, 1995; Lakey & Lutz, 1996). At the relational level, the antecedents of perceived coach support were largely consistent with those in Chapter 2. As such, interventions could focus on cultivating a common identity between athletes and coaches in order to enhance perceptions of coach support. For example, the coach could accentuate shared values between the two to foster a supportive relationship. Further, at the relational level, received coach support predicted self-confidence and interventions could look to bolster the confidence of athletes by enhancing the support they feel they receive from coaches. Such an approach could look to match athletes with coaches who they feel they would receive a large amount of support from. In the current

study, however, we were unable to identify the antecedents of received coach support, so further research is needed to ascertain these antecedents to help further develop interventions.

The present research provided further evidence for the influence of perceived and received support on performance outcomes but some potential limitations should be noted. First, the correlational nature of the study means that causal relationships cannot be inferred. Although performance was assessed under controlled conditions, the study was not a true experimental design as coaches were free to decide upon the content of their supportive message. This does, however, permit a more natural approach to study support interactions and is similar to previous generalisability theory research (Lakey, Cohen, & Neely, 2008; Veenstra et al., 2011). Second, participants did not complete the current study with the most important coaches that they currently work with. Using a partially nested design could provide an opportunity to further explore the effect of these existing coach-athlete relationships on performance outcomes.

In conclusion, the current study partitioned perceived and received coach support and their correlates into perceiver, provider, and relational components, and examined the relationships between perceived and received coach support and their correlates across the components. Perceiver and relational components were found to account for significant amounts of variance in both perceived and received coach support, although it was the relational component that was particularly salient for perceived coach support. Multivariate analyses found that when athletes perceived certain coaches to be highly agreeable and sharing a common identity, those coaches were also perceived to be particularly supportive. Importantly, this study also found that perceived and

received coach support had different relationships with self-confidence and performance. At the perceiver level, the findings suggest that if athletes generally reported receiving more support from coaches, they generally felt more confident and performed better. At the relational level, athletes who reported receiving more support from a particular coach did feel more confident but this did not transfer to better performance in the presence of this coach. In contrast, when athletes perceived a certain coach to be particularly supportive, their performance was also superior. Adopting a generalisability theory approach, therefore, has provided a more detailed understanding of coach support processes, in particular the relationship between perceived and received support, their correlates, and how these differ at the perceiver and relational level.

5.7 Footnote

¹ The trait component accounted for more variance in received support than the social component, although only the social component was significant as it had more statistical power, as each recipient rated three support providers. This means that the sample size for this component was effectively 150 (50 perceivers each rating 3 providers). The trait component sample is the players rather than how many providers they rated (50 ratings of perceivers' average across all providers).

Chapter 6: General Discussion

6.1 Summary of Findings

The main aims of this thesis were to apply a generalisability theory approach to examine the components of perceived and received support, their antecedents, and effects on performance outcomes. The univariate analyses consistently found the relational and social components accounted for the largest amount of variance in perceived and received support, suggesting that athletes judged certain providers as particularly supportive. The present studies were the first to apply a multivariate generalisability theory approach to examine social support in a performance context. The multivariate analyses found that provider personality, coach competency, and social identity consistently predicted perceived support at the relational and social level. Further, in both Studies 3 and 4, received support predicted self-confidence at the relational and social level. Perceived support directly predicted performance at the relational and social level. In comparison, received support was associated with significant indirect effects on performance via self-confidence at the relational and social level. The findings emphasise the importance of support for sports performance, but that perceived and received support may operate via different pathways.

6.2 Components of Perceived and Received Support

The present thesis contained three studies which adopted fully crossed designs to examine perceived coach support. In Study 1a, participants rated well-known soccer coaches. In Studies 1b and 4, participants rated coaches who they had viewed in short video clips. In all three studies, the relational component accounted for the highest amount of variance in perceived coach

support. The perceiver component was also significant in Study 4. The findings were largely consistent with previous research that examined perceived coach support (Rees et al., 2012), and support perceptions in other contexts (Branje et al., 2002; Lakey et al., 2004; Lakey et al., 2014). The current findings are similar to previous fully crossed designs, as a similar pattern of results was reported for the perceiver and relational components (Branje et al., 2002; Lakey et al., 2004; Lakey et al., 2014). Study 4 was the first to examine the components of received coach support, and found that both the perceiver and relational components were significant. The present findings offer a theoretical explanation of how athletes judge the supportiveness of coaches. The perceiver component suggests that athletes did, in part, have a general disposition to be consistent in their support judgments across coaches. The significant relational component, however, suggests that athletes also have notable disagreement regarding the support they perceived to be available and support received from coaches. The current research is able to provide an intricate conceptual understanding of the components that contribute to both perceived and received support.

Three studies adopted a partially nested design to examine perceptions of support from either the four most important people to them as an athlete, or four specific members of their existing social network: a coach, a team-mate, a close peer, and a family member. Across Studies 2a, 2b, and 3 the social component accounted for the highest amount of variance in perceived support, although the trait component was also significant. These findings were consistent with the findings of previous research that examined recipients' perceptions of support from existing support providers, as the trait and social components accounted for a significant amount of variance (Lakey et al., 2010;

Lakey & Scoboria, 2005; Shorey & Lakey, 2011). The current findings suggest that some athletes perceived all providers in their support network to be either supportive or unsupportive, and that some athletes systematically disagreed in their ratings of the supportiveness of different providers within their existing support network.

Study 3 examined the components of received support and found that only the social component was significant for received support. Limited research has applied a generalisability theory approach to examine the components of received support. In a two-study design college students were asked to rate the received support of their mother, father, and a close peer, and both the trait and social components were found to account for a significant amount of variance (Lakey, et al., 2010). The current findings suggest that athletes systematically disagreed in the support they felt members of their support network provided, and offers a detailed explanation of the components underpinning the receipt of support from providers within athletes' existing social networks.

6.3 Support Antecedents

There is a plethora of research highlighting the beneficial effects that social support can have on general health (Cohen & Janicki-Deverts, 2009; Ertel et al., 2009), morbidity and mortality rates (Treiber et al., 2003; Uchino, 2006), and cardiovascular disease (Berkman et al., 1992; Brummett et al., 2001; Frasure-Smith et al., 2000; Rutledge et al., 2004). In sport, social support is positively associated with the prevention of, and rehabilitation from, injuries (Williams & Andersen, 1998; Bianco & Eklund, 2001; Smith, Smoll, & Ptacek, 1990; Wadey, Evans, Evans, & Mitchell, 2011), development and well-being in athletes (DeFreese & Smith, 2013; Fletcher & Sarkar, 2012; Kristiansen &

Roberts, 2010; Rees & Hardy, 2000), and psychological resilience (Morgan, Fletcher, & Sarkar, 2015). It is, therefore, vital to identify antecedents of perceived and received support to advance theory and inform the development of social support interventions.

Consistent with previous research, studies in the present thesis found perceptions of provider personality predicted perceived support, particularly the trait of agreeableness in Studies 1 and 4 at the relational level only (Lahey et al., 2004; Lahey et al., 2014). Across the partially nested designs the personality traits that predicted athletes' perceptions of support varied. In both Study 2a and 2b, conscientiousness and openness predicted perceived support, and in Study 3 extraversion predicted perceived support at the social level. Lutz and Lahey (2001) also suggested provider personality was an antecedent of support at the social level, as certain providers within participants' existing support networks rated as agreeable and open were also perceived to be particularly supportive. Previous research highlights there are a number of different personality traits that relate to perceptions of support, although the current studies suggest that if athletes know providers within their existing network well then a greater range of traits are associated with supportiveness. In comparison, when the knowledge of providers are less the personality trait of agreeableness may act as a proxy of support perceptions. It could be that when there is a lack of familiarity between perceiver and provider the most important personality trait that is associated with perceptions of support is the trait of agreeableness. Further, when recipients perceive providers to share a similar personality to themselves, these providers are also perceived to be supportive (Neely et al., 2006). It could be that across Studies 2 and 3 perceivers were extraverted, conscientious, and open, and in Studies 1 and 4

perceivers were agreeable, and providers who shared this personality were also perceived to be particularly supportive. Further research would be needed to ascertain whether a similar personality between athletes and support providers is a predictor of perceived support.

The studies in the current thesis were the first to examine coach competency as an antecedent of social support. Empirical evidence has, however, found that athletes make judgments about coaches based on their experience, reputation, and coaching qualifications (Manley et al., 2008). The knowledge and expertise of support providers are influencing factors when recipients make appraisals of available support (Gottlieb, 2000; Rosenfeld et al., 1989). In Study 1, coach competency predicted perceptions of coach support at the relational level which suggests that athletes systematically disagreed in their perceptions of coach competency and these disagreements were associated with athletes having different perceptions of coach support. These findings, however, were not replicated in Study 4 as coach competency failed to make a significant contribution to perceived coach support at the perceiver, provider, or relational level. There may not be any tangible evidence for why coach competency did not predict perceived support in Study 4, although it could be that participants in Study 4 did not provide enough information regarding their coaching experience and expertise for participants to differ in their ratings of coach competency. Future research may want to ask individuals independent of the research sample to rate the objective values of providers included in videos, similar to Neely et al. (2006), as this would provide additional insight into how individuals' rate information provided.

No research had examined the link between social identity with perceived and received support using a generalisability theory approach.

Consistent with previous research, when individuals felt they shared a salient identity with providers they also perceived them to be supportive, although in the current studies this relationship occurred at the trait and social level in partially nested designs, and the relational level in fully crossed designs (Haslam et al., 2004; Levine et al., 2005). The efficacy and interpretation of support is very much dependent on who provides it and the context in which it occurs, as individuals' thoughts regarding social interactions are influenced by their membership to relevant social groups (Haslam et al., 2009). Applying a generalisability theory approach explains the relationship between social identity and perceptions of support in greater detail as this association occurs at different levels of analysis.

In Studies 3 and 4, antecedents of received support were examined alongside perceived support. In contrast to the evidence for perceived support, personality, competency, and identity did not significantly predict received support in either study. A number of studies have examined provider personality as an antecedent of perceived support, although the current studies were the first to examine provider personality as a potential antecedent of received support. Provider personality has not been examined as a potential antecedent of received support, and the current studies found that provider personality did not predict received support at any level of analysis. Previous research reported that the thoughts and behaviours of fellow in-group members can influence how individuals' interpret social situations, although the current findings suggest a shared social identity between perceiver and provider is unable to predict received support (Haslam, 2004; Haslam, O'Brien, Jetten, Vormedal, & Penna, 2005). Previous research and the findings in Study 3 suggests there is a lack of shared variance between perceived and received

support, and this may explain the different relationships perceived and received support have with other variables (Cohen & Hoberman, 1983; Goodwin, et al., 2004; Haber et al., 2007; Komproe et al., 1997). The current findings also found that perceived and received support had distinct relationships with potential antecedents.

By applying a generalisability theory approach, the current findings highlight potential antecedents at the relational and social level, demonstrating that athletes systematically disagreed in their perceptions of provider personality, coach competency, and social identity, and that these disagreements generally were associated with athletes perceiving certain providers to be particularly supportive. Beyond identifying potential antecedents of perceived support, multivariate generalisability theory was applied approach to examine the consequences of support at the different levels of analysis.

6.4 Social Support and Performance Outcomes

In Study 4, perceived and received support predicted self-confidence at the perceiver level. Perceived and/or received support have also been linked with self-confidence in previous research (Cutrona, Cole, Colangelo, Assouline, & Russell, 1994; Freeman & Rees, 2010; Rees & Freeman, 2007). The findings from Study 4 suggest that if athletes, on average, judged coaches as supportive, they also reported, on average, higher levels of self-confidence. Further, received coach support was associated with indirect effects on performance via self-confidence. These findings suggest that athletes had a general tendency to report receiving high levels of support from coaches and this confidence was associated with better performance. In comparison, in Studies 3 and 4, perceived and received support did not predict performance

directly at the perceiver/trait level, and neither support constructs predicted self-confidence at the trait level in Study 3.

The current studies, however, were the first to find an association between perceived and received support with performance outcomes in sport applying a multivariate generalisability theory approach. Results at the relational and social level across Studies 3 and 4 could be of most interest to researchers as these effects were found consistently across current studies. Previous research has identified a link between perceived and/or received support with negative and positive affect consistently at the social level (Barry et al., 2007; Lakey et al., 2010). Empirical evidence has also demonstrated that perceived and received support are positively associated with enhanced self-confidence (Freeman & Rees, 2010; Rees & Freeman, 2007) and improved performance (Freeman & Rees, 2008). The present results offers additional insight into these relationships, as in Studies 3 and 4 received support predicted self-confidence at the relational and social level, suggesting that when athletes felt they received support from certain providers they also felt confidence in the presence of these providers.

Perceived and received support were related to performance, albeit through separate pathways. Similarly, in a health context, Uchino (2009) noted that support constructs can operate via different mechanisms. Perceived support was associated with a direct effect on performance in both Study 3 and 4. Received support, however, was associated with a significant indirect effect on performance via self-confidence at the relational and social level. The support received from certain individuals was also associated with bolstering self-confidence and, in turn, superior performance.

6.5 Theoretical Implications

The findings from the current studies have some important theoretical implications and contribute to conceptual understanding of social support processes, by initially applying a univariate generalisability theory approach. The most interesting and novel aspect of the current thesis that furthers conceptual understanding was applying a multivariate generalisability theory approach to examine the antecedents of perceived and received support, and explore the consequences of perceived and received support. Applying mediational analysis within a generalisability theory framework provided a novel approach to better understand the relationship between support antecedents and the association between support and performance outcomes across different levels of analysis.

Study 1 initially applied a univariate generalisability theory approach to determine the components of perceived coach support, and to demonstrate if the results of Rees et al. (2012) could be replicated. Study 2 was the first research to apply a partially nested design to understand the components of athletes' perceptions of support, and in Study 3 both perceived and received support of athletes were examined applying a partially nested design. Studies 3 and 4 were the first to apply a multivariate generalisability theory approach to examine the relationship between perceived and received support with performance outcomes. The progression of the studies identified the components of perceived and received support, identified the association between support antecedents and perceived support, and examined the relationship between social support and performance outcomes at the different levels of analysis.

The findings from Studies 2 and 3 replicated previous research as the trait and social component accounted for a significant amount of variance in perceived support (Lakey et al., 2010; Lakey & Rhodes, 2015; Lakey & Scoboria, 2005), and in Studies 3 and 4 the social and relational component accounted for a significant amount of variance in received support (Lakey et al., 2010). Previous research has proposed that perceptions of support could reflect either appraisals of support recently received from providers or the trait-like characteristic of the perceiver (Uchino, 2009), although Lakey and Scoboria (2005) noted that these explanations could occur concurrently as ratings of support can be accounted at different levels of analysis.

The current studies were the first to apply a multivariate generalisability theory as a framework to examine antecedents of perceived and received support in sport, and explore the consequence of support at the different levels of analysis. A benefit of applying such an approach is that correlates of perceived and received support can be partitioned into distinct components (Lakey & Orehek, 2011). Previous research has hypothesised that correlations between perceived support and mental health would reflect social processes (Sarason et al., 1990), although research has generally not fully distinguished the objective supportive properties of the provider, or whether perceptions of support depends upon individuals' perceptions of certain providers. Applying multivariate generalisability theory offers a more fine-grained theoretical understanding of the relationship between perceived and received support with antecedents and performance outcomes with greater precision and accuracy (Lakey, 2010; Neely et al., 2006). The current findings are able to offer an explanation for how athletes judge the supportiveness of providers, for both perceived and received support, and explains how athletes differ in their

appraisals of support of the same set of providers, and providers within their existing support network.

The current studies were the first to apply a generalisability theory approach to examine the antecedents of perceived and received support concurrently. Previous research has found the similarity between recipient and provider (Lakey et al., 2004; Neely et al., 2006), and provider personality (Lakey et al., 2004; Lakey et al., 2014), predicted perceived support at the relational level. There is a lack of research, however, that has examined the antecedents of received support, and the current studies suggest that perceived and received support have different antecedents. The current studies found perceived support correlated with provider personality, coach competency, and social identity at the relational and social levels. Received support, however, was not found to be associated with the same antecedents, and these findings may not be surprising considering the lack of shared variance between support constructs (Haber et al., 2007). Previous research has highlighted that perceived and received support have different antecedents (Lakey, 2010; Uchino, 2009), although the current studies were the first to examine the antecedents of received support at the different levels of analysis.

The majority of research adopting a multivariate generalisability theory approach has only included self-report measures, mainly to examine perceived and received support and their correlates. In Studies 3 and 4, however, athletes were asked to complete performance tasks under controlled conditions to provide objective measures of performance. The current studies were able to offer an alternative approach to examining the relationship between social support with correlates across the different levels of analysis, as an objective measure of performance was assessed.

By conducting mediation analyses it permits researchers to get a better understanding of how social support relates to performance outcomes, as mediation analysis can explain how or by what means a causal effect occurs (Preacher & Hayes, 2008). The current studies were able to demonstrate that conscientiousness and social identity had indirect effects on self-confidence via perceived support at the relational level. Furthermore, mediation analysis revealed that when athletes generally felt they received high levels of support from all providers, this bolstered self-confidence and performance was also superior.

6.6 Practical Implications

The findings from the current studies have a number of important implications for the development of effective interventions. The results across all four studies may provide a vital insight into why randomised controlled trials examining interventions to enhance perceptions of support and/or improve outcomes through providing support have yielded inconsistent results (Brand, Lakey, & Berman, 1995; Hogan, Linden & Najarian, 2002). For example, the use of a single supportive community staff worker randomly assigned to provide support to elderly women over a ten week period failed to increase perceived support (Heller, Thompson, Trueba, Hogg, & Vlachos-Weber, 1991). The significant relational component observed in the current thesis suggests that recipients systematically disagree on the supportiveness of providers. As such, interventions that only include one support provider may only work for some recipients.

One potential avenue for interventions would be to focus on relational influences, as this component consistently accounted for the highest proportion of variance in both perceived and received support. One such approach to

enhance perceptions of support could involve matching athletes with providers whom they perceive to be particularly agreeable, conscientious, or open (Lakey, 2010; Veenstra et al., 2011). Based on the findings of Veenstra et al. a similar approach could initially ask athletes to rate perceptions of support after watching a short video of providers discussing their approach to providing support, or after a short discussion between perceiver and provider, and pairing athletes with providers that are perceived to be particularly supportive. This matching approach, however, could be time consuming and may not be feasible in all sports or contexts, such as a team that only has one coach. Alternatively, athletes could be matched with providers in their existing social network whom they perceive to be extraverted and with whom they identify, which may be more feasible as these providers are already known to athletes.

Rather than matching athletes with specific individuals, interventions could look to enhance athletes' perceptions of support providers, particularly their agreeableness, competency, or promote a common social identity. Focusing on developing a common social identity between recipient and provider may be the most promising antecedent included in the current studies as previous research has shown that group membership can be relatively easily manipulated (Haslam et al., 2014; Levine, Prosser, Evans, & Reicher, 2005). Personality traits (Branje, van Lieshout, & Gerris., 2007; McCrae & Costa Jr., 1994) and the competency of providers (Manley et al., 2008) are considered to be relatively stable constructs, although it might be possible to manipulate *perceptions* of provider personality and competence. Cutrona and Cole (2000) suggest that support interventions could focus on cognitive modification techniques to alter dysfunctional attitudes, and in the present context

interventions could look to highlight to perceivers when providers are exhibiting agreeable, conscientious, or open characteristics.

In contrast, interventions could look to develop a common identity between athletes and support providers in order to enhance perceptions of support. Social identity was found to relate to perceptions of support whether providers were coaches or members of athletes' existing support network. One approach would be for providers to promote shared values between themselves and the athletes to harness a supportive relationship. Based on the findings reported in Study 2, such interventions might not only enhance perceptions of support but could also result in improved self-confidence.

The findings of Studies 3 and 4, suggest that athletes looking to improve confidence and/or performance may achieve this through bolstering received support. For example, individuals who are rated as particularly supportive might be asked to provide additional support in the build up to competition. Previous research has found an improvement in adherence to a weight loss programme and enhanced feelings of support received when recipients' close friends provided support (Wing & Jeffrey, 1999). Based on the findings from Studies 3 and 4, however, athletes could look to coaches or individuals within their existing social network as support providers. The current findings though, were unable to identify antecedents of received support and future research should seek to identify these antecedents to help further develop effective interventions.

6.7 Limitations

The current thesis makes some novel contributions to further understanding of support processes in sport, but some potential limitations should be noted. First, perceptions of support and antecedents were assessed

contemporaneously, as were received support and self-confidence, therefore, causality cannot be inferred. For example, it could be that if providers are rated as being supportive, these providers may also be perceived to have certain personality traits or sharing a common identity, rather than these being antecedents of support.

Second, the perceiver, provider and relational components for the fully crossed studies, and the trait and social components for the partially nested studies were derived from an unequal number of observations. The power to detect statistically significant effects was unequal across components. The number of providers included in the current studies was based on previous research, as recipients were asked to rate their mother, father, and a close peer, or three symbolic providers (Lakey et al., 2010; Lakey et al., 2014).

Third, the content of what providers said to athletes across Studies 3 and 4 was not recorded as the aim was to provide naturalistic messages that providers would say to be supportive. It could, therefore, be that certain perceivers may have providers in their existing support network that would be deemed objectively supportive by all participants, however, this is unlikely as there is little evidence to support this view (Lakey, 2010; Rees et al., 2012). A previous study asked participants to complete a measure of perceived support for the same four providers, but independent observers were also asked to complete measures of perceived support after viewing videos of recipients and providers interacting (Neely et al., 2006). The findings from Neely et al. failed to consistently find strong correlations between recipients' perceptions of support and affect, compared to ratings of the same providers from independent observers. These findings further suggest that individuals interpret the same interactions in an idiosyncratic way.

Fourth, in Study 1, participants were asked to rate symbolic providers who athletes had previously never met but were aware of through media coverage or viewing brief video clips. Previous studies that have asked participants to rate well-known TV characters as potential providers suggest they are suitable to include as potential providers as they accurately mimic behaviours of real providers (Lakey et al., 2004; Lakey et al., 2014). Rating symbolic providers produced a similar pattern of results to research asking participants to rate providers they had interacted with, or members of their existing support network, strengthening the confidence in this methodology (Rees et al., 2012). It might also be argued that brief video clips of coaches discussing their coaching philosophy provided limited information to develop an accurate appraisal of available support. Empirical evidence applying a longitudinal design, however, found that perceptions of support remained stable over time, from a relatively short conversation to further in-depth interviews (Veenstra et al., 2011). Similarly, In Studies 1 and 4, the coaches were not those who the participants usually worked with. In a previous study, athletes on gifted and talented program rated perceived support from five coaches they regularly worked with, and the relational component accounted for the highest amount of variance, although the perceiver component was also significant (Rees et al., 2012). The findings of Studies 1 and 4 found similar results to Rees et al., suggesting that perceptions of support reflect the same components regardless of whether providers have interacted with participants previously. Equally, in Study 3, participants did perform in the presence of three providers deemed to be important to them as an athlete and a similar pattern of results to Study 4 was observed.

Fifth, the self-confidence measure applied in Chapters 3, 4, and 5 is a validated measure (Cox et al., 2003), but it should be noted that the question stem was adapted in the current studies to reflect different providers. As such, caution should be exerted over the findings. It could be considered a proxy measure of social support given the measure was completed multiple times in relation to each different support provider.

6.8 Future Research

To build on the important theoretical and practical implications derived from the current findings, a number of directions exist for future research. First, as the components of interest were derived from an unequal number of observations, future research should consider including additional providers to address the lack of power for the provider level. One potential fully crossed design study could look to measure the supportiveness of team-mates as it would be of interest to determine whether certain members of a team are considered objectively supportive, or whether there is a disagreement within the team as to providers who are particularly supportive.

Second, in Study 1, participants were asked to rate either well-known coaches or coaches after viewing two-to-three minute video clips, and in Study 4 asked to rate coaches after viewing video clips and receiving a supportive message. The practice of using symbolic providers and videos has been successfully applied in previous social support research (Rees et al., 2012; Lakey et al., 2004; Lakey et al., 2014), although this approach could be criticised on grounds of ecological validity. Future research may look to incorporate research with a number of coaches participants presently work with, or have worked with previously as this would provide an opportunity to

understand the role social support plays in developing positive coach-athlete relationships in a naturally occurring context.

Third, the current thesis has made recommendations for support-based interventions but research is needed to examine the effectiveness of such interventions. Previous research suggests that social support interventions should be guided and developed by theory (Eckenrode & Hamilton, 2000). Applying a generalisability theory framework provides the analytical framework to design interventions that target certain components, which could be vital given the relationships between social support and its correlates vary across different levels of analysis (Lakey, 2010). There is some evidence, however, to suggest that matching recipients with supportive providers at the relational level is possible and these perceptions remain stable over time (Veenstra et al., 2011).

Fourth, in the current studies provider personality, coach competency, and social identity failed to consistently predict received support across different components. These findings are congruent with the suggestion that perceived and received support have unique antecedents (Lakey, 2010; Uchino, 2009). Future research should examine alternative antecedents of received support. Possible antecedents of received support could include coach-athlete compatibility, as athletes that felt they were compatible with a coach also felt they received more support from this coach (Kenow & Williams, 1999), although applying a generalisability theory would shed more light into this relationship.

Fifth, in Studies 3 and 4, support providers delivered a short message with the aim being to help athletes with a performance task. Future studies could video these messages and ask independent observers to rate the supportiveness of these providers (cf. Neely et al., 2006). This would help

determine whether certain providers are deemed to be objectively supportive, or there may be common characteristics those providers that are considered to be particularly supportive exhibit. If participants were asked to rate perceptions of available support and support received from providers in their existing support network, a recording of support interactions would provide an opportunity for independent observers to measure whether certain recipients elicit greater levels of support from their providers. Such an approach would permit a better understanding of social influences.

6.9 Conclusion

In conclusion, this thesis has made a significant contribution to the social support literature by furthering conceptual understanding of perceived and received support, and how these support constructs relate to antecedents and performance outcomes at different levels of analysis. The current studies provided further evidence that relational and social components consistently accounted for the largest amount of variance in perceived and received support, suggesting that perceivers rated certain providers to be particularly supportive, in comparison to how they rated other providers. Multivariate analyses were applied to examine the relationships between perceived and received support and their correlates across the different components. Provider personality, coach competency, and social identity related to perceptions of support at the relational and social level. These findings suggest that when athletes perceived certain providers to exhibit specific personality traits, felt certain coaches were competent, and providers shared a common identity, those providers were also perceived to be particularly supportive. The current studies, however, were unable to identify antecedents of received support, reinforcing the view that perceived and received support have distinct antecedents. The present

research also found that perceived and received support had different relationships with self-confidence and performance at different levels. At the perceiver and trait level, if athletes generally reported receiving more support from providers, they generally felt more confident. At the relational and social level, if athletes perceived certain individuals to be particularly supportive, they performed better in their presence. The support received from those individuals was also beneficial through bolstering self-confidence and, in turn, performance. Adopting a generalisability theory approach, therefore, has provided a detailed understanding of social support processes, in particular the relationship between perceived and received support, antecedents of perceived support, and the unique relationships perceived and received support have with self-confidence and performance. Importantly, the relationships observed varied across different levels of analysis. In summary, the findings of the current thesis emphasise the importance of support in performance contexts but that effects differ across particularly supportive providers.

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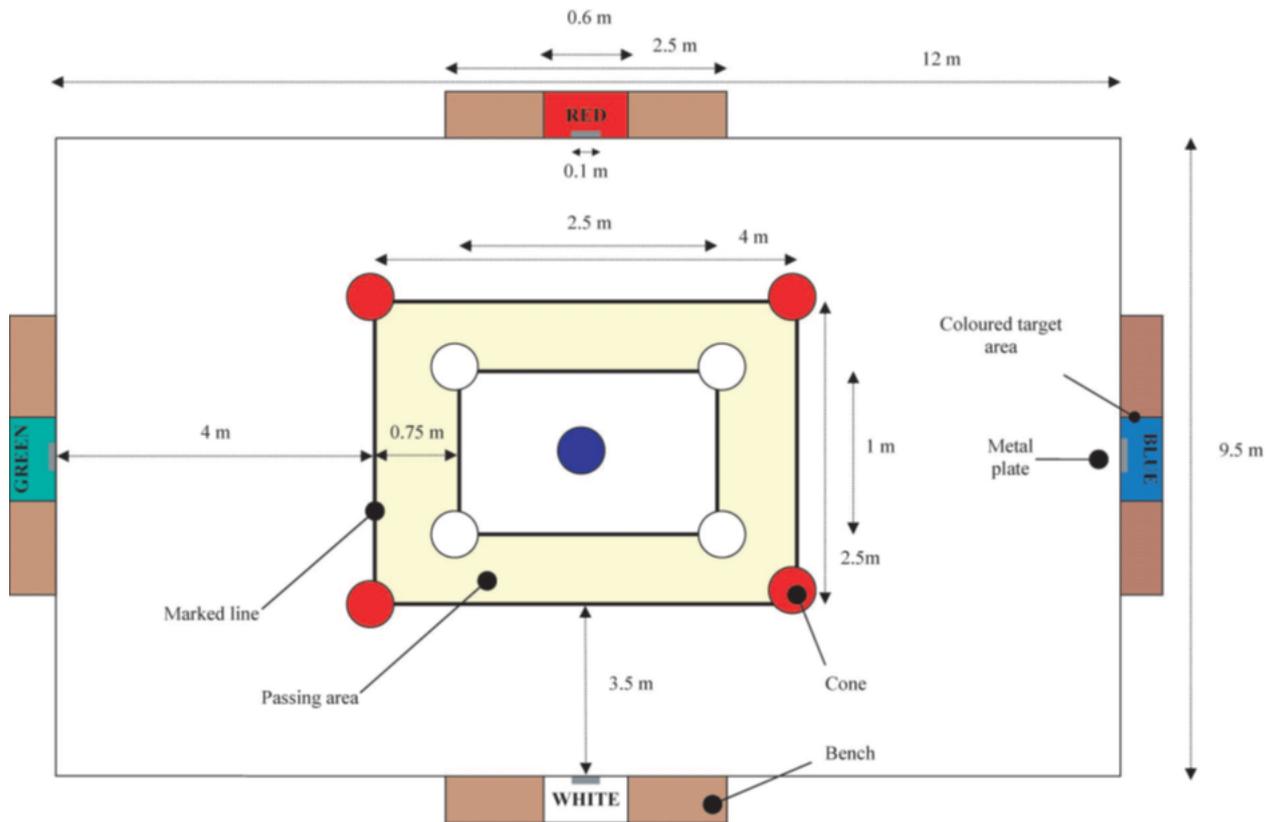
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Figure 1.1 Representation of the Loughborough Soccer Passing Test, cited from Ali et al. (2007).



Appendix 1 Questionnaire booklet, Chapter 2



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HOW DO ATHLETES JUDGE THE SUPPORTIVENESS OF COACHES?

INFORMATION SHEET FOR PARTICIPANTS

Thank you for showing an interest in this project. Please read this information sheet carefully before deciding whether or not to participate. If you decide to participate we thank you. If you decide not to take part there will be no disadvantage to you of any kind and we thank you for considering our request.

What is the Aim of the Project?

This project is part of ongoing research at the University of Exeter into the help and support that athletes have, and how this support impacts upon how athletes think, feel, and perform in sporting situations. The aim of this project is to understand the factors that influence support perceptions and how these judgments are formed.

What Type of Participants are Needed?

Participants need to be footballers and must be at least 18 years of age.

What will Participants Be Asked to Do?

Should you agree to take part in this project, you will be asked to attend a testing session at the Sports Park, Streatham Campus, University of Exeter at a time convenient to you. At the testing session, you will be shown photos of football managers and asked to complete a series of questions that assess your perceptions of the manager. In total, the testing session should last approximately 30 minutes. Please be aware that you may decide not to take part in the project without any disadvantage to yourself of any kind.

Can Participants Change their Mind and Withdraw from the Project?

You may withdraw from participation in the project at any time and without any disadvantage to yourself of any kind. You may also request that any information collected from you be destroyed or deleted and not used either now or in the future.

What Data or Information will be Collected and What Use will be Made of it?

Some general descriptive information about you (such as age, gender, and competitive level) will initially be requested. You will then be shown photographs of five football managers in turn. After each photo, you will be asked to complete a short questionnaire booklet that focuses on how supportive you think that manager is, and your thoughts on their personality, competency, and whether you identify with them. You have the option of omitting questions that you do not wish to answer.

Once collected, the data will be stored in a locked cabinet before being entered on to a password-protected computer only accessible by the primary researcher. The questionnaires will then be shredded but the computerised raw data will be retained securely for a period of 7 years from collection. The computerised raw data will be analysed to help us understand how support perceptions are formed, and what factors contribute to these perceptions.

No names are requested on the questionnaire so you will not be identified individually and your confidentiality is assured. Results of this project may be published but any data included will in no way be linked to any specific participants. You are most welcome to request a copy of the results of the project should you wish.

What if Participants have any Questions?

If you have any questions about our project, either now or in the future, please feel free to contact

Either:-

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The Ethics Committee of Sport and Health Sciences has reviewed and approved this project



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How do athletes judge the supportiveness of coaches?

CONSENT FORM FOR PARTICIPANTS

I have read the Information Sheet concerning this project and understand what it is about. All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I know that:-

1. my participation in the project is entirely voluntary;
2. I am free to withdraw from the project at any time without any disadvantage;
3. the questionnaires will be shredded once the data has been inputted on to a password-protected computer but any raw data on which the results of the project depend will be retained securely for 7 years;
4. the results of the project may be published but my anonymity will be preserved.

I agree to take part in this project.

.....
(Signature of participant)

.....
(Date)

This project has been reviewed and approved by the Ethics Committee
of Sport and Health Sciences

Below you will find a list of words that describe a range of personality traits that may or may not apply to the coach pictured above. **Please read each one carefully and indicate (by circling one number) if the traits apply to the coach. You should rate the extent to which the pair of traits applies to the coach, even if one characteristic applies more strongly than the other.**

1 = Disagree Strongly

2 = Disagree Moderately

3 = Disagree a Little

4 = Neither Agree nor Disagree

5 = Agree a Little

6 = Agree Moderately

7 = Agree Strongly

To what extent do you see the coach pictured as . . . ?

1.	Extraverted, Enthusiastic	1	2	3	4	5	6	7
2.	Critical, Quarrelsome	1	2	3	4	5	6	7
3.	Dependable, Self-Disciplined	1	2	3	4	5	6	7
4.	Anxious, Easily Upset	1	2	3	4	5	6	7
5.	Open to new Experiences, Complex	1	2	3	4	5	6	7
6.	Reserved, Quiet	1	2	3	4	5	6	7
7.	Sympathetic, Warm	1	2	3	4	5	6	7
8.	Disorganised, Careless	1	2	3	4	5	6	7
9.	Calm, Emotionally Stable	1	2	3	4	5	6	7
10.	Conventional, Uncreative	1	2	3	4	5	6	7

Appendix 2 Questionnaire booklet, Chapter 3.



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ATHLETE'S PERCEPTIONS OF SUPPORT FROM THEIR SOCIAL NETWORK

INFORMATION SHEET FOR PARTICIPANTS

Thank you for showing an interest in this project. Please read this information sheet carefully before deciding whether or not to participate. If you decide to participate we thank you. If you decide not to take part there will be no disadvantage to you of any kind and we thank you for considering our request.

What is the Aim of the Project?

This project is part of ongoing research at the University of Exeter into the help and support that athletes have, and how this support impacts upon how athletes think, feel, and perform in sporting situations. The aim of this project is to understand the mechanisms that influence support perceptions, how support impacts upon self-confidence, and how these judgments are formed.

What Type of Participants are Needed?

Participants need to be playing sport regularly at club/university level, and must be involved in team sports.

What will Participants Be Asked to Do?

Should you agree to take part in this project, you will be asked to complete a series of questions that assess your perceptions of key relationships that are available to you in your existing social network. In total, the questionnaires will take around 15 minutes to complete. Please be aware that you may decide not to take part in the project without any disadvantage to yourself of any kind.

Can Participants Change their Mind and Withdraw from the Project?

You may withdraw from participation in the project at any time and without any disadvantage to yourself of any kind. You may also request that any information collected from you be destroyed or deleted and not used either now or in the future.

What Data or Information will be Collected and What Use will be Made of it?

Some general descriptive information about you (such as age, gender, and competitive level) will initially be requested. You will then be asked to identify the most significant person to you for four key relationships you have as an athlete. You will be asked to complete a short questionnaire booklet that focuses on how supportive you think each person is, and your thoughts on their personality characteristics, whether you identify with them, and your level of confidence when competing in the presence of this person. You have the option of omitting questions that you do not wish to answer.

Once collected, the data will be stored in a locked cabinet before being entered on to a password-protected computer only accessible by the primary researcher. The questionnaires will then be shredded but the computerised raw data will be retained securely for a period of 7 years from collection. The computerised raw data will be analysed to help us understand how support perceptions are formed, and what factors contribute to these perceptions.

Once you have completed the questionnaire your name will be omitted from any documents, so you will not be identified individually and your confidentiality is assured. Results of this project may be published but any data included will in no way be linked to any specific participants. You are most welcome to request a copy of the results of the project should you wish.

What if Participants have any Questions?

If you have any questions about our project, either now or in the future, please feel free to contact

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Athlete's Perceptions of Support from their Social Network

CONSENT FORM FOR PARTICIPANTS

I have read the Information Sheet concerning this project and understand what it is about. All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I know that:-

1. my participation in the project is entirely voluntary;
2. I am free to withdraw from the project at any time without any disadvantage;
3. the questionnaires will be shredded once the data has been inputted on to a password-protected computer but any raw data on which the results of the project depend will be retained securely for 7 years;
4. the results of the project may be published but my anonymity will be preserved.

I agree to take part in this project.

.....

(Signature of participant)

.....

(Date)

This project has been reviewed and approved by the Ethics Committee
of Sport and Health Sciences

In this study, you will be asked for your perceptions of four people who are considered to have key relationships with you as an athlete, regardless of whether these relationships are positive or negative. The information you provide will be used only for research purposes and you will not be identified individually. As such, your confidentiality is assured – I am asking you to provide me with your name and contact details, only so that I can be sure to match up your responses, and so that I can email you about the results of the study, should you be interested. Please indicate (by circling a response) if you would like to be included in a group email about the study findings, which I will send out on completion of the study. If you circle yes, please provide your e-mail address in the space provided.

YES NO Email:

Now, please fill out the information about yourself below.

Name:

Age:

Gender (please circle): Male or Female

Nationality:

Main sport you play:

Years playing this sport:

Number of hours you usually train per week:

Number of matches you usually play per week:

Competitive level: (please circle your highest current competitive level)

Recreational Club/University Regional/County National
International

Four types of relationships have been specified below. Within each of these roles please identify an individual who has the largest influence on you as an athlete. So, for example for the role of 'Family Member' this could be your Father, for 'Closest Peer' this could be a close friend. This relationship can be either positive or negative. Please then complete the following table and questions for each type of relationship.

Four Relationship Types

- a) FAMILY MEMBER (e.g. Mother, Father, Sibling, Cousin, etc...)
- b) CLOSEST PEER (e.g. Closest Friend, Romantic Partner, Housemate, etc...)
- c) COACH
- d) TEAM-MATE

Relationship Type	Person's relationship to you? (i.e. Mother, Romantic Partner, etc...)	Person's initials	Gender of person? (Please circle one)	How long have you known this person?
FAMILY MEMBER			M / F	
CLOSEST PEER			M / F	
COACH	Coach		M / F	
TEAM-MATE	Team-mate		M / F	

**How frequently do you interact with this person during a typical month?
(Please circle one option per relationship)**

FAMILY MEMBER	About every day	Several times a week	About once a week	Once or twice	Not at all
CLOSEST PEER	About every day	Several times a week	About once a week	Once or twice	Not at all
COACH	About every day	Several times a week	About once a week	Once or twice	Not at all
TEAM-MATE	About every day	Several times a week	About once a week	Once or twice	Not at all
				Once or twice	

Now, please take your time and answer all the questions on the following pages. Each section asks for your perceptions of one of the four people you have identified above. If you are unsure about something, put what you think is as reasonable an answer as you can, given the question. There are no right or wrong answers, and I am interested in all responses. **PLEASE CHECK ALL YOUR ANSWERS AND MAKE SURE EVERY QUESTION HAS JUST ONE NUMBER CIRCLED, BEFORE YOU FINISH.** If only one question has not been answered in this way, I cannot use your data.

THANK YOU

The following questions relate to your FAMILY MEMBER

Please write the initials of this person.....

Part A. Below is a list of items referring to the types of help and support you may have available to you as a sportsperson. Please indicate to what extent you have these types of support available to you from your chosen FAMILY MEMBER.

If needed to what extent would your FAMILY MEMBER...?	Not at all	Slightly	Moderately	Considerably	Extremely So
1. Provide you with comfort and security	0	1	2	3	4
2. Reinforce the positives	0	1	2	3	4
3. Help with travel to training and matches	0	1	2	3	4
4. Enhance your self-esteem	0	1	2	3	4
5. Give you constructive criticism	0	1	2	3	4
6. Help with tasks to leave you free to concentrate	0	1	2	3	4
7. Give you tactical advice	0	1	2	3	4
8. Always be there for you	0	1	2	3	4
9. Instil you with confidence to deal with pressure	0	1	2	3	4
10. Do things for you at competitions/matches	0	1	2	3	4
11. Care for you	0	1	2	3	4
12. Boost your sense of competence	0	1	2	3	4
13. Give you advice about performing in competitive situations	0	1	2	3	4
14. Show concern for you	0	1	2	3	4
15. Give you advice when you're performing poorly	0	1	2	3	4
16. Help you organise and plan your competitions/matches	0	1	2	3	4

Part B. Now please read each of the statements below and indicate (by circling one number), to what extent you identify with your chosen FAMILY MEMBER.

To what extent do you...?	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1. Identify strongly with this person	1	2	3	4	5	6	7
2. Feel a solidarity with this person	1	2	3	4	5	6	7
3. Feel a strong connection with this person	1	2	3	4	5	6	7

Part C. Below you will find a list of words that describe a range of personality traits that may or may not apply to your chosen FAMILY MEMBER. **Please read each one carefully and indicate (by circling one number) if the traits apply to this person. You should rate the extent to which the pair of traits applies to this person, even if one more characteristic applies more strongly than the other.**

To what extent do you see your FAMILY MEMBER as...?	Disagree Strongly	Moderately Disagree	Disagree a Little	Neither Agree nor Disagree	Agree a Little	Agree Moderately	Agree Strongly
1. Extraverted, Enthusiastic	1	2	3	4	5	6	7
2. Critical, Quarrelsome	1	2	3	4	5	6	7
3. Dependable, Self-Disciplined	1	2	3	4	5	6	7
4. Anxious, Easily Upset	1	2	3	4	5	6	7
5. Open to New Experiences, Complex	1	2	3	4	5	6	7
6. Reserved, Quiet	1	2	3	4	5	6	7
7. Sympathetic, Warm	1	2	3	4	5	6	7
8. Disorganised, Careless	1	2	3	4	5	6	7
9. Calm, Emotionally Stable	1	2	3	4	5	6	7
10. Conventional, Uncreative	1	2	3	4	5	6	7

Part D. Now think carefully about your upcoming competition/match. **Please read each of the statements below and indicate (by circling one number), how you would feel about your upcoming competition/match if you were with your chosen FAMILY MEMBER.**

In the presence of this person...?	Not at all	Some What	Moderately	Very Much So
1. I would be self-confident	1	2	3	4
2. I would be confident I could meet the challenge	1	2	3	4
3. I would be confident about performing well	1	2	3	4
4. I would be confident because I can mentally picture myself reaching my goal	1	2	3	4
5. I would be confident coming through under pressure	1	2	3	4