

**Enacted social support in sport:
The effects of support type and support visibility**

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Abstract

This thesis examined the influence of support type and support visibility on the effects of enacted social support on performance and a number of key psychological and behavioural variables. It comprises five chapters. Chapter 1 is a general introduction. The next three chapters (outlined below) present the results of four studies. Chapter 5 is a general discussion.

Chapter 2 examined how support type and support visibility influenced the effects of natural support exchanges between athletes and their key support providers occurring in the week prior to an athlete's match. Athletes and key support providers reported respectively the receipt and provision of support during this week. Athletes also indicated their self-confidence and emotional states regarding the upcoming the match. Moderated hierarchical regression analyses revealed that all types of received support predicted athletes' emotional states and self-confidence regarding the upcoming match. There was no evidence that invisibly providing these support types predicted athletes' outcomes. For informational support, however, it was found that its provision predicted self-confidence, suggesting that athletes' levels of confidence may have benefited from advice that they were not always aware of.

Chapter 3 employed an experimental paradigm to better examine the influence of the type and visibility of enacted social support. Using a golf-putting task with novices ($n = 105$), it examined the influence of informational and esteem support provided in a visible or invisible manner by a fellow novice golfer. This fellow novice golfer was in reality a confederate scripted to give one of five support manipulations (visible informational support, invisible informational support, visible esteem support, invisible esteem support, no support) to participants prior to performing the golf-putting task. The results demonstrated that participants given invisible informational support or visible esteem support outperformed those given no support, while participants given visible informational support or invisible esteem support did not. There was no evidence that participants' self-efficacy or emotional states could explain these effects.

Chapter 4 also involved experimental procedures across two separate studies with samples of skilled football players completing a football aiming task. In these studies, esteem and informational support was provided in a visible or invisible manner by a coach with expertise in penalty-taking. In the first of these studies, the players ($n = 68$) performed better when the expert provided them with informational

support than when the expert provided them with esteem support. This effect occurred regardless of whether the support was provided in a visible or invisible manner. Self-efficacy could not explain this effect.

Given the lack of effects of support visibility, the second of these two studies was designed as a replication and an extension of the first. It sought to further examine why informational support might be more effective than esteem support for skilled football players ($n = 84$). Consistent with the first study, kicking performance was again significantly better for players provided with informational support than for players provided with esteem support regardless of whether the support was provided in a visible or invisible manner. There was evidence that players given informational support performed better than those given esteem support, because their attention was focused more externally on the target and less internally on the process of movement execution.

This series of studies are important for sport and social psychology: They are the first to explore the effect of support type and support visibility in a sport context; and they are the first to examine the effect of support type and support visibility in relation to performance. The results demonstrate that support type is a crucial factor to consider when exchanging support. However, no support type may necessarily be considered the best under all conditions. In light of explaining the effects of different support types on performance, the final study suggests that attentional focus may be an important underlying mechanism. The results indicate that support visibility may play a role in the exchange of support but its influence depends on the type of support provided and the context in which this type of support is provided. An overriding finding of this thesis is that enacted support can have beneficial effects upon athletes' psychological states and performance.

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Chapter 1: Introduction

“I’m able to say that I’m a happy man, because I’ve had the support of so many of you to help me reach where I am today”.

(Edson Arantes do Nascimento, in *Pelé: The Autobiography*, 2006, p.5)

1.1 The Importance of Social Support

Pelé is regarded by many people as one of the greatest football players of all time. Despite being gifted with a surplus of talent, in the first sentence of his autobiography he highlights to not have been able to achieve all his successes without the support received throughout his life and career. Open any autobiography and athletes will have written similar words of gratitude to (thank and) underscore the importance of those who have supported them during their career (e.g., Muhammed Ali, 1976; Bolt, 2010; Dalglish, 1996; Flintoff, 2009; Gerrard, 2006; McEnroe, 2002; Edson Arantes do Nascimento, 2006; Radcliffe, 2004; Wellington, 2012). Not only in autobiographies do athletes highlight the crucial role of social support. Various qualitative studies have reported that athletes use social support as an external resource to deal with the many stressors and demands experienced in their sports (e.g., Crocker, 1992; Greenleaf, Gould, & Dieffenbach, 2001; Gould, Guinan, Greenleaf, Medbery, & Peterson, 1999; Hassell, Sabiston, & Bloom, 2010; Kristiansen & Roberts, 2010; Park, 2000; Rees & Hardy, 2000; Rees, Smith, & Sparkes, 2003; Rosenfeld, Richman, & Hardy, 1989; Udry, Gould, Bridges, & Tuffey, 1997).

The meaning of social support for individuals in daily life has long been recognised in psychological, medical and behavioural research (Caplan, 1974; Cobb, 1976; House, 1981; Moss, 1973). Since then, social support has become one of the most important psychosocial factors influencing mental and physical health outcomes

(e.g., Cohen, Gottlieb, & Underwood, 2000; Goldsmith, 2004; Thoits, 1995; Uchino, 2009; Veiel & Baumann, 1992). Social support has, for example, been linked with better psychological adjustment; increased levels of self esteem, self-efficacy and feelings of control; reduced (work) stress, depression, and anxiety; and lower rates of psychological disorder (e.g., Cohen & Wills, 1985; Cohen et al., 2000; Schwarzer & Knoll, 2007; Sherman, Kim, & Taylor, 2009; Viswesvaran, Sanchez, & Fisher, 1999). Physical health outcomes with which social support has been associated are, for instance, lowered blood pressure, better immune function, improvement of preventative health behaviours, reduced incidence of physical diseases, better recovery from diseases and surgery, lower mortality rates, and reduced burnout rates (Berkman & Syme, 1979; Chronister, Frain, Chou, & da Silva Cardoso, 2008; Cohen, 2004; Greenglass, Firskenbaum, & Burke, 1996; O'Donovan & Hughes, 2008; Reblin & Uchino, 2008; Schwarzer & Leppin, 1991; Uchino, Cacioppo, Kiecolt-Glaser, 1996). Besides these benefits for mental and physical health, social support has also been noted as an elementary feature for satisfactory personal relationships (e.g., Burleson, Albrecht, Goldsmith, & Sarason, 1994; Cutrona, 1996; Burleson & MacGeorge, 2002). Research has documented positive links of social support with relationship intimacy and/or closeness, relationship satisfaction, marital quality, and trust (e.g., Abbey, Andrews, & Halman, 1995; Finch et al., 1997; Gleason, Iida, Shrout, & Bolger, 2008; Maisel & Gable, 2009).

Given these mainstream findings, it was not surprising that Sarason and colleagues in the early 1990s noted the potential of social support in the context of sports as 'intriguing' (Sarason, Sarason, & Pierce, 1990a, p. 125). Numerous studies have since provided evidence for the fundamental role of social support in the context of sports. Studies have documented the benefits of social support when

dealing with injury related stressors, return from injury, and burn-out (e.g., Bianco, 2001; Carson & Polman, 2012; Raedeke & Smith, 2004; Rees, Mitchell, Evans, & Hardy, 2010; Smith, Smoll, & Ptacek, 1990). Researchers have reported that social support may help develop strategies to cope with adversity (Morgan & Giacobbi Jr., 2006), act as a coping strategy to deal with organisational stressors (Greenleaf et al., 2001; Kristiansen & Roberts, 2010), improve psychological resilience (Fletcher & Sarkar, 2012), improve training adherence (Way, Jones, & Slater, 2012), and increase commitment to sport (Young & Medic, 2011). Researchers have further identified social support as a crucial factor in the development of talented athletes (Van Yperen, 2009; Wolfenden & Holt, 2005). Moreover, social support has been shown to be an important predictor of performance-related factors such as team cohesion (Gardner, Shields, Bredemeier, & Bostrom, 1996), flow (Rees & Hardy, 2004), self-talk (Zourbanos et al., 2011), perceptions of control and challenge appraisals (Freeman & Rees, 2009), self-efficacy (Rees & Freeman, 2009), and self-confidence (Freeman & Rees, 2010; Rees & Freeman, 2007). Finally, social support has had strong effects on performance at different levels of excellence (e.g., Freeman & Rees, 2008; Rees, Hardy, & Freeman, 2007; Rees & Freeman, 2010).

Following these findings, one can understand why Pele opened his autobiography with words of gratitude towards those who supported him, and why many researchers have promoted the use and provision of social support in sporting contexts (e.g., Hassell et al., 2010; Morgan & Giacobbi Jr., 2006; Connaughton, Wadey, Hanton, & Jones, 2008). But what is social support and how is it conceptualised? Is social support always beneficial? In the next sections, an answer is given to these questions by drawing a general picture of what social support constitutes, and by giving an insight into the current understanding of the

effectiveness of social support. This is followed by providing a rationale for why it is important to study the effects of enacted support, and why the goal in this thesis is to examine the influence of support type and support visibility the effects of enacted support.

1.2. What is Social Support?

1.2.1. The Definition of Social Support

The concept of social support is complex. Researchers have put forward various definitions of social support. Moss (1973) defined social support as “the subjective feeling of belonging, of being accepted, or being loved, of being needed all for oneself, and for what one can do” (p. 273). Henderson (1977) described social support as a basic human need that must be satisfied in order for an individual to enjoy a sense of human being. Cobb (1976) conceptualised social support as information leading the subject to believe that he is cared for and loved, is esteemed and valued, and a member of a network of mutual obligations. Sarason and colleagues (1990a) formulated social support as “knowing that one is loved and that others will do all they can when a problem arises” (p. 119), whereas Shumaker and Brownell (1984, p. 13) defined social support as “an exchange of resources between at least two individuals perceived by the provider or the recipient to be intended to enhance the well-being of the recipient”. These different definitions are only a small selection of the many definitions in the social support literature but already underscore that social support contains different facets that make it difficult, if not impossible to reach consensus on an exact definition of social support (e.g., Sarason & Sarason, 2009; Veiel & Baumann, 1992).

Researchers nowadays tend to refer to social support as an umbrella construct that encompasses several related yet conceptually different social phenomena and processes which arise as a result of interactions between individuals and their social environment (Cohen, 1988; Cohen, Gottlieb, & Underwood, 2000; Goldsmith, 2004; Sarason, Sarason, & Pierce, 1990b; Vaux, 1992). The term *social support* is however insufficiently specific and researchers have recognised that social support should be treated as a multi-faceted construct (Barrera, 1986; Lakey, 2010). This includes separating the various concepts of support and specifying the processes by which each conceptualisation influences outcome variables (Cohen, 1988; Lakey, 2010; Gottlieb & Bergen, 2010).

1.2.2. Different Perspectives

Cohen and colleagues have adopted an approach that distinguishes social support in a structural element and a functional element, of which the functional element encompasses perceived and received support (e.g., Cohen, 1992; Cohen et al., 2000; Cohen & Syme, 1985). Burlinson and MacGeorge (2002) have divided social support in a similar manner but they referred to a sociological perspective and a psychological perspective. In their conceptualisation, the psychological perspective incorporates perceived, received, and enacted support.

1.2.2.1. Structural Perspective

The structural/sociological perspective describes social support in terms of the existence and structure of individuals' supportive network and the way individuals are integrated within this network (Cohen & Syme, 1985; Brisette, Cohen, & Seeman, 2000; Cohen & Janicki-Deverts, 2009). In this perspective, *social integration* refers to "the extent to which individuals belong to different groups (e.g., marital status, church membership, friendship) and the actual use they make of these memberships (e.g.,

activities)” (Stroebe & Stroebe, 1996, p. 598). Measures of social integration typically assess: the number of social relationships in which an individual takes part (role differentiation), the frequency with which an individual engages in various activities (social participation), and the extent to which individuals feel that they belong or are embedded in certain communities (perceived integration); or a combination of these measures (Brisette et al., 2000). Since Berkman and Syme’s (1979) study, which reported that highly integrated individuals lived longer, numerous studies in general sociology and psychology have demonstrated positive effects of social integration on a wide range of outcomes. For example, studies have reported that individuals who are better (socially) integrated have higher levels of resistance to infectious diseases, and experience less depression and anxiety (Cohen, Doyle, Skoner, Rabin, & Gwaltney, 1997; Cohen & Wills, 1985; House, Landis, & Umberson, 1988). Additional research has shown links between social integration and physiological and biological mechanisms affecting health (Uchino, et al., 1996) including cardiovascular functioning (Seeman, 2001), immune-system functioning (Cohen, 1994), and neuro-endocrine functioning (Seeman, Berkman, Blazer, & Rowe, 1994). Thus for athletes, being socially integrated seems an important factor for their physical and mental health.

Several qualitative studies have further demonstrated the importance for athletes’ embeddedness in a good supportive network in relation to the specific context of sports (Hassell et al., 2010; Rosenfeld et al., 1989; Schinke et al., 2006; Rees & Hardy, 2000; Udry et al., 1997). Whether it is coaches, teammates, fellow athletes, friends, parents or sports-specific communities, all these social ties have been reported by athletes to be important for their sporting career (e.g., Hassell et al., 2010; Schinke et al., 2006). In a study by Kristiansen and Roberts (2010) which

looked at coping strategies in Olympic competition, an athlete illustrated: “my coach was with me, and told me what to do during every step of the warm up; he had previous experience from competitions in such an extreme heat”. In the same study though, Kristiansen and Roberts (2010) demonstrated that some athletes felt that the presence of their coach was harmful for their performance. The sheer existence of social ties thus does not necessarily mean that they are supportive (see also, Rosenfeld et al., 1989; Rees & Hardy, 2000; Reeves, Nicholls, & McKenna, 2009; Udry et al., 1997) Researchers have therefore argued that studies should examine the specific functions of athletes’ supportive networks (e.g., Burtleson & MacGeorge, 2002). Still, it is important to remember that supportive ties are a pre-requisite for functional support to take place. Without the presence of a coach, it is rather difficult to get his/her advice.

1.2.2.2. Functional Perspective

The functional perspective emphasises that individuals’ social ties provide specific resources and these may serve important functions (e.g., comfort, give advice, and provide tangible aid). The two major operationalisations of functional support comprise perceived support and enacted (/received) support (Lahey, 2010; Uchino, 2009, see section 1.2.2.2.2 for a description of enacted and received support). Both perceived support and enacted support are functional but do not appear to be interchangeable (Wills & Shinar, 2000). The different constructs seem only at best moderately correlated and each construct appears to link differently to various outcomes (e.g., Barrera, 2000; Freeman & Rees, 2008; Schwarzer & Knoll, 2007; Uchino, 2009).

1.2.2.2.1. Perceived support

Perceived support refers to one's subjective judgment that social support is (or would be) available when needed (e.g., in bad times, under stressful circumstances, Lakey, 2010; Uchino, 2009). This potential access to support is argued to be relatively stable over time and is believed to stem from early familial transactions (Sarason, Sarason, & Shearin, 1986). To examine the effects of perceived support, researchers often use self-reports such as the Perceived Available Support in Sport Questionnaire (PASS-Q: Freeman, Coffee, & Rees, 2011) to ask respondents about the availability of different types of support when needed (Wills & Shinar, 2000). A relatively small number of studies have experimentally manipulated participants' perceptions of support (e.g., Uchino & Garvey, 1997).

The effects of perceived support in- and outside of sport have been consistently good. Whether due to changing cognitive appraisals, enhancing self-efficacy, improving physiological functioning or facilitating important behavioural changes (e.g., Lakey & Cohen, 2000; Uchino et al., 1996), perceived support has been positively associated with a wide array of physical and psychological outcomes. Perceived support has, for example, been related to lowered cardiovascular reactivity, enhanced immune function, lessened psychological distress, enhanced life satisfaction, lowered rates of disease and mortality, and better recovery from life-threatening illnesses (e.g., Dunkel-Schetter, 1984; Eil, Nishimoto, Medianski, Mantell, & Hamovitch, 1992; Helgeson, 1993; Jemmott & Magloire, 1988; Lee & Rotheram-Borus, 2001; Orth-Gomer, Rosengren, & Wilhelmsen, 1993). In sport, perceived support has been linked to better psychological responses to injury, improved psychological resilience, enhanced self-confidence and self-efficacy, improved situational control, increased flow, and better performance (Fletcher & Sarkar, 2012;

Freeman & Rees, 2008, 2009, 2010; Rees & Freeman, 2009; Rees & Hardy, 2004; Rees et al., 2007; Rees et al., 2010).

1.2.2.2.2. Enacted support

Researchers have used different terminology to refer to the interpersonal exchanges of verbal and nonverbal supportive acts occurring between support providers and support recipients (Dunkel-Schetter & Bennett, 1990; Lakey 2010, Uchino, 2009).

Researchers have used the term *received support* to refer to an individual's perception of the receipt of support resources during a specific time frame or specific event (Dunkel-Schetter & Bennett, 1990; Sarason, Sarason, & Pierce, 1990b; Uchino, 2009). Although received support only reflects the recipient's account, several researchers have argued that it corresponds to the actual interpersonal exchanges of support (Cohen, Lakey, Tiell, & Neely, 2005; Uchino, 2009). This would be the case when providers and recipients completely agree on the support occurrences between them – so called, support concordance (Coriell & Cohen, 1995). In contrast to this suggestion, evidence suggests that providers and recipients often have incongruous perceptions of the exchanged support behaviours (Bolger, Zuckerman, & Kessler, 2000; Coriell & Cohen, 1995). One of the reasons is that support providers sometimes intentionally disguise support acts to ensure that these acts remain outside of recipient's awareness (e.g., Bolger et al., 2000, see section 1.2.2.2.2.6. for a more thorough explanation). As such, *received support* may not capture all support exchanges.

A number of researchers have favoured the term *enacted support* to describe the specific helping actions of individuals (i.e., coach, teammate, peer, family members, etc.) (Barrera, 1986; Goldsmith, 2004; Lakey, 2010; Tardy, 1985). Simply

stated, enacted support involves anything that individuals say or do to help one another (Goldsmith, 2004). Enacted support may include objectively observable support behaviours (Burlison & MacGeorge, 2002), the reported provision of support behaviours by support providers and the reported receipt of support behaviours by recipients (Goldsmith, 2004).

In the social support literature, some researchers have used the terms enacted support and received support interchangeably (Barrera, 1986; Finch et al., 1997). To avoid confusion in this thesis, I will use the term *received support* to refer to the receipt of specific supportive acts as reported by recipients. This thus always reflects the recipients' subjective view. I will further use the term *provided support* to refer to specific acts of support given by providers. This either involves a providers' subjective view on the supportive acts provided (e.g., when measured with self-reports) or the specific supportive acts provided by support providers in experimental designs. I will use the term 'enacted support' as overarching term for the interpersonal exchanges of support, which may occur in the eyes of the support provider, the eyes of the support recipient, and/or as objectively observable support behaviours.

1.2.2.2.1. Different Types of Enacted Support

What is important to realise is that when support is enacted, providers may say or do different things to help individuals. Though some studies have employed an aggregate measure to assess enacted support (e.g., Barrera, Sandler, & Ramsay, 1981; Freeman & Rees, 2008), nowadays there is consensus that enacted support should be considered a multi-dimensional construct that comprises different types of support. These different types of support may fulfil different functions and exert unique effects on outcomes of interest (Cohen, 1988; Wills & Shinar, 2000). Though

there has been debate as to how many different functional support dimensions exist, a comprehensive review of the existing literature, led Cutrona and Russell (1990) to derive four support dimensions: emotional, esteem, informational, and tangible support. Emotional support refers to 'being there for comfort and security during times of stress, leading the person to feel that he or she is cared for by others'. Esteem support refers to 'bolstering a person's sense of competence or self-esteem'. Informational support refers to the 'provision of advice or guidance'. Tangible support refers to 'providing concrete instrumental assistance' (p. 322). In the domain of sport psychology researchers have identified the same four dimensions of support (Hassell et al., 2010; Morgan & Giaccobi Jr., 2006; Rees & Hardy, 2000).

1.2.2.2.2. The Way Enacted Support Operates

Researchers have postulated that enacted support may function as an external coping strategy (Carver, Scheier, & Weintraub, 1989; Thoits, 1986; Uchino, 2009); may facilitate other coping strategies (Fletcher & Sarkar, 2012; Goldsmith, 2004), or may work in conjunction with other coping strategies (Lakey & Cohen, 2000; Raedeke & Smith, 2004). Solely or together with other coping strategies, enacted support may exert effects on athletes' well being and performance through its influence on emotions, cognitions, and behaviours (Cohen, 1988).

Considering the different types of support, Cutrona and Suhr argued that informational and tangible support mainly exert their effects through being action facilitating in that these support types help an individual to solve/get rid of a problem or distressing situation. Emotional support, they postulated, is supposed to have a more nurturing function in that it intends to comfort or console an individual without directly solving the situation (Cutrona & Suhr, 1992, 1994). Esteem support may be both action facilitating and nurturing. Conveying liking for or confidence in one's skills

or abilities may be action facilitating by reassuring recipients to belief in their initiated actions. At the same time, reassuring a person of his competence may reduce the intensity of distress (e.g., Cutrona & Suhr, 1994). Contrarily, Burleson and MacGeorge (2002) noted that the specific functions of support types may not always be as clear cut. They pointed out that informational support may not only be informative but may contain a sense of caring (nurturing) too. Furthermore, the receipt of emotional support may result in greater problem solving motivation and therefore be, besides being nurturing, action facilitating as well.

1.2.2.2.3. Measuring Enacted support

To determine whether enacted support has any effect on recipient's outcomes, researchers have employed different methods. As previously discussed, enacted support can be viewed from different perspectives (recipients, providers, and 'objective' observers). Two methods specifically focus on the perspective of the recipient to assess the effects of enacted support. In the first method, the so called *natural paradigm*, researchers approach participants who are coping/have had to cope with certain situations and stressors (e.g., a serious injury, performing at the Olympics). Through retrospective interviews or questionnaires, participants are asked to report the helpful and unhelpful behaviours they have received from their supportive network (e.g., Dakof & Taylor, 1990; Kristiansen & Roberts, 2010; Lehman, & Hemphill, 1990; Rees & Hardy, 2000). A major benefit of using such a qualitative approach is the ability to get a very detailed and in-depth understanding of supportive interactions and their functions in the context of real stressors (Holt & Hoar, 2006). A downside of this approach is that data is often obtained a long time after the supportive encounters took place (e.g., Udry et al., 1997), which increases

the possibility of recall bias (Burlison & MacGeorge, 2002). Furthermore, the small sample sizes may limit the generalisability of the findings (Rees & Hardy, 2000).

In the second extensively used method, researchers employ *self-report measures* that assess individuals' perceptions of the amount of supportive behaviours they have received from their supportive network during a specific time frame (e.g., Wills & Shinar, 2000). Examples of such self-reports are the popular Inventory of Socially Supportive Behaviors (ISSB, Barrera, Sandler, & Ramsey, 1981), the UCLA Social Support Inventory (UCLA-SSI, Dunkel-Schetter, Feinstein, & Call, 1986), or the Support in Intimate Relationships Rating Scale (SIRRS, Dehle, Larsen, & Landers, 2001). While early studies used a composite score of received support to predict outcomes of interest (e.g., Barrera et al., 1981; Sandler & Barrera, 1984), more recent work has demonstrated unique effects for different dimensions of received support (e.g., Barry, Bunde, Brock, & Lawrence, 2009; Dehle et al., 2001; Freeman & Rees, 2008; Finch et al., 1997). Furthermore, while many studies have assessed recipients' receipt of support from a range of support sources (e.g., Barrera et al., 1981; Freeman & Rees, 2008), researchers have argued that focusing on such a broad spectrum of providers might obscure the effects of particular support providers (Dehle et al., 2001). Therefore, research should consider concentrating on specific support providers. Though recipients' self-reports may be convenient measures for social support research (Reis & Collins, 2000), these measures only reflect the recipient's perspective of the support enacted. Further, they are potentially subject to biased recollections of experiences because individuals differ in their awareness, interpretation, and memory for supportive actions (Bolger, Kessler, & Zuckerman, 2000; Goldsmith, 2004; Reis & Collins, 2000). This may be particularly

the case when recipients have to recall the support received during the past month (e.g., Barrera et al., 1981; Finch et al., 1997).

A third method which has recently been given more attention is the report of support exchanges via *daily diaries* (Bolger et al., 2000; Shrout, Herman, & Bolger, 2006; Shrout et al., 2010). Similar to the previous methods, daily diaries focus on real interactions in a naturalistic context. On a given day, support recipients report the receipt of support whereas support providers report the support provided. Thus, these studies do assess enacted support from both the provider and recipient's perspective. Studies using this approach collect repeated reports from participants (e.g., couples) using structured item formats and time sampling procedures. Although diaries are not objective reports, the detailed and repeated measurement in a short time frame minimises the self-report bias (Reis & Collins, 2000). A weakness of this method is that studies are limited in the level of detail they can obtain about the exchange of support behaviours. Studies have, so far, either focused on emotional support (Bolger et al., 2000) or have separated between emotional and practical support (e.g., Shrout et al., 2006).

In a less frequently utilised fourth method, the *experimental paradigm*, researchers adopt various procedures to create a meaningful/stressful situation in which participants need to perform a certain task. Prior to this task, participants receive specific supportive messages from a confederate, friend, or experimenter (Burlison & MacGeorge, 2002). To examine the effect of these support messages, participants are assessed on relevant post message outcomes. After receiving certain support messages, participants are, for example, asked to indicate the helpfulness of the support messages (e.g., Jones & Guerrero, 2001; Tardy, 1994), have to report their post-message feelings towards a task (e.g., Bolger & Amarel,

2007), are assessed on biological indicators (i.e., heart rate, cortisol levels) of stress (Deelstra et al., 2003; Thorsteinsson, James, & Gregg 1998), and/or have to complete cognitive or physical tasks (e.g., Rees & Freeman, 2010; Sarason & Sarason, 1986; Searle, Bright, & Bochner, 2001). The controlled nature of experimental designs may trade some of the realism of natural contexts (these can be minimised) but a major strength is that one can be certain that the data reflects the effects of actual support exchanges (Reis & Collins, 2000). Furthermore, experimental paradigms enable researchers to isolate, control, and observe the effects of specific (aspects of) support messages (Burleson & MacGeorge, 2002). As such, the potential role of confounding variables can be minimised (Burleson & MacGeorge, 2002) and causal effects between enacted support and specific outcomes of interest can be inferred.

1.2.2.2.4. The Effects of Enacted Support

Before giving a detailed overview of the effects of enacted support, it is important to highlight that, contrary to perceived support, the effects of enacted support have been strikingly inconsistent (Uchino, 2009). Nadler and colleagues therefore described enacted support as a 'double-edged sword' (Nadler, Fisher, & Ben-Izthak, 1983, p. 318). A decade later Finch and colleagues (1997) still classified enacted support as 'the least studied, the least understood, and the most controversial' (p. 324). Even more recently, researchers have continued to refer to enacted support as a 'mixed blessing' (Gleason et al., 2008, p. 824). With the overview, I will demonstrate that enacted support is indeed a mixed blessing but I will also demonstrate that some factors may influence whether the positive or negative side of the sword will strike recipients.

Naturalistic paradigm

General social support research has frequently looked at the receipt of support behaviours in times of stress. Individuals who are dealing with chronic diseases (e.g., Dakof & Taylor, 1990; Dunkel-Schetter, 1984; Lehman & Hemphill, 1990), those recovering from a stroke (Clark & Stephens, 1996), bereaved individuals (Lehman, Ellard, & Wortman, 1986) or those with work stress (Pearlin & McCall, 1990), all have reported receiving helpful and unhelpful behaviours from their supportive network. Even the same support behaviours were classified as helpful when received from certain providers but viewed as harmful from others. Generally though, behaviours categorised as emotional or esteem support (i.e., reassurance, praise, encouragement, expressing love, opportunity to talk, increased attentiveness) have been perceived as helpful particularly when they come from intimate others (e.g., Lehman et al., 1986). Behaviours categorised as informational and tangible support (i.e., advice, control situation, knowledge, competence) have more often been noted as unhelpful (e.g., Cramer, 1990; Lehman & Hemphill, 1990) especially when received from non-expert individuals (e.g., Lehman et al., 1986). In addition, behaviours typically seen as unhelpful were those that maximised or minimised the problem, were untimely, overprotecting, patronising, or pressuring (e.g., Dakof & Taylor, 1990; Lehman et al., 1986; Pearlin & McCall, 1990).

Also in sport, studies have studied the helpful and unhelpful behaviours of athlete's supportive network during high-pressure events such as the Olympics (Kristiansen & Roberts, 2010), times of injury or burnout (Udry et al., 1997) or more general during athletes' career (Hassell et al., 2010; Rees & Hardy, 2000; Rosenfeld et al., 1989). Although these studies have shown that athletes favour a wide range of support behaviours, again some support acts were viewed as more/less appropriate depending on who was the support provider. Whereas athletes negatively construed

informational support from those who they deemed unknowledgeable (i.e., parents, peers, teammates), they much appreciated informational support from those with expertise (coaches, Hassell et al., 2010; Reeves et al., 2010). In addition, athletes viewed emotional and esteem support as helpful from a wide range of support providers (i.e., coaches, teammates, parents, and peers) but they did mention to sometimes avoid seeking emotional support from coaches due to their lack of understanding or ability to deal with issues outside of sport (Hassell et al., 2010). Furthermore, one athlete reported that he did not want emotional support from his coach. Specifically, he did not want his coach to listen to his problems because of being afraid that he would be negatively evaluated (Rees & Hardy, 2000).

Self-reports

Despite the multi-dimensionality of enacted support, several studies have created a single global, aggregate score to study the effects of received support on outcomes of interest (e.g., Barrera et al., 1981; Norris & Kaniasty, 1996). When measured uni-dimensionally, studies have reported mixed findings with the receipt of support leading to increased distress and depressive symptoms (e.g., Cohen & Hoberman, 1983; Sandler & Barrera, 1984), being unrelated to depressive symptoms, perceived stress, self-efficacy, and cardiovascular reactivity (e.g., Cohen, McGowan, Fooskas, & Rose, 1984; Norris & Kaniasty, 1996; Piferi & Lawler, 2006; Reynolds & Perrin, 2004; Wethington & Kessler, 1986) or being positively related to feelings of self-worth and self-esteem (Goodwin, Costa, & Adonu, 2004; Krause, 1987).

Studies, which have considered the multi-dimensional character (e.g., Barry et al., 2009; Finch et al., 1997; Xu & Burlinson, 2004), have painted a rather different picture. These studies have predominantly documented positive effects of received

emotional and/or esteem support on outcomes including, psychological distress (e.g., Finch et al., 1997; Yang & Yeh, 2006), depressive symptoms (Barry et al., 2009), life satisfaction (Helgeson, 1993), recipients' self-efficacy, competence and well-being (Arora et al., 2007), and marital satisfaction or adjustment (e.g., Barry et al., 2009; Xu & Burleson, 2004). With the exception of Arora and colleagues (2007), studies examining the effects of received informational and tangible support have mainly observed null- or negative effects. The receipt of informational support has been linked with increased psychological distress (Finch et al., 1997; Helgeson, 1993), reduced life satisfaction (Finch et al., 1997), and has also been shown to be unrelated to feelings of anxiety, depression, and marital satisfaction (Barry et al., 2009; Xu & Burleson, 2004). Helgeson (1993) further revealed that those recipients who reported receiving a lot of informational support found this amount 'too much and unhelpful' whereas a lot of emotional support was not 'too much or unhelpful'. The receipt of tangible support has also mainly been unrelated or negatively related to outcomes such as anxiety, depressive symptoms, recipients' self-efficacy, competence, and marital adjustment (Arora et al., 2007; Barry et al., 2009; Xu & Burleson, 2004; Finch et al., 1997; Helgeson, 1993).

In the specific context of sport, a few studies have examined the effects of received support on outcomes of interest. Using an aggregate measure of support, Freeman and Rees (2008) showed that received support had a beneficial influence upon performance. When they focused on a combination of received emotional and esteem support, they found a positive relationship with self-confidence (Rees & Freeman, 2007). Rees and colleagues further demonstrated benefits for received emotional, esteem, informational, and tangible support on performance but when analysed together received esteem support was the only (main) predictor of

performance (Rees et al., 2007). Zourbanos and colleagues studied the effect of received coaches' support on athletes' self-talk. They found that the receipt of emotional support led to better anxiety control self-talk and less disengagement, and the receipt of informational support was linked to more instructional self-talk and less irrelevant self-talk. Still, the receipt of esteem support seemed most effective as it led to increased psych up and confidence talk, and less worry self-talk and fatigue self-talk (Zourbanos et al., 2011).

Daily diaries

Daily diary studies examining enacted support have either focused on a global assessment of support (Maisel & Gable, 2009), the assessment of one specific support type (Bolger et al., 2000), or on emotional support (listening and comforting) and practical support ('tangible acts and doing something concrete', Shrout et al., 2006). Initial studies revealed that the receipt of emotional support had a negative influence on feelings of anger, anxiety, and depression (Bolger et al., 2000; Shrout et al., 2006). More recent studies seem to suggest that receiving emotional support is not always detrimental but may actually benefit individuals' relationship closeness, cardiovascular reactivity, vigour, and anxiety (Belcher et al., 2011; Gleason et al., 2008; Shrout et al., 2010; Vella, Kamarck, & Shiffman, 2008). Only a few studies have examined the effects of practical support on outcomes of interest. These studies have primarily found that the receipt of practical support was unrelated to recipient's moods (Belcher et al., 2011; Shrout et al., 2006), although Shrout and colleagues (2010) observed links between practical support and increased vigour and anxiety. It should be noted that all these studies have reported the effects of providers' reported provision of support. To avoid repetition, these findings will only be discussed in the section 'Effectively Providing Support – Invisible Support' (p. 30).

Experimental paradigm

Various studies have examined how specific supportive messages influence recipient's outcomes in a controlled laboratory context. The vast majority of these studies experimentally manipulating support have examined the effects of support messages conveying *emotional support* (Gerin, Pieper, Levy, & Pickering, 1992; Gramer & Reitbauer, 2010) or a *combination of emotional and esteem support* (Christenfeld et al., 1997; Lepore, 1995). Researchers who examined the effects of these forms of support on physical health have often found positive outcomes with the provision of emotional/esteem support being associated with attenuated levels of cardiovascular reactivity (e.g., Christenfeld, et al., 1997; Gerin et al., 1992; Lepore, 1995; Lepore, Karen, & Evans, 1993) and lower cortisol levels (Thorsteinsson et al., 1998). In addition, several studies have shown that the provision of *emotional/esteem support* was beneficial for psychological outcomes such as self-reported anxiety (Hilmert, Kulik, & Christenfeld, 2002), better mood before and after a speech task (Kirschbaum, Klauer, Filipp, & Hellhamer, 1995), and perceived stress (Lepore, 1995). Besides these findings, studies have reported that provided emotional/esteem support reduced task irrelevant thoughts (Sarason & Sarason, 1986), psychological strain (Searle, Bright, & Bochner, 1999), was viewed as more helpful than no support (e.g., Glynn, Christenfeld, & Gerin, 1999; Tardy, 1994), increased perceived task performance (Searle, Bright, & Bochner, 2001), and enhanced actual performance on cognitive tasks (Sarason & Sarason, 1986; Tardy, 1992). Still, some studies have found no effects on cardiovascular reactivity (e.g., Glynn et al., 1999; Uno, Uchino, & Smith, 2002), performance on speech tasks (Christenfeld et al., 1997; Lepore, 1995) or negative effects on levels of distress (Bolger & Amarel, 2007), and cardiovascular reactivity (Hilmert et al., 2002).

Far fewer studies have examined the effects of provided *informational* and *tangible support* in controlled experiments. The reported results explain why this may be the case. Studies have mainly found no effects or negative effects with the provision of informational support resulting in higher levels of negative affect, lower self-evaluations, increased distress, reduced feelings of efficacy and heightened cardiovascular reactivity (Bolger & Amarel, 2007; Nadler et al., 1983; Suganuma & Ura, 2001; Uno, Uchino, & Smith, 2002). Furthermore, Searle and colleagues revealed that informational support did not affect task performance (Searle et al., 2001). When Deelstra and colleagues (2003) examined the effects of imposed tangible support on administrative workers' reactions during a planning task, they found that the support given caused a negative effect upon workers' cardiovascular reactivity, negative affect, and state self-esteem. Even when the workers received the imposed support when working on a problem they could not solve without getting help, the support given did not elicit beneficial reactions (Deelstra et al., 2003).

In the specific context of sport, research experimentally manipulating support is scarce. A recent study by Rees and Freeman (2010) revealed that a supportive message, which contained elements of emotional and esteem support helped novice golfers to perform better on a golf-putting task. Furthermore, those receiving support experienced less cognitive interference than those not receiving support. Cognitive interference did however not explain the effects of support on performance.

1.2.2.2.5. The Effects Explained

The overview in the previous section suggests that enacted support does indeed seem to have mixed effects. Before considering which factors influence the effectiveness of enacted support, it is important to highlight why supportive actions may be ineffective, or worse still, have negative effects.

1.2.2.2.5.1. The Costs Associated with Enacted Support

Researchers have argued that the enactment of support may entail costs and these costs may overshadow the potential benefits of enacted support. Intra-personally, supportive acts may signal to a recipient that he/she is unable to cope with a certain stressor or situation and therefore requires help. The support may then undermine recipient's perceptions of competence and self-efficacy (Bolger & Amarel, 2007; Fisher, Nadler, & Witcher-Alagna, 1982). Furthermore, supportive acts may come across as controlling and patronising, causing recipients to feel threatened in their sense of autonomy and freedom of choice, which in turn may elicit negative reactions (Bolger et al., 2000; Fisher et al., 1982; Hassell et al., 2010). Supportive actions may further unintentionally draw attention to the problem they are intended to solve (Dunkel-Schetter, Folkman, & Lazarus, 1987). Supportive acts may be insensitive, mismatched, inadequate and of poor quality (e.g., Dakof & Taylor, 1990; Goldsmith, 2004; La Gaipa, 1990; Lehman et al., 1986), and cause feelings of shame and embarrassment when provided in public (Rosenfeld et al., 1989; Taylor, Bandura, Ewart, Miller, & DeBusk, 1985). Furthermore, receiving aid in public may pose a greater threat to recipients when they realise that their distress and incompetence are available to others, thereby prompting concerns that these others may evaluate them negatively (Fisher et al., 1982).

Interpersonally, supportive exchanges may lead to deviation from the support provider in the form of reduced feelings of intimacy and liking for the support provider (Nadler et al., 1983). Finally, acts of support may result in feelings of indebtedness towards the support provider (Gleason et al., 2003; Hassell et al., 2010) increasing tension and dissatisfaction in the relationship.

1.2.2.2.5.2. Factors Influencing the Effectiveness of Enacted Support

To minimize the potential costs associated with enacted support (and) to increase the effectiveness of enacted support, it is important to consider a number of factors.

The Support Type

The overview suggests that some types of support are more beneficial (harmful) than others. That is, the reviewed studies provide an impressive array of beneficial effects for esteem support. Furthermore, emotional support is also often associated with positive outcomes. The usefulness of tangible support and particularly informational support seem questionable with their ineffectiveness and (sometimes) harmful effects on outcomes of interest. One of the reasons is that informational support and tangible support are typically viewed as less nurturing and more controlling which may make them more likely to threaten recipient's perceptions of competence, self-efficacy and autonomy than emotional and esteem support (Goldsmith, 2004; Trobst, 2000; Uchino, Carlisle, Birmingham, & Vaughn, 2011). Furthermore, the directness of informational and tangible support in comparison with the more indirect forms of emotional and esteem support may more explicitly communicate a recipient's inability to deal with specific problems/situations (cf. Finch et al., 1997). Thus, in order to provide effective support, it seems important to consider the multi-dimensional nature of support (e.g., Barry et al., 2009).

The Support Provider

Another important factor to consider is who the support provider is exchanging specific types of support. Several studies have shown that support recipients prefer to receive informational support from support providers with knowledge and expertise in dealing with certain situations (Cutrona & Suhr, 1992; Hassell et al., 2010). For individuals dealing with a chronic illness, this may be their physician (Dakof & Taylor,

1990) while athletes mainly ascribe expertise to their coaches (Hassell et al., 2010; Rees & Hardy, 2000). Cutrona and Suhr (1992) further showed that the satisfaction individuals felt with informational support depended on the amount of control they believed the support provider had over the stressor/situations. In addition, when support recipients believed that they had the control and expertise to deal with the situation, they were less likely to appreciate and accept the advice from the support provider (Cutrona & Suhr, 1992). These findings suggest that the effectiveness of informational support may depend on the level of expertise of the provider (in relation to the expertise of the recipient). Support recipients seem to favour emotional support from intimate others such as close friends and family (e.g., Rees & Hardy, 2000; Rosenfeld et al., 1989). This is supported by some empirical evidence suggesting that close others (i.e., friends) providing emotional support had stronger beneficial effects on individuals response to stress compared to non-close others (i.e., strangers)(Christenfeld et al., 1997). Support recipients seem to appreciate esteem support from a wide range of support providers (e.g., Hassell et al., 2010), and beneficial effects upon outcomes have been observed with a wide range of support providers (Finch et al., 1997; Rees et al., 2007). Occasionally (male) athletes have reported that they felt pressured or embarrassed after receiving esteem support from their coach (Hassell et al., 2010; Rosenfeld et al., 1989). Taken together, these findings suggest that the support provider may influence the extent to which specific support types come with costs and are effective.

The Matter for which Support is Enacted

Another important factor that may influence the possibility of costs is the extent to which the given help is a response to a recipient's inability to deal with problems/situations that reflect his/her inferiority on an ego-relevant dimension. For

example, when an experienced football player is told how to kick a ball (ego relevant dimension) by a teammate then this may be aversive for the recipient because social comparison processes will likely pose a threat to his/her self-esteem. When the advice reflects inferiority on a non-ego relevant dimension (i.e., dealing with the heat when playing in warm temperatures), the positive elements in receiving this aid (i.e., someone's concern, the action facilitating tips) may be more salient and meaningful (Fisher et al., 1982).

The Timing of Support

Researchers have further argued the need to consider whether recipients have made the decision to ask for support (Bolger & Amarel, 2007; Uchino et al., 2011). When individuals have chosen to ask for support, and providers respond to this request with aid that matches the need of the recipient, the support is likely to come without costs and be effective. However, when the support is given in the absence of a recipient's request, threatened feelings of autonomy and efficacy may be particularly salient. This is particularly relevant in sporting contexts because a sport setting may oftentimes elicit support transactions between athletes and their support providers without athletes having asked for support. Though researchers have repeatedly recommended athletes to seek support (e.g., Connaughton et al., 2008), Pensgaard and Roberts (2003) indicated that athletes feel that asking for help might be interpreted as a sign of weakness and incompetence and therefore they avoid doing so. Furthermore, training or medical staff may frequently give athletes guidance or encouragement to prevent, maintain or maximise their abilities without athletes asking them for such support (cf. Rees & Freeman, 2012). One only has to think of a coach calling a time-out during a match, or a teammate trying to support a player who has just missed an excellent opportunity to score a goal. Thus, in a sport

context, support exchanges may often take place at times when there is a greater possibility that they may carry costs.

Summary

Altogether, to (minimise the costs in order to) ensure the effectiveness of enacted support, it seems vital to consider the type of support, the expertise of provider and recipient, the relationship of the provider with the recipient, the stressor/situation for which support is given, and the timing of support exchanges. What happens if support providers do not/cannot consider all these factors? What should providers do, for example, when they (i.e., coaches, teammates) want to give support knowing that an athlete has not asked for it? What if support providers want to give athletes support on an ego-relevant dimension, which may quite often occur within a sporting context? Finally, should non-expert providers avoid giving informational support because it may carry risks?

1.2.2.2.2.6. Effectively Providing Support – Invisible Support

Definition

Researchers have proposed that there is a skilful way of providing support that may avoid the unintended risks of support and maximise its potential gains. That is, Bolger and colleagues argued that the most beneficial support acts are those that are accomplished without being visible to the recipient, so called invisible support (Bolger et al., 2000). Bolger and co-workers (2000) distinguished two forms of invisible support.

First, they pointed out that supportive acts can be invisible when they occur outside of the recipient's awareness. That is, a provider could do something for a recipient (tangible support) but he/she never finds out that the provider has actually done this for him/her. An example is that a team manager decides to take care of

unexpected travel issues which would have stressed out an athlete had he/she known them or had to deal with them.

Second, they noted that invisible support could involve a provider purposely communicating supportive acts in such a skilful manner that, although a recipient is aware of the acts, he/she does not code the acts as support. Because the supportive acts are not made salient, recipients are less likely to experience doubts about their competence in the problem domain, less likely to feel threatened in their autonomy, and less likely to perceive that their distress and incompetence are publicly visible (Bolger et al., 2000). In other words, such invisible support may minimise the costs often accompanied with provided support and, in turn, enhance its effectiveness. An example of invisibly providing emotional support may involve acknowledging the normatively distressing nature of the recipient's situation and highlighting that others in a similar position have been able to cope with the situation. Invisibly provided informational support may, for example, occur when a coach discusses a problem with an athlete and the coach decides to tell a story of his/her own experience with a similar situation as a way of indirectly giving advice or offering a perspective. The athlete may pick up the information from the story but not interpret it as support. This may help to minimise the potential threat to the athlete's sense of autonomy and efficacy when receiving the advice.

Measurement

Researchers have adopted different approaches to examine the influence of support visibility on the effects of enacted support. Before explaining these different approaches, it is crucial to remember that invisible support occurs when a provider gives support (reports giving support) but a recipient does not recognize it as such and therefore does not report receiving support. In order to capture this

phenomenon, it is thus vital that researchers assess both the provision of support and the receipt of support. One way to do so is to obtain self-reports from providers and recipients regarding the support exchanged during a specific time-frame (Bolger et al., 2000; Howland & Simpson, 2010). When these support exchanges are observable, objective coders can further evaluate whether and how the support was provided in a visible/invisible manner (Howland & Simpson, 2010). Another option is to manipulate the visibility of provided support in an experimental setting. A manipulation check is then required to determine whether support recipients believe that they received support. When recipients do not report receiving support after invisible support has been provided then the invisible support manipulation has been successful (Bolger & Amarel, 2007). The methods discussed suggest that researchers have different options to determine whether/how support has been provided. In order to determine whether the given support is visible (received) or invisible (not received), it is however crucial to collect the recipients' accounts of support.

Effects

Bolger and colleagues (2000) studied support exchanges between couples of which one member was preparing for a major exam. Over a 5-week period, they collected daily diaries of the examinee's receipt of emotional support and partner's provision of emotional support as well as examinee's daily levels of distress. Their results showed that examinees' distress (e.g., depression and anxiety) levels benefited most on days when partners provided support but examinees did not report receiving support (invisible support days). Using the same data but at different time points (the evening of the same day rather than the next morning), Shrout and co-workers reported similar effects for depressive symptoms but, no such effects for

anxiety, anger, fatigue, and vigour (Shrout et al., 2006). A more recent daily diary study by Shrout and colleagues (2010) studying the same situation with a much larger sample size did not find any benefits for invisibly provided emotional support. Instead, the provision of emotional support was associated with negative outcomes including increased anxiety, anger, and fatigue. It was actually the receipt of emotional support, which was, except for increased anxiety, associated with positive outcomes, namely, increased vigour and reduced anger (Shrout et al., 2010). Besides these daily diary studies, experimental studies examining the influence of support visibility on emotional and esteem support have demonstrated similar findings. There were some benefits (reduced distress, and anxiety) to exchanging these forms of support in an invisible manner but the effects were rather small (Bolger & Amarel, 2007; Howland & Simpson, 2010). In addition, there was no sign that invisible emotional support increased self-efficacy (Howland & Simpson, 2010).

Regarding informational and tangible support, Shrout and colleagues (2006) revealed that invisibly providing tangible (practical) support benefited recipients' vigour and fatigue levels whilst visible tangible support did not. Furthermore, Shrout and colleagues (2010) reported that invisible tangible support was associated with lower depressive symptoms. The strongest evidence for increased effectiveness of invisibly providing informational support comes from the experimental work by Bolger and Amarel (2007). They revealed that informational support given without recipients' awareness was the most effective in lowering emotional reactivity to a significant stressor. That is, invisible advice given to students prior to a speech task led to less distress than no support whereas visible advice led to more distress. Their findings further indicated that invisible informational support was more effective because it avoided undermined feelings of efficacy. Howland and Simpson (2010) obtained

similar results in a study observing supportive transactions between couples discussing a problem experienced by one individual. Support recipients whose partners communicated more invisible advice and concrete help but who reported receiving less, experienced the largest increase in self-efficacy and declines in anxiety and anger pre- to post-interaction.

These findings suggest that the phenomenon 'invisible support' may be highly effective for informational and tangible support. Furthermore, the results provide some evidence that invisibly providing emotional and esteem support may increase their effectiveness though these findings are less clear-cut. However, for these types of support, it may be less relevant given that they have predominantly been associated with beneficial outcomes (e.g., Rees et al., 2007; Rees & Freeman, 2010).

If invisibly providing support can ensure that support is less likely to come with costs and more likely to have beneficial effects in performance contexts (Bolger et al., 2000; Bolger & Amarel, 2007), why are there no studies which have examined whether support visibility influences the effectiveness of provided support on actual performance?

The role of support visibility in a sport context

Just as in other domains, also in a sport context, supportive interactions may run the risk of carrying costs. However, the possibility of costs may be considerably higher in this context given that supportive acts may frequently involve help that is a response to an athlete's inability to deal with an ego-relevant situation or stressor (i.e., upcoming match, element of performance). Furthermore, as Rees and Freeman noted (2012), in a sport context, supportive acts may often take place without being requested by an athlete, thereby increasing the likelihood of undermined feelings of

efficacy and autonomy (Bolger & Amarel, 2007). Thus, in a sport context, invisible support could play a very important role in avoiding the costs of provided support to maximise its potential gains on outcomes including the so important but little studied outcome 'performance'.

1.3. Aims, Theoretical, and Practical Contributions of the Thesis.

The main objective of this thesis was to examine the influence of support type and support visibility on the effects of enacted social support. The series of studies aimed to: (1) examine the influence of support type and support visibility on the effects of enacted social support on performance as well as a number of key psychological and behavioural variables; and (2) to determine through which underlying mechanisms support type and support visibility influenced the effects of enacted social support on performance.

Study 1 looked at support exchanges in the naturalistic context of sportspeople preparing for an upcoming competition. In this field study, separate self-reports of recipients (athletes) and providers (their key support provider) were obtained to examine whether support type and support visibility influenced the effects of enacted social support on athletes' psychological states. This study allowed for the examination of support exchanges between dyadic relationships in their natural context with 'real' stressors and problems (Reis & Collins, 2000). An issue of the study was that by relying on self-reports from providers and recipients to assess support exchanges, it was not possible to verify whether the support behaviours they reported having provided/received actually happened. In addition, several other factors (timing of support acts, provider characteristics) could have influenced the effectiveness of the support transactions. To limit and control the influence of

confounding variables as well as to systematically manipulate the support type and support visibility of actual support behaviours, the remaining three studies of this thesis employed an experimental paradigm.

Study 2 examined how the provision of esteem support and informational support delivered in a visible or invisible manner influenced performance of novice golfers on a golf-putting task. The experiment further tested the potential mediating role of self-efficacy and the emotions assessed in the field study. Study 3 examined how the provision of esteem support and informational support delivered in a visible or invisible manner by an expert coach influenced kicking performance of skilled football players. Given the contrasting findings of this experiment compared to the first experiment, Study 4 used a similar design as Study 3 to replicate, extend, and clarify the findings of Study 3.

The reason to focus on esteem and informational support in these experimental studies is that these types of support seem to be the extremes of the spectrum of effectiveness. Esteem support with its function to boost efficacy has often been associated with beneficial outcomes. In contrast, informational support has often been ineffective or harmful due to its risk of undermining self-efficacy (e.g., Bolger & Amarel, 2007; Rees & Freeman, 2012).

The thesis will contribute to theory and scientific knowledge in the social support literature by furthering the understanding of whether and how support type and support visibility influence the effects of enacted social support upon performance and performance related variables. It will seek out whether the invisible provision of specific support acts can improve their effectiveness and in particular, whether invisibility can improve the often observed ineffectiveness of informational support (e.g., Bolger & Amarel, 2007; Howland & Simpson, 2010). The applied

contribution of this thesis is that if invisibly providing support does enhance its effectiveness, this would have important implications for support providers (e.g., coach, teammates) working with athletes. At present, there is a dearth of studies examining support interventions, and interventions have thus far had only limited effectiveness in enhancing athletes' performance (Freeman, Rees, & Hardy, 2009). If alterations in the exchange of supportive acts as subtle and smooth as changing their visibility will enhance the effectiveness of support acts, then this would give support providers an easy adoptable method to maximise the benefits of provided support on athletes psychological states, behaviours, and actual performance. This might be particularly helpful in situations when athletes have not asked for support or situations that involve providing help on ego-relevant problems.

1.4. Structure of the Thesis

This thesis comprises five chapters. Chapter 1 is a general introduction. The next three chapters present the results of four studies. Chapter 5 is a general discussion. Chapter 1 draws a general picture of what social support constitutes, discusses the effectiveness of the different constructs of social support, and provides a rationale for why this thesis examined whether support type and support visibility influence the effectiveness of enacted support. Chapter 2 examines the influence of support type and support visibility on the effects of natural support exchanges between athletes and their key support providers occurring in the week prior to an athlete's match. It reports the effects of the exchanged support between athletes and key support providers on athletes' emotional states and self-confidence. Chapter 3 uses an experimental paradigm to better examine how support type and support visibility influence enacted social support. It outlines how the performance of novices

on a golf-putting task is influenced by the provision of esteem support or informational support in a visible or invisible manner by a fellow novice golfer. It further discusses the role of self-efficacy and emotions. Chapter 4 also uses experimental procedures in two separate studies with samples of skilled football players performing a football aiming task. In these studies, esteem support and informational support are given in a visible or invisible manner by a coach with expertise in penalty taking. The first study examines the effects of the support provided on performance and looks at the role of players' self-efficacy in explaining the support-performance relationship. The second of these studies is a replication and extension of the first. It examines the effects of the support provided on performance and addresses the role of players' self-confidence, attentional focus, and preparation times in explaining the support-performance relationship. Chapter six is an overall discussion of the thesis. It draws together the key findings of the four studies, highlights the theoretical and applied implications, discusses the strengths and weaknesses of the studies, outlines areas for future research, and provides a conclusion of the thesis.

Chapter 2: Do different types of enacted support benefit athletes prior to a competition? The effects of provided support and received support.

Introduction

Athletes have consistently cited social support as an important resource for their success (Connaughton, Wadey, Hanton, & Jones, 2008; Fletcher & Sarkar, 2012; Kristiansen, Murphy, & Roberts, 2012; Kristiansen & Roberts, 2010), and several field studies have observed positive links between athletes' reported receipt of support and their self-confidence and performance (Freeman & Rees, 2008; Rees & Freeman, 2007; Rees, Hardy, & Freeman, 2007). Receiving support is, however, not always noted as positive or perceived to be helpful (e.g., Hassell, Sabiston, & Bloom, 2010; Kristiansen & Roberts, 2010). Furthermore, when in a support intervention different types of support were provided to golfers to enhance their performance, and the golfers reported receiving these support types as well as perceiving them as helpful, only the performance of one golfer actually improved (Freeman, Rees, & Hardy, 2009). In other performance settings, researchers have frequently observed seemingly equivocal findings with the receipt of support being positively, negatively or unrelated to psychological and affective states (e.g., Deelstra et al., 2003; Shrout, Herman, & Bolger, 2006; Shrout et al., 2010). Thus, even though there are situations in which receiving support seems to help individuals, there also seem to be situations in which receiving support seems to be detrimental.

Researchers have argued that rather than being helpful, well-intentioned support acts may in fact undermine recipients' perceptions of competence, self-efficacy, and threaten their sense of autonomy (Bolger & Amarel, 2007; Bolger, Zuckerman, & Kessler, 2000). Bolger and colleagues therefore suggested that when the provision of support is not noted as having been received, it might help to avoid these costs and be more effective (Bolger et al., 2000). In the present study, we examined whether

the reported provision and receipt of support had differential effects on athletes' emotional and psychological states prior to competition.

Researchers have used the term *enacted support* to refer to the specific supportive actions of individuals to help one another (e.g., Goldsmith, 2004; Lakey, 2010). When enacted, these supportive actions can be provided by a provider and/or received by a recipient (Belcher et al., 2011). Whether provided and/or received, the support exchanges between these individuals may involve different types of support (Cutrona & Russell, 1990), and each support type may exert unique effects on outcomes of interest (Cohen, 1988).

Researchers have typically concentrated on measuring support recipients' accounts of their support receipt using self-reports, and have linked this received support to outcomes of interest. When doing so, researchers have primarily found that the receipt of emotional and esteem support are positively related to outcomes, including lowered anxiety and distress, increased life satisfaction and vigour (e.g., Barry, Bunde, Brock, & Lawrence, 2009; Finch et al., 1997; Rees, et al., 2007; Shrout et al., 2010). In contrast, the receipt of informational and (to a lesser extent) tangible support are either unrelated or negatively related to these outcomes (e.g., Barry et al., 2009; Finch et al., 1997; Dehle, Larsen, & Landers, 2001). These findings suggest unique effects for different support types as well as pointing out that the receipt of informational and tangible support may sometimes be ineffective or even harmful.

Coriell and Cohen (1995) noted that solely focusing on recipients' reports may not provide a complete picture of the support process. They argued that recipients' received support only corresponds with the occurrence of support exchanges when support providers agree with support recipients that support exchanges have

occurred—‘support concordance’ (Coriell & Cohen, 1995, p. 289). There is, however, evidence, which suggests that providers and recipients frequently disagree on the support behaviours exchanged (e.g., Bolger et al., 2000; Coriell & Cohen, 1995; Lichtenthal, Cruess, Schuchter, & Ming, 2003). As such, obtaining providers’ and recipients’ accounts of the support exchanged may better capture the effects of enacted support.

In recent years, studies have examined the effects of enacted support assessing both the reported provision and receipt of support (e.g. Howland & Simpson, 2010; Shrout et al., 2010). Several studies have demonstrated that when informational and tangible support were provided in such a way that recipients remained unaware of it — so called invisible support (Bolger et al., 2000, p. 954) — costs were avoided, and both types of support had a beneficial influence upon recipients’ psychological states (Howland & Simpson, 2010; Shrout et al., 2006; Shrout et al., 2010). Though some studies have observed similar beneficial effects for invisibly provided emotional support (e.g., Bolger et al., 2000; Howland & Simpson, 2010), other studies revealed that provided emotional support was more effective when (visible and) received by recipients (Shrout et al., 2010; Vilchinsky et al., 2011). These findings suggest that invisibly provided support might be particularly effective for those support types that would be associated with costs when recipients receive them. These findings further highlight that provided and received support may thus have differential effects on outcomes of interest.

In line with the social support literature in social psychology, field studies in sport also suggest that receiving esteem support and/or emotional support may be more effective than informational and tangible support (e.g., Rees & Freeman, 2007; Rees et al., 2007). These studies have, however, only focused on recipients’ reported

receipt of support. It is unknown whether there may be unique effects of provided support on recipients' outcomes when athletes disagree with their support providers on the support exchanged (e.g., Bolger et al., 2000). Therefore, deriving conclusions from these field studies about the effects of enacted support in a sport context may be somewhat premature.

The aim of the present study was two-fold. First, we wanted to determine the extent to which athletes and their key support providers agreed on the support exchanges occurring between them in the week leading up to a competition. Second, we wanted to examine how the exchanges of different support types between these individuals influenced athletes' emotional and psychological states prior to the competition. Assessing both recipients' and providers' accounts of support exchanges allowed us to examine whether provided and received support would exert unique and differential effects on the outcomes of interest. We chose to focus on athletes' self-confidence and a number of discrete emotions which have been shown to be important for performance including, anxiety, happiness and excitement (e.g., Druckman, 2004; Totterdell, 2000; Vast, Young, & Thomas, 2010).

For each outcome, we tested the effect of athletes' reported receipt of support types, their key support providers' reported provision of support types, and the interaction between these two predictors. Based upon previous research (Howland & Simpson, 2010; Rees & Freeman, 2007; Shrout et al., 2006; Shrout et al., 2010), we expected that athletes would benefit from the receipt of emotional and esteem support but not from the receipt of informational and tangible support. However, we also predicted that athletes might benefit from informational and tangible support when they were unaware that these support types had been provided.

Method

Participants

The participants were 148 athletes (71 males, 77 females; $M_{age} = 24.14$ years, $SD = 7.18$) and their key support providers (68 males, 80 females; $M_{age} = 30.71$ years, $SD = 12.93$). Athletes competed in team ($n = 146$) and individual sports ($n = 2$) and their competitive standard varied from international ($n = 3$), to national ($n = 11$), county/regional ($n = 17$), and university/club level ($n = 117$). Athletes chose various individuals as their key support provider including: teammate ($n = 61$), family member ($n = 30$), coach ($n = 25$), partner ($n = 18$), and peer ($n = 14$).

Procedures

The study was approved by an institutional ethics review committee, and the participants provided informed consent. A day before the competition, athletes indicated the importance of the event (0 = *not at all* to 4 = *extremely*), and completed measures of emotions and self-confidence in relation to the upcoming competition or match. They further reported how frequently they had received support from their self-identified key support provider in the past week. On the same day, their key support provider reported how frequently they had provided support to the athlete in the past week.

Measures

Received support. In social psychology research, the Inventory of Socially Supportive Behaviors (ISSB, Barrera, Sandler, & Ramsey, 1981) is a widely used measure to assess the frequency of supportive behaviours individuals have received during a specific time frame (month, e.g., Finch et al., 1997). Researchers have, however, argued that social support measures should be situational-specific, with items that are relevant to the social support experiences of sports people (Bianco & Eklund, 2001). Some sport-specific received support questionnaires exist but these

have generally focused on participants' global perceptions of received support using response options such as 'a lot' (e.g., Rees & Freeman, 2007; Zourbanos et al., 2011) while asking participants to recall the frequency of specific support behaviours may more accurately reflect the actual support received (Barrera, 1986; Haber, Cohen, Lucas, & Baltes, 2007). An additional issue with received support measures is that these measures typically measure support received from multiple sources in a person's social network (Barrera et al., 1981; Rees et al., 2007). Such aggregation of different sources may limit the ability to determine how different types of support function when given by specific support providers (Barry et al., 2009).

Therefore, we constructed a 16-item measure specifically designed for this study to assess support received from a particular source (key support provider). Items were derived from statements made by high-level sportspeople about their social support experiences (Rees & Hardy, 2000) and previously designed received support measures including the ISSB (Barrera et al., 1981) and measures developed specifically for their use in sporting contexts (Rees & Freeman, 2008; Rees et al., 2007). Items were chosen for their relevance for athletes competing across a range of sports and competitive levels and comprised the four types of support identified by Rees and Hardy (2000): esteem, emotional, informational, and tangible support (4 items per dimension). Examples of items were: "take your mind of things" (emotional), "emphasise your abilities" (esteem), "offer you ideas and suggest actions" (informational), and "arrange something for you" (tangible) (see Table 1 for the full list of items). The items followed a generic stem that asked: "In the last week, how often did your key support provider . . . ?", with participants responding on a five-point frequency scale: not at all, once, twice, three times, or four or more times (coded 0-4 for analysis). A confirmatory factor analysis (Jöreskog & Sörbom, 1993) of

the full four-factor model revealed a reasonably good fit. The Satorra-Bentler chi-square statistic ($SB \chi^2$) to degrees of freedom ratio was less than 2, the RMSEA and SRMR were close to respectively .06 and .08, and the NNFI and CFI were both close to .95 (e.g., Hu & Bentler, 1999; see Table 1). The Satorra-Bentler Chi-square value was reported because deviations from normality were identified. The completely standardised factor loadings, measurement error variances, and correlations between factors are displayed in table 1. The factor loadings were .55-.86 ($ps < .05$). The correlations between the four dimensions were .44-.75 ($ps < .05$). Shared variances for the four dimensions were .44-.62, composite reliabilities were .75-.87, and coefficient alpha reliabilities were .75-.87.

Provided support. Providers responded to the same 16 items and response scale used to assess the support received except for that items were slightly modified, for instance, 'boost your confidence' became 'boost his/her confidence'. Furthermore, the response stem preceding each item was changed into: "In the last week, how often did you . . . ?". Again, a confirmatory factor analysis (Jöreskog & Sörbom, 1993) of the full four-factor model revealed a reasonably good fit. The Satorra-Bentler chi-square statistic ($SB \chi^2$) to degrees of freedom ratio was less than 2, the RMSEA and SRMR were close to respectively .06 and .08, and the NNFI and CFI were both close .95 (e.g., Hu & Bentler, 1999; see Table 2). The completely standardised factor loadings, measurement error variances, and correlations between factors are displayed in table 2. The factor loadings were .47-.81 ($ps < .05$). The correlations between the four dimensions were .35-.82 ($ps < .05$). Shared variances for the four dimensions were .42-.61, composite reliabilities were .74-.86, and coefficient alpha reliabilities were .73-.86.

Table 1. Completely Standardised Solution and Fit Measures for the Full-Factor Model of Recipients.

Items	MEV	Factor			
		Emo	Est	Inf	Tan
take your mind of things	.70	.55			
cheer you up	.40	.77			
show concern for you	.47	.73			
make you feel that they would always be there for you	.39	.78			
instil you with confidence	.42		.76		
emphasise your abilities	.46		.73		
reinforce the positives	.37		.79		
boost your confidence	.26		.86		
suggest a way you might do something	.35			.81	
offer you ideas and suggest actions	.50			.70	
give you advice about what to do	.33			.82	
give you constructive criticism	.45			.74	
loan or give you something	.68				.57
help you with tasks	.51				.70
arrange something for you	.62				.61
help you sort out practical matters	.44				.75

Factor	ρ_c	ρ_{vc}	A	Factor – factor correlations			
Emotional support (Emo)	.80	.51	.80				
Esteem support (Est)	.87	.62	.87	.75**			
Informational support (Inf)	.85	.59	.85	.44**	.76**		
Tangible support (Tan)	.75	.44	.75	.60**	.61**	.73**	

	SB χ^2	Df	p (SB χ^2)	RMSEA	RMSEA (p)	SRMR	NNFI	CFI
Full four-factor recipient model	122.88	98	.05	.04	.72	.06	.94	.95

Notes. $N = 148$. MEV = Measurement Error Variances. ρ_c = composite reliability. ρ_{vc} = shared variance. α = coefficient alpha. SB χ^2 = Satorra Bentler χ^2 . RMSEA = root mean square error of approximation. SRMR = standardised root mean square residual. CFI = comparative fit index. NNFI = non-normed fit index.

** denotes correlation significant at .01 level (2-tailed).

Table 2. Completely Standardised Solution and Fit Measures for the Full-Factor Model of Providers.

Items	MEV	Factor			
		Emo	Est	Inf	Tan
take his/her mind of things	.64	.60			
cheer him/her up	.41	.77			
show concern for him/her	.41	.77			
make him/her feel that you would always be there for him/her	.40	.77			
instil him/her with confidence	.36		.80		
emphasise his/her abilities	.41		.77		
reinforce the positives	.42		.76		
boost his/her confidence	.37		.80		
suggest a way he/she might do something	.34			.81	
offer him/her ideas and suggest actions	.54			.68	
give him/her advice about what to do	.51			.70	
give him/her constructive criticism	.53			.68	
loan or give him/her something	.78				.47
help him/her with tasks	.64				.60
arrange something for him/her	.46				.73
help him/her sort out practical matters	.42				.76

Factor	ρ_c	ρ_{vc}	α	Factor – factor correlations			
Emotional support (Emo)	.82	.53	.82				
Esteem support (Est)	.86	.61	.86	.82**			
Informational support (Inf)	.81	.52	.81	.35**	.61**		
Tangible support (Tan)	.74	.42	.73	.59**	.59**	.59**	

	SB χ^2	Df	p (SB χ^2)	RMSEA	RMSEA (p)	SRMR	NNFI	CFI
Full four-factor provider model	134.25	98	.01	.05	.48	.06	.93	.94

Notes. $N = 148$. MEV = Measurement Error Variances. ρ_c = composite reliability. ρ_{vc} = shared variance. α = coefficient alpha. SB χ^2 = Satorra Bentler χ^2 . RMSEA = root mean square error of approximation. SRMR = standardised root mean square residual. CFI = comparative fit index. NNFI = non-normed fit index.

** denotes correlation significant at .01 level (2-tailed).

Emotions. We used the Sport Emotion Questionnaire (SEQ, Jones, Lane, Bray, Uphill, & Catlin, 2005) to assess athletes' emotions experienced in relation to the upcoming competition or match. The SEQ is a sports-specific measure with 22 items designed to assess five discrete emotions: anxiety, dejection, anger, excitement, and happiness. The emotions anger and dejection were highly positively skewed and leptokurtic (anger, Zskewness = 13.30, Zkurtosis = 17.44; dejection, Zskewness = 12.72; Zkurtosis = 16.19) and therefore not used for further analyses. Participants responded on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*extremely*) to items about "how they feel right now, at this moment, in relation to the upcoming competition or match". Research has demonstrated good validity and reliability for the SEQ and has shown its utility in sport (Allen, Jones, & Sheffield, 2009; Vast et al., 2010). In this study, Cronbach's alpha internal reliability coefficients for the three emotions were: anxiety, $\alpha = .93$; excitement, $\alpha = .84$; and happiness, $\alpha = .86$.

Self-confidence. Self-confidence was assessed using the scale from the revised version of the Competitive State Anxiety Inventory-2 (CSAI-2R) (Cox, Martens, & Russell, 2003). The self-confidence scale in the CSAI-2R has five items, and asks participants to indicate on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*very much so*) how confident they feel right now about an upcoming competition. The Cronbach's alpha internal reliability coefficient for the scale in the present study was $\alpha = .87$.

Data analysis

Correlations between key support providers' and athletes' accounts of support were assessed to determine the level of agreement between these reports of support (e.g., Cohen, Lakey, Tiell, & Neely, 2005; Franks & Stephens, 1996). To examine how enacted support influenced athletes' emotions and self-confidence, we used moderated hierarchical regression analyses (Baron & Kenny, 1986; Jaccard, Turrisi, & Wan, 1990). Following Chelladurai (2007), we used a two-step process to test the different regression models. Received and provided support were entered initially, followed by the product term (provided support * received support). The significance of increments in explained variance in the dependent variable over and above the variance accounted for by those variables already entered into the equation, as well as the sign of the regression coefficients, was assessed at each step. In all regression models, the independent variables were first standardised before the product term was created (Jaccard et al., 1990). Thereafter, the unstandardised solution was examined (statistical significance at $p < .05$). To explore the nature of any significant product terms (interactions), we followed the recommendation of Aiken and West (1991), by plotting the effects and performing simple slopes analyses.

Results

Means, standard deviations, and intercorrelations of all variables are displayed in Table 3. The results suggest that athletes rated the match or competition as 'quite a bit' to 'extremely' important ($Mean = 3.13$; $SD = .97$). The results revealed high correlations between athletes and their self-identified key support provider in relation to the different support types exchanged ($r_s = .52-.63$, $p_s < .01$). The correlations between the four dimensions were: $r_s = .30-.69$ ($p_s < .01$) for recipients and $r_s = .36-.66$ ($p_s < .01$) for providers.

Table 3. Means, Standard Deviations, and Correlations between Variables.

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Emotional provided	2.02	1.09											
2. Emotional receipt	2.01	1.13	.63**										
3. Esteem provided	2.22	1.00	.69**	.49**									
4. Esteem receipt	2.10	1.06	.37**	.62**	.59**								
5. Informational provided	1.56	.99	.30**	.23**	.52**	.36**							
6. Informational receipt	1.50	1.09	.14	.36**	.31**	.66**	.52**						
7. Tangible provided	1.27	.94	.47**	.30**	.47**	.34**	.48**	.34**					
8. Tangible receipt	1.23	.94	.34**	.50**	.26**	.49**	.34**	.57**	.58**				
9. Anxiety	1.63	1.06	.14	.15	.18*	.25**	.16	.14	-.08	.05			
10. Happiness	1.90	.90	.17*	.33**	.29**	.38**	.27**	.33**	.28**	.38**	.02		
11. Excitement	2.54	.91	.13	.24**	.25**	.34**	.25**	.28**	.13	.18*	.27**	.64**	
12. Self-confidence	2.09	.60	.07	.22**	.22**	.24**	.30**	.29**	.14	.28**	-.12	.29**	.38**

Note. $n = 148$.

* denotes correlation significant at .05 level (2-tailed)

** denotes correlation significant at .01 level (2-tailed)

Anxiety

There was a significant main effect for esteem support on anxiety ($R^2 = .06$, $p = .01$). This was primarily attributable to its receipt ($b = .23$, $p = .03$) but not its provision ($b = .06$, $p = .58$) with higher levels of received esteem support being related to higher levels of anxiety (see Table 4). There were no significant main effects for emotional, informational and tangible support on anxiety (R^2 s = .00-.03, b s = .03-.12, $ps > .05$) and no significant interactions (ΔR^2 s = .00-.01, b s = -.10 - .04, $ps = .26$ -.79).

Table 4. Moderated Hierarchical Regression Analyses for Anxiety: Effects of emotional, esteem, informational, and tangible support.

Dependent Variable	Step	Independent Variables	ΔR^2 ^a	$p(F)$ ^b	b^c	$p(t)$ ^d
Anxiety	1	Emotional Support Provided	.03	.16	.09	.45
		Emotional Support Receipt			.10	.39
	2	Product	.01	.26	-.10	.26
Anxiety	1	Esteem Support Provided	.06	.01	.06	.58
		Esteem Support Receipt			.23	.03
	2	Product	.00	.78	.02	.78
Anxiety	1	Informational Support Provided	.03	.11	.12	.24
		Informational Support Receipt			.09	.40
	2	Product	.00	.63	.04	.63
Anxiety	1	Tangible Support Provided	.00	.79	.03	.78
		Tangible Support Receipt			.04	.74
	2	Product	.00	.79	.03	.79

Notes. $n = 148$. All variables standardised except for interaction terms. Interactions formed from the two standardised variables. ^aStepwise change in R^2 . ^bProbability of F for ΔR^2 . ^cUnstandardised regression coefficient in final equation. ^dProbability of t for b .

Happiness

There were significant main effects for emotional, esteem, informational, and tangible support on happiness (R^2 s = .11-.16, $ps < .01$). For each type of support, these effects were primarily attributable to their receipt ($bs = .23$ -.32, $ps = .00$ -.01) and not their provision ($bs = -.05$ -.15, $ps = .08$ -.56), with the receipt of each support type positively predicting happiness (see Table 5). There was a significant interaction for emotional support ($\Delta R^2 = .03$, $b = -.16$, $p = .03$) but there were no significant interactions for esteem, informational, and tangible support (ΔR^2 s = .00-.03, $bs = -.16$ - .00, $ps = .12$ -.97). The interaction effect is displayed in Figure 1. Simple slopes analyses revealed that the relationship between received emotional support and happiness was significantly different from zero at low levels ($b = .49$, $t = 4.28$, $p < .001$) of provided emotional support but not at high levels ($b = .16$, $t = 1.40$, $p = .16$). Specifically, the relationship between received emotional support and happiness differed significantly from zero at levels of provided emotional support less than .73 standard deviations above the mean. These analyses indicate that the interaction was not consistent with an invisibility explanation: the relationship between received emotional support and happiness was stronger when providers reported providing low to moderate levels of emotional support than when they provided high levels of emotional support. Furthermore, levels of happiness were particularly low with low levels of received emotional support, suggesting a particularly detrimental impact of both being isolated from and reporting a lack of emotional support.

Table 5. Moderated Hierarchical Regression Analyses for Happiness: Effects of emotional, esteem, informational, and tangible support.

Dependent Variable	Step	Independent Variables	ΔR^2 ^a	$p(F)$ ^b	b^c	$p(t)$ ^d
Happiness	1	Emotional Support Provided Emotional Support Receipt	.11	.00	-.05 .32	.56 .00
	2	Product	.03	.03	-.16	.03
Happiness	1	Esteem Support Provided Esteem Support Receipt	.15	.00	.09 .27	.30 .00
	2	Product	.01	.12	-.10	.12
Happiness	1	Informational Support Provided Informational Support Receipt	.12	.00	.13 .23	.13 .01
	2	Product	.01	.38	-.06	.38
Happiness	1	Tangible Support Provided Tangible Support Receipt	.16	.00	.15 .27	.08 .00
	2	Product	.00	.97	-.00	.97

Notes. $n = 148$. All variables standardised except for interaction terms. Interactions formed from the two standardised variables. ^aStepwise change in R^2 . ^bProbability of F for ΔR^2 . ^cUnstandardised regression coefficient in final equation. ^dProbability of t for b .

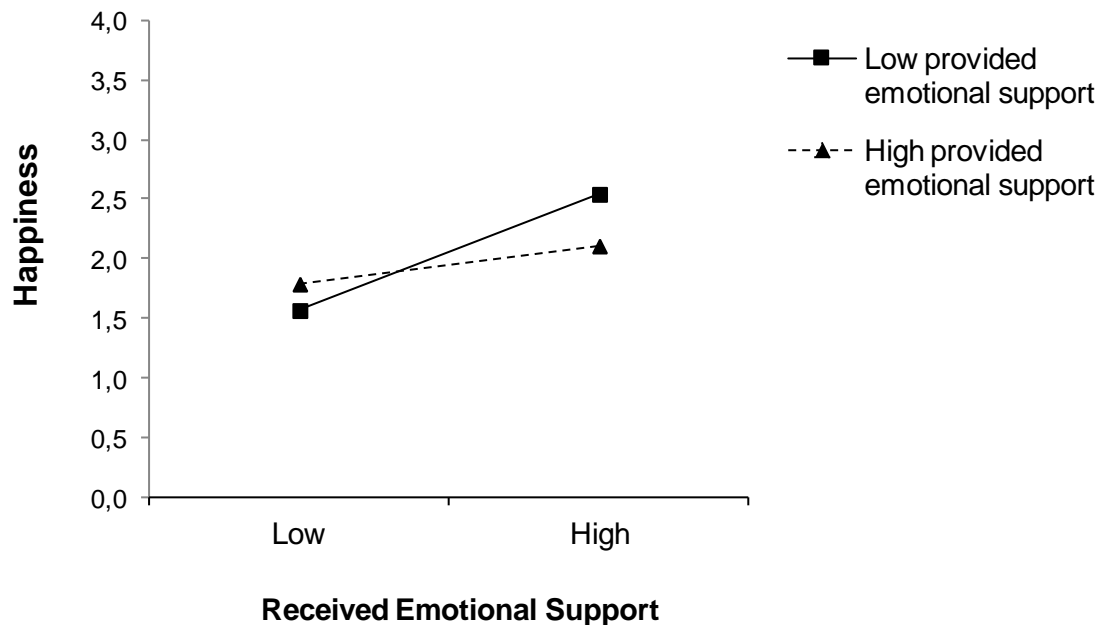


Figure 1. Interaction of received emotional support and provided emotional support on happiness. The relationship between received emotional support and happiness at low (1 SD below the mean), and high (1 SD above the mean) levels of provided emotional support.

Excitement

There were significant main effects for emotional, esteem, and informational support on excitement (R^2 s = .06 - .12, p s = .00-.01). For each type of support, these effects were primarily attributable to their receipt (b s = .18-.26, p s = .00-.04) and not their provision (b s = -.03-.14, p s = .10-.77), with the receipt of each support type positively predicting excitement (see Table 6). There was a significant main effect for tangible support on excitement ($R^2 = .06$, $p = .02$), but this effect could not be uniquely explained by its provision ($b = .16$, $p = .08$) or its receipt ($b = .08$, $p = .35$). There were no significant interactions (ΔR^2 s = .00 - .02, b s = -.14 -.03, p s = .07-.71). However, because interactions are notoriously so difficult to detect in field studies, the plot of the marginally non-significant interaction for emotional support ($\Delta R^2 = .02$, $b = -.14$, $p = .07$) is provided in Figure 2 (and simple slope analyses were performed). This demonstrates that the relationship between received emotional support and excitement was significantly different from zero at low ($b = .37$, $t = 3.00$, $p = .003$) levels of provided emotional support but not at high levels ($b = .09$, $t = .76$, $p = .45$). Specifically, the relationship between received emotional support and excitement differed significantly from zero at levels of provided emotional support less than .28 standard deviations above the mean. These analyses suggest that the interaction was not consistent with an invisibility explanation: the positive relationship between received emotional support and excitement was stronger when providers reported providing low to moderate levels of emotional support than when providers reported providing high levels of emotional support. Furthermore, levels of excitement were particularly low with low levels of received emotional support, suggesting again a particularly detrimental impact of both being isolated from and reporting a lack of emotional support.

Table 6. Moderated Hierarchical Regression Analyses for Excitement: Effects of emotional, esteem, informational, and tangible support.

Dependent Variable	Step	Independent Variables	ΔR^2 ^a	$p(F)$ ^b	b^c	$p(t)$ ^d
Excitement	1	Emotional Support Provided Emotional Support Receipt	.06	.01	-.03 .23	.77 .02
	2	Product	.02	.07	-.14	.07
Excitement	1	Esteem Support Provided Esteem Support Receipt	.12	.00	.07 .26	.44 .00
	2	Product	.01	.22	-.08	.22
Excitement	1	Informational Support Provided Informational Support Receipt	.09	.00	.14 .18	.10 .04
	2	Product	.00	.59	-.04	.59
Excitement	1	Tangible Support Provided Tangible Support Receipt	.06	.02	.16 .08	.08 .35
	2	Product	.00	.71	.03	.71

Notes. $n = 148$. All variables standardised except for interaction terms. Interactions formed from the two standardised variables. ^aStepwise change in R^2 . ^bProbability of F for ΔR^2 . ^cUnstandardised regression coefficient in final equation. ^dProbability of t for b .

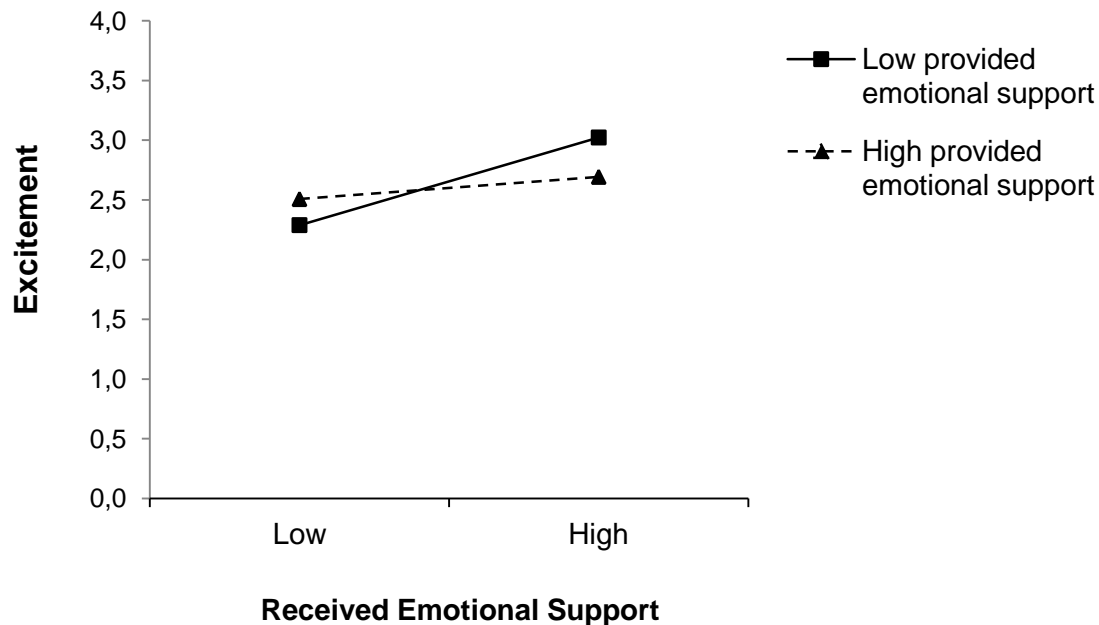


Figure 2. Interaction of received emotional support and provided emotional support on excitement. The relationship between received emotional support and excitement at low (1 SD below the mean), and high (1 SD above the mean) levels of provided emotional support.

Self-Confidence

There were significant main effects for emotional, informational, and tangible support on self-confidence (R^2 s = .06 - .12, ps = .00-.02). For emotional and tangible support, the effects were primarily attributable to their receipt (bs = .17-.18, ps = .00-.01) and not their provision (bs = -.07-.01), ps = .29-.85), with higher levels of received support being related to higher levels of self-confidence (see Table 7). For informational support, the effect was primarily due to its provision (b = .12, p = .03) and not its receipt (b = .11, p = .05) with the provision of informational support positively predicting self-confidence. There was a significant main effect for esteem support on self-confidence (R^2 = .07, p = .01) but this could not be uniquely explained by its provision (b = .08, p = .21) or receipt (b = .08, p = .17). There were no significant interactions (ΔR^2 s = .00 - .02, bs = -.08 - (-.01), ps = .06-.81). However, as the interaction for esteem support was only marginally non-significant (ΔR^2 = .02, b = -.08, p = .06), it has been plotted (see Figure 3) and simple slope analyses were performed. This demonstrates that the relationship between received esteem support and self-confidence was significantly different from zero at low (b = .17, t = 2.13, p = .04) levels of provided esteem support but not at high levels (b = .001, t = .01, p = .99). Specifically, the relationship between received esteem support and self-confidence differed significantly from zero at levels of provided esteem support less than .68 standard deviations below the mean. Again these analyses suggest that the interaction was not consistent with an invisibility explanation: the positive relationship between received esteem support and self-confidence was stronger when providers reported providing low levels of esteem support than when providers reported providing moderate to high levels of esteem support. Further, levels of self-confidence were particularly low with low levels of received esteem support,

suggesting a particularly detrimental impact of both being isolated from and reporting a lack of esteem support.

Table 7. Moderated Hierarchical Regression Analyses for Self-Confidence: Effects of emotional, esteem, informational, and tangible support.

Dependent Variable	Step	Independent Variables	ΔR^{2a}	$p(F)^b$	b^c	$p(t)^d$
Self-Confidence	1	Emotional Support Provided	.06	.02	-.07	.29
		Emotional Support Receipt			.17	.01
	2	Product	.01	.32	-.05	.32
Self-Confidence	1	Esteem Support Provided	.07	.01	.08	.21
		Esteem Support Receipt			.08	.17
	2	Product	.02	.06	-.08	.06
Self-Confidence	1	Informational Support Provided	.12	.00	.12	.03
		Informational Support Receipt			.11	.05
	2	Product	.00	.81	-.01	.81
Self-Confidence	1	Tangible Support Provided	.08	.00	.01	.85
		Tangible Support Receipt			.17	.00
	2	Product	.00	.61	-.03	.61

Notes. $n = 148$. All variables standardised except for interaction terms. Interactions formed from the two standardised variables. ^aStepwise change in R^2 . ^bProbability of F for ΔR^2 . ^cUnstandardised regression coefficient in final equation. ^dProbability of t for b . ^eSignificant when measured with 3 decimals.

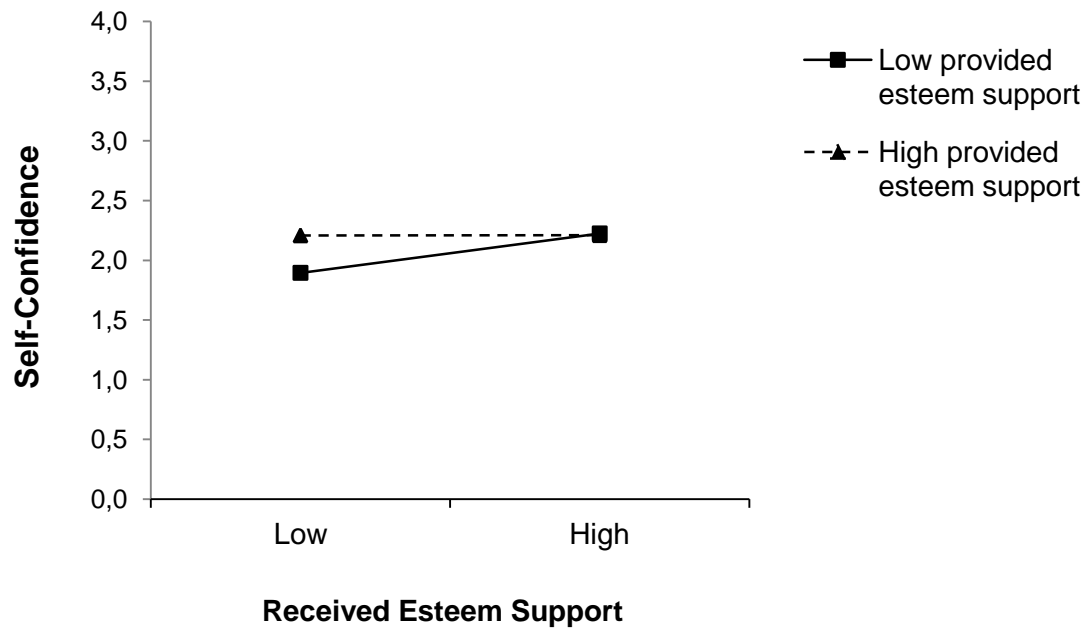


Figure 3. Interaction of received esteem support and provided esteem support on self-confidence. The relationship between received esteem support and self-confidence at low (1 SD below the mean), and high (1 SD above the mean) levels of provided esteem support.

Discussion

In the present study, we determined the extent to which athletes and key support providers agreed on the support exchanges occurring between them a week prior to an important competition, as well as examining how the reported provision and receipt of support types influenced athletes' emotional states and self-confidence prior to the competition.

The results showed that providers' and recipients' accounts of the support occurring between them were highly correlated suggesting that they agreed to a substantial extent on the support exchanged. These levels of agreement between providers and recipients are similar to those observed in previous studies looking at dyadic relationships with members who were in close proximity to each other (Bolger

et al., 2000; Franks & Stephens, 1996). Cohen and colleagues (2005) advocated that with such high levels of agreement, one would not expect additional/differential effects of provided support on outcomes of interest. The present findings are largely consistent with this notion. In 10 out of 16 models, the effects of support types on outcomes of interest were primarily attributable to their receipt. Only in one model were the effects attributable to provided (informational) support, but even in this model the effect of support receipt was close to being significant. We did observe one significant and two marginally non-significant interactions between providers' and recipients' reported support. These interactions highlighted the importance of being able to get and receive support for athletes' emotional states and self-confidence.

With the receipt of support being the primary predictor of athletes' outcomes, we anticipated beneficial effects for emotional and esteem support but not for informational and tangible support. The results of the present study revealed that, in fact, all received support types were to a greater or lesser extent related to positive outcomes. For example, where the receipt of emotional support positively predicted happiness, excitement, and self-confidence, the receipt of tangible support positively predicted happiness and self-confidence. None of the support types had a positive influence on athletes' anxiety. Therefore, the findings suggest that the benefits of the support types depend on the outcome of interest. Receiving support was particularly beneficial for athletes' positive emotions and self-confidence.

In contrast with previous work (e.g., Bolger & Amarel, 2007; Bolger et al., 2000), the receipt of informational and tangible support did not predict any negative outcomes. Together with the above-mentioned findings, these results suggest that informational support and tangible support are not necessarily harmful or ineffective. Perhaps the undermined perceptions of competence or self-efficacy which

researchers have so often associated with these support types (Bolger & Amarel, 2007; Trobst, 2000) were not elicited in recipients because of receiving the support from their key support providers (Hassell et al., 2010).

We did observe one negative effect with high levels of received esteem support being related to higher levels of anxiety. Thus despite the benefits observed in this study and other field studies (e.g., Rees & Freeman, 2007; Rees et al., 2007), receiving esteem support may not always be beneficial. There is some evidence to suggest that those who receive esteem support (e.g., praise and encouragement) may feel more pressure to perform well, especially when this praise is received from important support providers (e.g., Rosenfeld, Richman, & Hardy, 1989, see also Wallace, Baumeister, & Vohs, 2005). This may explain why, in the present study, the receipt of esteem support seemed to heighten athletes' anxiety prior to competition.

An important aim of the study was to determine whether support visibility influenced the effects of support types on the outcomes of interest. To detect benefits of support invisibility, interactions would have had to show that high levels of provided support predicted higher positive outcomes (e.g., self-confidence) but only under the condition of low levels of received support. Even though we found one significant and two marginally non-significant interactions, none of them provided evidence for this pattern. Instead, these interactions suggested that athletes' psychological states were particularly harmed when athletes were both being isolated from and reporting a lack of support.

Although none of the interaction effects provided evidence for the role of invisible support, the main effect of informational support on self-confidence was attributable to its provision and not its receipt. As such, these results provide some

tentative evidence that athletes may have benefited from advice that was provided even though they were not fully aware of it.

The findings have important implications. First, the findings provide further evidence for the benefits of receiving emotional and esteem support on recipients' self-confidence (Rees & Freeman, 2007). Second, the findings suggest that there are conditions under which receiving informational and tangible support does not undermine recipients' confidence (Rees & Freeman, 2010; Trobst, 2000). In fact, recipients' confidence levels may actually increase after the receipt of informational and tangible support. Under these conditions, the concept of invisible support does not seem to play a particularly important role in enhancing the effectiveness of these support types (or minimising their costs). The findings further suggest that the receipt of any of the four support types may be useful in enhancing the experience of positive emotions towards competition.

With the receipt of all four support types positively predicting athletes' positive emotions and/or self-confidence regarding an upcoming match, key support providers should try to ensure that athletes receive all four support types prior to competition. Given that athletes agreed to a substantial extent with their providers on the occurrence of all support types, key support providers should be encouraged to provide these support types (Connaughton et al., 2008). However, with the receipt of esteem support positively predicting anxiety, key support providers should be mindful about the provision of esteem support.

The study has a number of limitations that should be considered when interpreting the findings. First, even though providers and recipients appeared to agree to a substantial extent on the occurrence of support, a key issue with the use of self-report measures is that these measures only reflect a subjective perception of

the support exchanged. It is therefore not possible to verify whether the support behaviours actually happened. Second, given the correlational nature of the study, caution should be taken when inferring causal relationships from the data—e.g., rather than received support leading athletes to be happier, happier athletes may have been more likely to report more support. To address these concerns, future research is needed to examine the effects of actual support actions on outcomes of interest. This could be done by systematically manipulating social support under experimental conditions. Third, the present study examined the effects of provided and received support within relationships where the athlete highly valued the support provider. Within such a dyad, it is less likely that recipients would feel undermined in their sense of competence and autonomy. Therefore, it may be less necessary for such support providers to disguise their support acts. Future research is required to determine whether invisible support does play a role in the support exchanges with other key people in the context of sport.

In conclusion, the present study found substantial agreement between athletes and their key support providers on the occurrence of support behaviours in the week prior to competition. Furthermore, the results showed that receiving all four support types identified by Rees and Hardy (2000) positively predicted athletes' positive emotions and self-confidence. Taken together, these findings suggest that support exchanges between athletes and their key support providers can play an important role in aiding athletes' emotional states and self-confidence regarding an upcoming competition. Future research should examine the effects of actual observable exchanges of support to shed further light on the role of support type and visibility in a sport context.

**Chapter 3: Enacted Support and Golf-Putting
Performance: The Effects of Support Type and
Visibility**

Introduction

Social support has consistently been cited by sportspeople as a key ingredient of their success (Connaughton, Wadey, Hanton, & Jones, 2008; Fletcher & Sarkar, 2012; Kristiansen & Roberts, 2010; Rees & Hardy, 2000), and several studies have linked self-reported received support to self-confidence and performance (Freeman & Rees, 2008; Rees & Freeman, 2007; Rees, Hardy, & Freeman, 2007). Evidence of this form underpins researchers' recommendations to encourage the active provision of support (e.g., Connaughton et al., 2008). Empirical evidence suggests, however, that the provision of support does not always meet its intended aims. Social support studies in general and sport psychology have frequently found provided support to be unrelated to outcomes or worse still, associated with negative outcomes (e.g., Deelstra et al., 2003; Freeman, Rees, & Hardy, 2009; Shrout, Herman & Bolger, 2006). If the receipt of support seems so crucial for sportspeople, an important question to address is: "What makes the provision of support effective?" We addressed this question by focusing on two key aspects of the support process: (a) the type of support, and (b) the manner in which it is given. Specifically, we sought to examine how the provision of esteem and informational support delivered in a direct (visible) or indirect (invisible) way would affect participants performing a golf-putting task.

Researchers have often used the term *enacted support* to refer to the interpersonal exchange of specific supportive acts arising in response to demanding or stressful situations (e.g., Lakey, 2010). Although given with the intention to help one and another (Goldsmith, 2004), these acts of support may unintentionally entail costs. First, the provision of support might communicate to a recipient that he/she is unable to cope with the problem/stressor threatening his/her sense of competence

and efficacy (Bolger, Zuckerman, & Kessler, 2000; Rafaeli & Gleason, 2009).

Further, provided support may come across as controlling and pressuring, challenging the independence of the support recipient (Hassell, Sabiston, & Bloom, 2010; Ryan & Solky, 1996).

Researchers have highlighted that enacted support is a multi-dimensional construct, which can be separated into four distinct types of support: emotional, esteem, informational, and tangible support. Emotional support refers to the provision of comfort, security, and a sense that an individual is loved and cared for. Esteem support refers to the bolstering of an individual's sense of competence. Informational support refers to the provision of advice and guidance. Tangible support refers to the provision of practical and instrumental assistance (Cutrona & Russell, 1990, p. 322). These different forms of support may exert unique effects on outcomes of interest (Cohen, 1988). Despite the distinction between emotional support and esteem support, the majority of experimental studies have used the term *emotional support* to refer to support manipulations containing elements of both support types.

Experimental studies examining the provision of *emotional* (and esteem) support in a performance context have frequently found benefits on a range of outcomes including perceived stress, cardiovascular reactivity, cortisol levels and (perceived) performance (e.g., Collins & Feeney, 2004; Lepore, Allen, & Evans, 1993; Rees & Freeman, 2010; Searle, Bright, & Bochner, 2001; Thorsteinsson, James, & Gregg, 1998). In contrast, the provision of *informational support* (e.g., advice or guidance) has often had no effects or detrimental effects on self-esteem, self-efficacy, distress, cardiovascular reactivity, and performance (Bolger & Amarel, 2007; Nadler, Fisher & Ben-Itzhak, 1983; Uno, Uchino, & Smith, 2002). Thus,

whether provided support is costly seems to depend on the type of support exchanged.

Bolger and colleagues have highlighted that support visibility is another factor that might influence the effectiveness of support (Bolger et al. 2000; Bolger & Amarel, 2007). They argued that *invisible support* — support given in such a skilful manner that recipients remain (relatively) unaware of it or do not interpret it as support — may circumvent the costs associated with provided support and therefore maximise its benefits. For instance, a player may give advice to a struggling teammate on a shared task (visible support). Alternatively, the player may ask a coach to give advice about this shared task pretending that the advice is for him but in reality it is indirectly meant for his/her struggling teammate. The coach will convey the advice directly to the player but indirectly to his/her struggling teammate for whom the advice is meant for (invisible support).

Several studies have examined the influence of support visibility on the effects of provided support. Field studies using daily diaries have found mixed effects for invisible emotional support on affective states in the days leading up to an achievement task (e.g., Bolger et al., 2000; Shrout et al., 2010). In three experiments, Bolger and Amarel (2007) examined the effects of visible or invisible support on the emotional reactivity of students prior to a speech task (they did not actually give the speech). Their findings revealed that in comparison with visible informational support, invisible informational support did not hinder self-efficacy and reduced distress prior to the task. Although less convincing, invisible emotional support also reduced distress whereas visible emotional support did not. These findings suggest that communicating support in an invisible way can enhance the effectiveness of support in a performance context and may be particularly useful for those acts conveying

advice. Surprisingly, studies examining the effect of support visibility on actual performance are non-existent.

In the present study, we sought to examine the effect of support type and support visibility on novice golfers' performance in a golf-putting task. Similar to Bolger and Amarel (2007), we developed an experimental set-up in which support was provided by a confederate acting as a fellow participant. We focused on informational support and esteem support as different types of support. Though previous experiments have often chosen to provide participants support messages incorporating elements of emotional *and* esteem support, Rees and colleagues demonstrated that esteem support seemed the most effective form of support in sport (Rees et al., 2007). Participants were given either esteem or informational support in a visible or invisible manner immediately prior to the putting task or given no support at all. Based upon previous research (Bolger & Amarel, 2007, Rees & Freeman, 2010, Rees et al., 2007), we predicted that the esteem visible support group would perform better than the no support group but the visible informational support group would not. We further predicted that the invisible informational support group would outperform the no support group. Given the ambiguous findings of previous studies (Bolger & Amarel, 2007; Shrout et al., 2010), we were uncertain as to whether the invisible esteem support would outperform the no support group.

To provide underpinning for what makes support effective, major theoretical models in social support research have postulated a host of psychological pathways through which social support may lead to better outcomes (Uchino, Bowen, Carlisle, & Birmingham, 2012). In the present study, we specifically sought to examine whether self-efficacy and emotional states could explain the effects of the experimentally manipulated support on performance because: (a) these variables

have been affected by both the type and visibility of the support provided (e.g., Bolger & Amarel, 2007; Howland & Simpson, 2010), and (b) have been postulated to be key factors for sport performance (Druckman, 2004; Jones & Uphill, 2012).

Method

Participants

A convenience sample of 105 undergraduate students (female, $n = 62$; male, $n = 43$; *Mean age* = 19.77 years, *SD* = 1.40 years) was recruited from a University in the South-West of England. All participants were right-handed and had no experience or very little experience in golf putting. This study used a between-factor experimental design with participants randomly assigned to one of five support conditions (per condition, $n = 21$: visible informational support; invisible informational support; visible esteem support; invisible esteem support; no support).

Materials

The experiment consisted of a golf-putting task performed in a laboratory on a rectangular artificial putting green (5.80 m long and 2.34 m wide). The putting task was adapted from previous studies (e.g., Kavussanu, Morris, & Ring, 2009; Pates, Oliver, & Maynard, 2001) and required participants to putt a standard white golf ball (4.3 cm in diameter) using a standard golf putter (Mizuno) to a white circular target measuring 10.8 cm in diameter from a distance of 3 m.

Procedure

The study was approved by an institutional ethics committee. Participants were informed that the purpose of the study was to examine the effect of thoughts and feelings on a golf-putting task. Upon arrival at the test site, they were welcomed in a waiting area and provided written consent. The male experimenter gave an overview of the task, and explained to participants that due to timing issues, another

participant was still being tested. In reality, this participant was a male confederate. To regain the loss of time, participants were asked to complete a demographics form while the experimenter completed the experiment with the confederate. After participants completed the form, participants were asked to enter the testing area.

In the testing area, the confederate completed a final measure. In the meantime, the experimenter gave specific task instructions to the participant. That is, participants were told that the golf putting task consisted of performing 10 putts towards the target and their performance would be determined by the average distance away from the target. To create a meaningful and evaluative situation, participants were told the following: there was a prize for the five best putters; a score chart would be circulated among all participants; and scores would be recorded on a leader board, available for all other participants to view. In reality, the leader board was made up of 20 false scores ($M = 47.50$ cm, $SD = 22.14$ cm; range, 12.7-87.3 cm).

Once the experimenter had finished the instructions, the confederate signaled that he had completed the questionnaire. The experimenter thanked the confederate for his time and asked whether he had any questions. The confederate responded with one of the five support manipulations (see table 1). This was the only interaction between participants and the confederate. Immediately after, the confederate left the testing area and participants completed measures of self-efficacy and emotions. They then performed the golf putting task. Following the task, participants completed a manipulation check after which they were fully debriefed and thanked for their participation. The roles of the experimenter and the confederate were fully scripted to minimise uncontrolled interactions with participants.

Support provision

To ensure that the supportive message was communicated in a natural way, the confederate acted as an undergraduate student who was taking part in the golf-putting experiment in which participants were about to partake. Type of support was manipulated by changing the content (informational support or esteem support) of the supportive message. Visibility was manipulated by addressing the supportive message directly (visible) to participants or expressing a similar message indirectly to the participant by speaking to the first experimenter rather than the participant. These manipulations were based upon previous experiments (e.g., Bolger & Amarel, 2007; Rees & Freeman, 2010).

Table 1. Support manipulation per condition.

Condition	<i>Peer response</i>
Visible informational Support	“No not really. But, can I say something to the participant? The task was okay, really. But to do well I would say make sure that you should relax, take your time, and focus on the target.”
Invisible informational support	“No not really. The task was okay, really. As long as everyone relaxes, takes their time, and focuses on the target, they can do well.”
Visible esteem support	“No not really. But can I say something to the participant? The task was okay, really. I think that you will be able to do fine on this task. Really, you have nothing to worry about. I am sure you can do well”
Invisible esteem support	“No not really. The task was okay. I think that everyone will do fine on this task. Really there is nothing to worry about. I’m sure everyone can do well.”
No support	“No not really.”

Measures

Self-Efficacy. Self-efficacy was assessed with a putting-specific questionnaire developed for this study following Bandura's recommendations (1997). The questionnaire involved giving participants a list of 10 bands. Each represented 10 cm wide bands on a meter ruler placed on the artificial green reflecting the distance away from the centre of the target. For each band, participants indicated their belief to achieve an average score equal to or better than the band (yes/no). For each affirmed band, they rated the degree of confidence (0-100) of getting their average putt equal to or better than that band. Scores for self-efficacy were determined by adding up the total confidence scores and dividing the scores by the total number of levels (10).

Emotions. To assess the impact of support on pre-performance emotions, we used the Sport Emotion Questionnaire (SEQ, Jones, Lane, Bray, Uphill, & Catlin, 2005). The SEQ is a 22-item sport-specific measure designed to assess five discrete emotions: anxiety, dejection, excitement, anger, and happiness. Participants were required to indicate per item how they feel *right now, at this moment, in relation to the upcoming task* on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*extremely*). Research has demonstrated good validity and reliability for the SEQ and has shown its utility in sport (Allen, Jones, & Sheffield, 2009; Jones et al., 2005). In this study, reliability coefficients for the five emotions were: anxiety, $\alpha = .88$; dejection, $\alpha = .62$; anger, $\alpha = .49$; excitement, $\alpha = .82$; and happiness, $\alpha = .86$.

Performance. The final resting place of each putt was used to determine the absolute distance from the centre of the target. Putting performance was computed by assessing the Mean Radial Error of the 10 putts (Mullen & Hardy, 2000).

Manipulation check. An important part of the experiment was to determine whether the invisible support provided was actually invisible for recipients. This would be the case when recipients in the invisible support conditions would *not* indicate that they had received the specific types of support given. The manipulation check for informational support was the item: “The other student offered me advice or guidance”. The manipulation check for esteem support was the item: “The other student encouraged me to do well”. As previously done by Bolger and Amarel (2007), these items were embedded in a 17-item questionnaire, which participants completed immediately after the task. In line with the *aim* of the study, the remaining items asked participants about their thoughts and feelings prior to the golf-putting task (e.g., “I thought about my putting stroke”).

Data analysis

To examine whether performance, self-efficacy, and emotions differed across support conditions, a series of one-way between-groups analyses of variance were conducted. In the case of significant effects, Tukey HSD post-hoc tests were performed to determine where the differences between the groups lay. In order to determine whether support manipulation affected putting performance through any of the pre-performance measures, mediation analyses were conducted using the *MEDIATE* SPSS custom dialog developed by Hayes and Preacher (2012). This custom dialog tests the total, direct, and the indirect effect of an independent variable on a dependent variable through a proposed mediator. Using indicator coding with the ‘no support’ condition as the reference group, we examined the relative indirect effects of each support condition on performance via self-efficacy and the emotional states.

Results

Manipulation check

The manipulation check revealed that in the visible informational support condition, 18/21 participants correctly reported receiving advice while 18/21 felt encouraged by the fellow participant. In the invisible informational support condition, 3/18 reported the receipt of advice and 5/21 felt encouraged. In the visible esteem support condition, 18/21 correctly felt encouraged by their fellow participant while 12/21 reported the receipt of advice. In the invisible esteem support condition, 1/21 felt encouraged and 0/21 reported the receipt of advice.

Performance

Means and standard deviations of putting performance (mean radial error) as a function of the five support conditions are displayed in Table 2. Data met the assumption of normality. A Levene's test demonstrated that the variances for putting performance were not equal for the different support conditions ($F_{4,100} = 3.12, p = .02$). However, given that group sizes were equal, we carried out the one-way independent ANOVA without corrections (Field, 2009). The one-way ANOVA revealed significant differences in performance between the support conditions ($F_{4,100} = 7.25, p < .001, \eta_p^2 = .23$). Post-hoc tests revealed that participants given invisible informational support and participants given visible esteem support performed significantly better than those given no support (all $ps = .012-.014$). In addition, participants given invisible informational support, visible informational support or visible esteem support performed significantly better than those given invisible esteem support (all $ps = .001 - .048$).

We further reran the analyses excluding participants who reported the receipt of support in the invisible support conditions. The results were almost identical with again a significant effect for support manipulation on performance ($F_{4,96} = 6.51, p <$

.05, $\eta_p^2 = .21$). Those participants given visible esteem support ($n = 21$, $M = 49.55$, $SD = 15.57$) and invisible informational support ($n = 18$, $M = 49.27$, $SD = 14.42$) still outperformed those given no support ($M = 67.20$, $SD = 20.36$) (both $p < .05$). For this reason, we used the original sample to run all subsequent analyses.

Evidence suggests that compared to men, women might respond differently to the same supportive message given by a male provider (e.g., Derlega, Barbee & Winstead, 1994). For this reason, we performed a one-way between-subjects ANCOVA controlling for gender. Even though there was a main effect for gender ($F_{1, 99} = 19.54$, $p < .001$, $\eta_p^2 = .17$), we found identical results with a significant effect of support manipulations on performance ($F_{4, 99} = 7.83$, $p < .001$, $\eta_p^2 = .24$).

Self-Efficacy

Three participants did not complete the self-efficacy measure correctly and were therefore excluded from analysis. Assumptions of normality and homogeneity of variances were met ($p > .05$). Means and standard deviations of self-efficacy as a function of the five support conditions are displayed in Table 2. The one-way ANOVA revealed no differences in self-efficacy between the support conditions ($F_{4, 97} = 2.34$, $p = .07$, $\eta_p^2 = .087$).

Emotions

For 'anger' and 'dejection', the mean values ($M_{\text{anger}} = .02$, $SD = .10$; $M_{\text{dejection}} = .03$, $SD = .13$) were extremely low, internal consistency values were poor, and assumptions of normality and homogeneity of variances were not met ($p < .05$). Therefore, these emotions were excluded from further analyses. Means and standard deviations of 'anxiety', 'happiness', and 'excitement' emotions as a function of the five support conditions are displayed in Table 2. The one-way ANOVA revealed no differences between the support conditions on anxiety ($F_{4, 100} = 1.22$, $p = .31$, $\eta_p^2 =$

.05), excitement ($F_{4,100} = 1.55$, $p = .20$, $\eta_p^2 = .06$), and happiness ($F_{4,100} = 1.36$, $p = .26$, $\eta_p^2 = .05$).

Table 2. Means and Standard Deviations of putting performance (cm), self-efficacy, anxiety, happiness, and excitement for each support condition.

Condition	Performance	Self-efficacy	Anxiety	Happiness	Excitement
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Visible informational support	56.21 (13.38)	40.10 (13.24)	1.05 (.74)	2.65 (1.24)	1.54 (.70)
Invisible informational support	49.28 (14.34)	46.12 (16.27)	1.07 (.68)	3.12 (1.52)	1.85 (.95)
Visible esteem support	49.55 (15.57)	53.62 (16.21)	.90 (.75)	3.24 (1.20)	1.61(.78)
Invisible esteem support	71.73 (21.93)	52.87 (20.15)	.70 (.52)	2.51 (1.16)	1.29 (.54)
No support	67.20 (20.36)	44.69 (18.61)	1.13 (.83)	2.57 (1.44)	1.74 (.90)

Mediation analyses

To estimate the significance of the indirect effect, we used percentile bootstrap confidence intervals (based on 5000 samples). In contrast with the steps outlined by Baron and Kenny (1986), recent studies suggest that the only requirement for mediation is a significant indirect effect (Zhao, Lynch Jr., & Chen, 2010). Therefore, even though the experimental manipulation did not lead to significant differences between conditions for any potential mediator, we still performed mediation analyses for self-efficacy and each pre-performance emotion. For all possible mediators, homogeneity of regression slopes was met ($p > .05$). The mediation analyses revealed that relative to the control group, there were no significant indirect effects indicating that the support manipulations did not indirectly influence performance through self-efficacy, anxiety, excitement, or happiness (see Table 3).

Table 3. The relative indirect effects of support manipulation on performance via self-efficacy, anxiety, happiness, and excitement with 'no support' as reference group.

Condition	Self-efficacy		Anxiety		Happiness		Excitement	
	<i>Effect</i>	<i>95% CI</i>	<i>Effect</i>	<i>95% CI</i>	<i>Effect</i>	<i>95% CI</i>	<i>Effect</i>	<i>95% CI</i>
Visible informational support	.31	-1.11 - 2.52	.12	-1.05 - 2.01	-.20	-2.94 - 2.25	.68	-1.34 - 3.32
Invisible informational support	-.10	-1.70 - 1.49	.09	-1.23 - 1.70	-1.42	-4.69 - 1.06	-.36	-2.98 - 2.18
Visible esteem support	-.61	-3.39 - 1.63	.31	-1.10 - 2.59	-1.73	-5.34 - .49	.44	-1.54 - 3.14
Invisible esteem support	-.56	-3.42 - 1.59	.58	-1.51 - 3.65	.15	-2.33 - 2.64	1.52	-.78 - 4.76

Discussion

The present study examined how support type and support visibility influenced the effects of provided support on performance. Specifically, we studied how esteem and informational support given in a visible and invisible manner influenced the performance of novice golfers on a golf putting task. The results revealed that participants given visible esteem support and invisible informational support outperformed those given no support whereas those given invisible esteem support and visible informational support did not. Besides, these performance effects, we found no differences in self-efficacy and emotional states between any of the support conditions. Additionally, these pre-performance states could not explain why certain support groups outperformed the no support group whilst others groups did not.

These findings provide the first experimental evidence that informational support when given in an invisible manner can have beneficial effects upon performance. These findings support the suggestion that invisibility can enhance the effectiveness of informational support (Bolger & Amarel, 2007). Thus, besides that invisibility may help to improve the gains of informational support on psychological states (Bolger & Amarel, 2007; Howland & Simpson, 2010), the results of the present study suggest that invisibility may also help to improve the effects of informational support on actual performance.

As opposed to the gains of communicating informational support in an invisible manner, there was no evidence that invisibility enhanced the effectiveness of provided esteem support. Actually, invisibly providing esteem support seemed to undo the benefits of esteem support as participants given visible esteem support outperformed their non-supported counterparts while those given invisible esteem support did not. These results may be surprising from a visibility perspective (Bolger

et al., 2000). However, other recent studies did not observe benefits for invisibly provided emotional (/esteem) support either (Shrout et al., 2010; Vilchinsky et al., 2011). Furthermore, social support studies in sport have indicated that the (visible) receipt of esteem support was related to increased self-confidence and better golf putting performance (Rees et al., 2007; Rees & Freeman, 2007). These findings as well as the results of the present study suggest that esteem support may be better given in a visible explicit manner in order to exert its effects. This may be particularly true for those individuals/athletes who are uncertain about their abilities such as the novices in the present study (cf. Burleson, 2009; Vilchinsky et al., 2011). That is, for someone who is uncertain about his/her ability to overhear a comparable individual say that 'everyone' should be able to do fine, such a (esteem support) message could evoke feelings of relative inferiority due to negative social comparisons (Fisher, Nadler, & Whitcher-Alagna, 1982), despite being intended to increase feelings of competence (Cutrona & Russell, 1990).

The present study did not provide evidence that self-efficacy or emotional states mediated the effects of provided support on performance. Therefore, it is unclear why participants given invisible informational support and visible esteem support outperformed those given no support. Though this may be surprising, Uchino and colleagues (2012) have noted the difficulty to uncover the psychological mechanisms responsible for the links between social support and outcomes of interest (Uchino et al., 2012). Still, knowing the mechanisms by which social support influences performance remains important to enhance theoretical understanding of how social support operates, and to better structure support interventions (Cohen, Gottlieb, & Underwood, 2000; Uchino et al., 2012). It may be that other not assessed psychological or cognitive mechanisms (e.g. attentional focus, perceived control)

were responsible for the effects of provided support on performance (cf. Thoits, 2011). Future research is needed to examine how the support-performance relationship in the present study emerged.

The findings have important theoretical implications. Our findings suggest that neither the support type (e.g., Cutrona & Russell, 1990) nor the support visibility (Bolger et al., 2000) decides the effectiveness of provided support prior to performance situations. Instead, these two factors need to be considered in combination with each other. Esteem support seems most effective when given in a visible manner. Informational support seems most effective when given in an invisible manner. The applied implication of these findings is that support providers need to consider how they give specific types of support prior to performance tasks. Support providers should direct esteem support explicitly to recipients so that recipients are aware of receiving this support. In contrast, support providers should provide informational support in such a subtle, invisible way that recipients remain relatively unaware of it. Support providers could do the following: Rather than giving the advice explicitly to a player, a support provider could mention the advice to players standing within hearing distance of this player. Via this way, the player can indirectly pick up the information without interpreting the advice as support making it less likely that he/she feels undermined in his/her sense of competence or autonomy. Although the exchange of support in the present study occurred in a sporting context — a novice golfer received support prior to a putting task from a fellow novice golfer — there is reason to believe that these findings may also be applicable to other performance contexts including business and education.

The key strength of our study is that we found strong performance effects. However, a number of methodological weaknesses need to be considered. First, the

provision of support in an isolated laboratory may pose a threat to ecological validity. For participants to receive support from a 'fellow participant' with whom they did not have a prior relationship may not correspond with the most common supportive exchanges in the real world. Furthermore, the invisible provision of informational support was effective in a quiet and isolated laboratory but it is unclear whether this subtle communication of support is equally effective in naturalistic situations. For instance, during a pre-game speech in a dressing room, an invisibly provided supportive message might be heard. In a full stadium when the crowds are roaring, this is perhaps less likely. To address both concerns, future research should consider studying support exchanges between performers and their actual support providers in more naturalistic settings. Furthermore, researchers have noted that informational support might be more effective when received from those with more expertise (Cutrona & Suhr, 1992). Future studies are needed to determine whether our findings can be generalised across a range of providers (i.e., coaches, teammates).

In conclusion, the findings of the present study suggest that it is important to consider both the support type and support visibility when providing support. The findings add to the existing social support literature (e.g., Rees & Freeman, 2010) by demonstrating that esteem support enhances performance when it is communicated in a visible manner. The findings are unique in that they provide initial experimental evidence that invisibility can enhance the effects of informational support on performance. If these findings hold in other contexts, then this means that invisibility can be an important factor to ensure that informational support is effective in helping athletes to perform better.

**Chapter 4: Which Form of Support is Most Effective
Prior to a Football Aiming Task? Evidence From Two
Experimental Studies.**

Introduction

When people are confronted with demanding situations, a natural, almost automatic response is to offer them support (Cohen, 1992; Rafaeli & Gleason, 2009). In sport, it is common to see words of encouragement or advice being exchanged between coaches and athletes prior to the start of a game or a competition (Vargas-Tonsing, 2009). Athletes at all levels of competition have cited the benefits of receiving such support (e.g., Hassell, Sabiston, & Bloom, 2010; Holt & Hogg, 2002; Kristiansen & Roberts, 2010; Rees & Hardy, 2000) and research has shown the benefits of the receipt of support on performance (Rees, Hardy, & Freeman, 2007). This evidence underpins researchers' recommendations to encourage the active provision of support (e.g., Connaughton, Wadey, Hanton, & Jones, 2008). An important question to address is which support is most effective for performance?

The specific helping actions of support providers have been referred to as *enacted support* (Lakey, 2010; Rees & Freeman, 2012). When support is enacted, it is both provided (by a provider) and received (by a recipient) (Belcher et al., 2011). Intuitively, one might expect the provision of support to be beneficial, particularly in demanding or stressful circumstances (Thoits, 1995; Rafaeli & Gleason, 2009; Uchino, 2009) and some studies have demonstrated such effects (e.g., Rees & Freeman, 2010). Counterintuitively, however, several studies have demonstrated that the provision of support not only failed to be helpful, but at times even proved to be harmful for recipients (Freeman, Rees, & Hardy, 2009; Bolger & Amarel, 2007; Nadler, Fisher, & Ben-Izthak, 1983). Several reasons have been offered to explain why support acts might entail costs. First, the provided support might highlight a person's inability to deal with a situation, undermining self-efficacy and self-confidence (Bolger, Zuckerman, & Kessler, 2000). Second, the support may be

perceived as controlling and threaten recipients' feelings of independence (Bolger & Amarel, 2007; Hassell et al., 2010). Third, it may unintentionally draw attention to the problem/stressor it is intended to solve (Bolger et al., 2000). Finally, the support may be insensitive, mismatched, and of poor quality (Goldsmith, 2004; La Gaipa, 1990). These negative effects might be particularly salient in situations when individuals receive unsolicited support (support given when individuals have not asked for it) that is not responsive to their needs (Bolger & Amarel, 2007; Maisel & Gable, 2009).

To avoid these negative effects, researchers have argued that it is important to consider the *multidimensionality* of (enacted) support (Cutrona & Russell, 1990). When support is exchanged, providers can give different types of support. These different types of support may serve different functions and exert unique effects on outcomes of interest (Cohen, 1988). In experimental studies in which providers gave emotional and/or esteem support (e.g., providing concern, offering reassurance, Cutrona & Russell, 1990) without being requested to do so, this led to beneficial effects on a range of outcomes including task performance, anxiety, cortisol levels and cardiovascular reactivity (Collins & Feeney, 2004; Hilmert, Kulik, & Christenfeld, 2002; Lepore, Allen, & Evans, 1993; Rees & Freeman, 2010; Thorsteinsson, James, & Gregg, 1998). Conversely, the unsolicited provision of informational support (e.g., advice and/or guidance, Cutrona & Russell, 1990) has frequently lacked any effect, or worse, has had detrimental effects on self-worth, distress, and cardiovascular reactivity (e.g., Bolger & Amarel, 2007; Nadler et al., 1983; Uno, Uchino, & Smith, 2002).

Bolger and colleagues theorised that a key factor which influences whether provided support, and particularly informational support, comes with costs, is the visibility of support acts. They argued that *invisible* support, support given in such a

way that recipients remain relatively unaware of it or do not interpret it as support, might avoid the potential risks and maximise the benefits of provided support (Bolger & Amarel, 2007; Bolger et al., 2000). For instance, a coach can give advice directed explicitly to a player (visible support). A coach can also opt to give the advice to a teammate standing/sitting next to the player. By directing the advice to this teammate, the player for whom the advice is meant for may listen to the advice but not actually interpret it as support for him/herself (invisible support). The (relative) lack of awareness of the support provided may protect the player from undermined feelings of self-efficacy and self-esteem. Further, it may avoid drawing attention to the problem or the player. Given that the costs of provided support may be particularly salient when support is given without a recipient asking for it (Bolger & Amarel, 2007), and the provision of support between coaches and athletes may frequently be unsolicited (Rees & Freeman, 2012), *invisible support* may play an important role in the communication of support between coaches and athletes.

Several experimental studies have examined the influence of support visibility on the provision of different types of support (Bolger & Amarel, 2007; Howland & Simpson, 2010). Most relevant for the present study are three experiments by Bolger and Amarel (2007) in which they examined the provision of visible and invisible support to students prior to a speech task. Their findings revealed that invisibly provided advice (informational support) lessened emotional reactivity (large effect size) while visibly provided advice did not. Their third experiment further showed that these effects could be explained by avoiding lowered feelings of self-efficacy. The provision of emotional support (emotional/esteem support, see Footnote 1) also reduced emotional reactivity but the size of the effect was only small. These experiments suggest that the costs of provided informational support and to a lesser

extent emotional/esteem support can be minimised when communicated in an invisible manner. It is, however, unclear whether invisibly providing these forms of support maximises the benefits on participants' actual performance (Bolger & Amarel, 2007).

The aim of the present study was to examine whether support type and support visibility influenced the effects of unsolicited provided support on athletes' performance in high pressure situations. Although studies examining the effect of experimentally provided support have demonstrated that a combination of emotional and esteem support has often led to benefits, Rees and colleagues revealed that in sports, of the two support types, esteem support seemed to be the most important support type to enhance performance (Rees et al., 2007). Therefore, in the current study, the experimental manipulations were focused on the provision of esteem support and informational support.

We developed a laboratory-based stressor and support paradigm to be used with skilled football players. A task in which football players are expected to be competent and which is typically viewed as pressuring is a football aiming task (e.g., penalty kick, Jordet, Hartman, & Sigmundstad, 2009). Given the controlled nature of the experimental set-up, we attempted to create a situation in which providing support prior to the kicking task was a realistic event. Several studies have shown that athletes highly value coaches' provision of encouragement (esteem support) and advice (informational support), while they view teammates' advice as less appropriate (Hassell et al., 2010; Rees & Hardy, 2000). Therefore, the support was provided by a coach with expertise in penalty-taking (in reality a confederate) prior to the task. The key experimental outcome was players' performance on the football aiming task.

In two experiments, we studied how the performance of skilled football players on a football aiming task was influenced by receiving esteem (i.e., encouragement) or informational (i.e., technical advice) support in a visible or invisible manner from an expert coach in penalty taking. Based upon previous research (Bolger & Amarel, 2007; Rees et al., 2007; Rees & Freeman, 2010), we predicted that providing support in an invisible manner would be more beneficial for the provision of informational support than for the provision of esteem support. We further predicted that when communicated in a visible manner, esteem support would be more effective than informational support.

To provide theoretical underpinning for why certain forms of support are more effective, we further sought to examine mechanisms that could explain the support-performance relationship. Social support research has postulated a host of psychological pathways through which social support may be beneficial (For a review, see, Uchino, Bowen, Carlisle & Birmingham, 2012). In experiment one, we specifically focused on *self-efficacy* (Bandura, 1997) because it is a key determinant of (sport) performance (Druckman, 2004) and has been affected by both the type and visibility of support (Bolger & Amarel, 2007; Howland & Simpson, 2010). In experiment two, we broadened our attention to the *preparation time* and *attentional focus* of participants, both process mechanisms that have been affected by the forms of support given and have been associated with performance (Baumeister, Hutton, & Cairns, 1990; Jordet et al., 2009; Wood & Wilson, 2012).

Experiment 1

Method

Participants

Sixty-eight University football players ($M_{age} = 20.1$ years, $SD = 1.1$ years) recruited from University football teams of a University in the South-West of England took part in the study. These players who had on average 12.5 years ($SD = 2.3$) playing experience differed in playing position (goalkeeper, $n = 6$; defender, $n = 19$; midfielder, $n = 32$; attacker, $n = 11$) and self-rated shooting ability (from 0 = *not skilled* to 10 = *very skilled*, $M = 6.16$, $SD = 1.29$, range 2-9). Playing experience, playing position, and shooting ability did not significantly alter the pattern of results.

Materials

The football aiming task was performed in an isolated testing area at the University Sports Centre. The task was performed with a standard football (size 5) kicked from a distance of 7 m at a circular target (radius 10 cm) of which the centre was placed 1.5 m above the ground (cf. Nagano et al., 2006). Prior to each kick, players placed the ball on the intersection of a white cross. To determine participants' kicking performance, a camera (Panasonic SDR-S26, 25 Hz) was placed 2 m behind and 1 m to the side of this spot.

Procedure

The study was approved by an institutional ethics committee. Participants were told that this was a study examining the influence of thoughts and feelings on a football aiming task. Upon arrival in the Sports Centre, participants were welcomed by the first experimenter and were informed about the task. They then provided informed consent and completed a demographics form. On the way to the testing area, the experimenter reiterated that the task involved ten one-step kicks towards a target from a distance of 7m and performance would be determined by the average distance away from the target. To induce pressure, participants were further told the following: there was a monetary incentive for the five best performers; a score chart

would be circulated throughout the University Football club; and participants' kicking performance would be recorded for coaches and captains of the University football club to watch. Finally, participants were told that a second experimenter already in the testing area would provide more detailed task instructions and record their kicking performance. After participants entered the testing area, they were introduced to the second experimenter. Furthermore, they were introduced to an expert in the penalty taking area who, had previously worked with a number of Premier League teams, was currently employed by the University and would be watching the experiment. In reality, the expert was a confederate scripted to give one of the four support manipulations. Following this introduction, the second experimenter gave participants a more detailed explanation of the football aiming task. After this, the first experimenter asked the following: "Does anyone have anything to say or add before we start the experiment?" The second experimenter responded first by reiterating to the participant the importance of taking a one-step kick and waiting for the whistle before taking each kick. Subsequently, the confederate responded with one of the four support manipulations communicated in a neutral manner (see table 1). Immediately after, participants were asked to complete a self-efficacy measure (see measures section). Subsequently, they performed the football aiming task and completed a manipulation check (see measures section) after which they were fully debriefed and thanked for their participation. The whole experiment was scripted to avoid uncontrolled interactions with the participant.

Support provision

The study used a two factor experimental design with support type (esteem or informational) and support visibility (visible or invisible) as the between participant variables. Participants were randomly assigned to one of the four support conditions

(per condition, $n = 17$). Type of support was manipulated by changing the content (esteem support or informational support) of the supportive message. The content of the esteem support message was based upon previous studies examining the effect of experimentally manipulated support on performance (e.g., Rees & Freeman, 2010). The content of the informational support message was based upon previous studies revealing that 'taking your time' (Jordet et al, 2009) and 'focusing on where you want to aim' (Wilson, Wood, & Vine, 2009) improved kicking performance in penalty kicks. Visibility was manipulated by addressing the support message directly (visible) to the participant or by expressing similar message indirectly to the participant by speaking to the first experimenter rather than the participant (invisible).

Table 1. Support manipulation per condition.

Condition	<i>Peer response</i>
Visible informational support	<p>“Am I allowed to say something to the participant? To do well, I would say that before each kick, make sure that you relax, take your time, and focus on the target.”</p>
Invisible informational support	<p>“(I would say that) as long as players make sure that before each kick, they relax, take their time, and focus on the target, I am sure they can do well.”</p>
Visible esteem support	<p>“Am I allowed to say something to the participant? I think that you will be able to do fine on this task. You know how to kick a ball. I am sure you can do well”</p>
Invisible esteem support	<p>“I think that players will do fine on this task. (I mean) They know how to kick a ball. I am sure that they can do well”</p>

Measures

Performance. Kicking performance was assessed as the average distance away from the target of 10 kicks. A frame-by-frame analysis of the camera recorded video file was used on every kick to measure the distance from the centre of the ball to the centre of the target as the ball struck the wall. One rater coded the complete sample of participants' shots. Two additional raters analysed 140 randomly chosen shots with an interrater-reliability (ICC_{2,1}) of $\alpha = .98$.

Self-Efficacy. Self-efficacy was assessed with a questionnaire specifically designed for the kicking task following Bandura's recommendations (1997). The questionnaire involved giving participants a list of 10 bands. Each represented 10 cm wide bands on a meter ruler placed on the wall reflecting the distance away from the centre of the target. For each band, participants indicated (yes/no) whether they believed that their average kick would be in that band or closer to the target. For each band participants indicated yes to, they rated the degree of confidence (0-100) of getting their average kick in that band or closer to the target. Scores for self-efficacy were determined by adding up the total confidence scores and dividing the scores by the total number of levels (10).

Manipulation check.

An important part of the experiment was to determine whether the invisible support provided was actually invisible for recipients. This would be the case when recipients in the invisible support conditions would *not* indicate that they had received the specific types of support given. The manipulation check for informational support was the item: "The expert gave me advice or guidance". The manipulation check for esteem support was the item: "The expert encouraged me to perform well". As previously done by Bolger and Amarel (2007), these items were embedded in a 21-

item questionnaire which participants completed immediately after the task. In line with the *aim* of the study, the remaining items asked participants about their thoughts and feelings prior to the football aiming task (e.g., “I felt at ease with the test environment”).

Data analysis

To examine whether self-efficacy and kicking performance differed across support conditions, two (support type: informational or esteem) by two (support visibility: visible or invisible) between-groups analyses of variance were conducted. Effect sizes were calculated using partial eta squared. To determine whether support type and/or support visibility affected kicking performance through self-efficacy, mediation analyses were conducted using the PROCESS SPSS custom dialog developed by Hayes (2013). This custom dialog tests the total, direct, and the indirect effect of an independent variable on a dependent variable through a proposed mediator.

Results

Manipulation check

The manipulation check revealed that in the visible informational support condition 14/17 participants correctly reported receiving advice while 12/17 felt encouraged by the expert. In the invisible informational support condition, 2/17 participants reported the receipt of advice and 4/17 felt encouraged. In the visible esteem support condition, 14/17 participants correctly felt encouraged by the expert whilst 6/17 reported the receipt of advice. In the invisible esteem support condition, 5/17 participants felt encouraged and 2/17 reported receiving advice from the expert.

Performance

Means and standard deviations of kicking performance (target accuracy) as a function of the four support conditions are displayed in Table 2. Data met the assumption of normality. A Levene's test demonstrated that the variances for kicking performance were not equal for the different support conditions ($F_{3, 64} = 4.42, p = .01$). Given that group sizes were equal, we carried out the two-way independent ANOVA without corrections (Field, 2009). The two-way ANOVA revealed a significant main effect of support type on kicking performance ($F_{1, 64} = 12.72, p = .001, \eta_p^2 = .17$). Participants in the informational support conditions ($M = 45.57$ cm, $SE = 1.76$) performed significantly better than participants in the esteem support conditions ($M = 54.45$ cm, $SE = 1.76$). There was no significant main effect for support visibility ($F_{1, 64} = 1.03, p = .31, \eta_p^2 = .02$) and no significant interaction effect ($F_{1, 64} = 1.10, p = .30, \eta_p^2 = .02$).

Self-Efficacy

Assumptions of normality and homogeneity of variances were met ($p > .05$). Means and standard deviations of self-efficacy as a function of the four support conditions are displayed in Table 2. There were no significant main effects for support type ($F_{1, 64} = .16, p = .69, \eta_p^2 = .002$) and support visibility ($F_{1, 64} = .47, p = .50, \eta_p^2 = .007$), and no interaction effect ($F_{1, 64} = .01, p = .93, \eta_p^2 = .000$) on self-efficacy.

Mediation analyses

To estimate the significance of the indirect effect, we used percentile bootstrap confidence intervals (based on 10000 bootstrap samples), which help to minimise the probability of Type I errors (in comparison with bias corrected and accelerated bootstrap confidence intervals) with sample sizes of $N < 2500$ (Fritz, Taylor, & MacKinnon, 2012). Contrary to the steps outlined by Baron and Kenny (1986), recent

studies suggest that the only requirement for mediation is a significant indirect effect (Zhao et al., 2010). Therefore, even though the experimental manipulation did not result in self-efficacy differences, we still performed mediation analyses with support type and support visibility as independent variables. The mediation analyses revealed no significant indirect effects indicating that support type (-.20, 95% percentile CI = -1.33 to 1.18) and support visibility (-.32, 95% percentile CI = -1.51 to 1.01) did not indirectly influence performance through self-efficacy (see further Table 3).

Table 2. Means and standard deviations of each support condition for performance and self-efficacy in experiment 1; and performance, supportiveness, preparation time, and the self-efficacy in experiment 2.

Variables	Support conditions				
	Informational	Informational	Esteem	Esteem	Total
	visible	invisible	visible	invisible	
<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	
<u>Experiment 1</u>					
Performance (cm)	45.53 (7.24)	45.61 (7.72)	57.02 (14.48)	51.88 (10.00)	50.00 (11.14)
Self-efficacy	56.36 (14.31)	54.18 (13.34)	58.16 (18.78)	55.30 (13.72)	56.00 (14.93)
<u>Experiment 2</u>					
Performance (cm)	47.23 (12.80)	49.24 (9.15)	58.49 (19.74)	56.28 (17.36)	52.81 (15.77)
Supportiveness	4.89 (.72)	4.33 (.92)	5.27 (.50)	4.38 (.83)	4.64 (.78)
Preparation time (s)	1.48 (.37)	1.31 (.31)	1.21 (.31)	1.34 (.27)	1.31 (.33)
Self-confidence intensity	-.57 (1.03)	-.52 (.68)	-.43 (.81)	-.29 (.64)	3.92 (1.12)
Self-confidence direction	-.33 (.80)	-.29 (.90)	-.43 (.75)	-.52 (.68)	.44 (.96)

Table 3. Mediation effects for self-efficacy in experiment 1 and preparation time and self-confidence in experiment 2.

Factor	Mediator	Effect	S.E.	LL 95% CI	UL 95% CI
<u>Experiment 1</u>					
Support type	Self-efficacy	-.20	.59	-1.33	1.18
Support visibility	Self-efficacy	-.32	.61	-1.51	1.01
<u>Experiment 2</u>					
Support type	Preparation time duration	.09	.68	-1.21	1.70
Support visibility	Preparation time duration	-.08	.45	-1.28	.69
Support type	Self-confidence intensity	-.93	.88	-2.90	.60
Support visibility	Self-confidence intensity	.52	.79	-.79	2.41
Support type	Self-confidence direction	-.01	.49	-1.23	.93
Support visibility	Self-confidence direction	.00	.49	-.91	1.22

Note. LL: lower limit; CI: confidence interval; UL: upper limit.

Discussion

The results showed that players given informational support performed better on a football aiming task than those given esteem support regardless of whether the support was given in a visible or invisible manner. There were no differences in self-efficacy between any of the support conditions. Moreover, self-efficacy did not explain the association between the support conditions and performance.

In contrast to previous work in mainstream psychology, these findings suggest that invisibility did not benefit the provision of informational (and esteem) support (e.g., Bolger & Amarel, 2007; Howland & Simpson, 2010). Unexpectedly, we found no differences in self-efficacy between visible informational support and any of the other support conditions (Bolger & Amarel, 2007; Nadler et al., 1983). It may be that visible informational support did not undermine players' self-efficacy (Bolger & Amarel, 2007; Trobst, 2000) which left no function for invisibility to reduce such costs.

The results further opposed previous research findings, which suggest that emotional/esteem support is the most effective type of support predicting performance (Nadler et al., 1983; Rees et al., 2007; Rees & Freeman, 2010). First, this may have had to do with players' self-efficacy. Research suggests that esteem support exerts beneficial effects through increasing individuals' self-efficacy (Rees & Freeman, 2007; 2009; Thoits, 2011). However, if self-efficacy levels did not differ between support conditions, it may be that esteem support did not enhance players' self-efficacy (relative to informational support) and therefore did not benefit performance. It is important to remark that we did not assess changes in self-efficacy and, thus, cannot infer whether baseline levels of players' self-efficacy were responsible for these findings.

Second, a large body of research has shown that appropriate allocation of attentional resources is vital for successful performance (e.g., Beilock & Carr, 2001; Liao & Masters, 2002). Various studies have shown that performance pressure may cause an internal focus on skill processes, which may, in turn, result in performance degradation for skilled individuals (e.g., Beilock, Carr, MacMahon, & Starkes, 2002; Jackson, Ashford, & Norsworthy, 2006; Liao & Masters, 2002). There is further tentative evidence that praised individuals performed worse on a skill-based task due to focusing their attention inwards (Baumeister et al., 1990). In contrast, in the present study, players given informational support were told to: “relax, take your time and focus on the target”. The latter part of this advice was based upon research demonstrating that skilled players performed better on pressuring aiming tasks when they adopted an external task focus (and do not adopt an internal task focus) (Wood & Wilson, 2010; 2012). It may be that performance differences between players given informational support and esteem support emerged through differences in their attentional focus with players given informational support focusing more externally than those given esteem support.

It is further worth considering players' preparation times as a possible explanation for the performance differences. The other part of the informational support message was based upon the finding that longer preparation times have been associated with better kicking performance (Jordet et al., 2009). Jordet (2009) also observed that praising (award winning) players hindered their kicking performance due to shorter preparation times. It may be that in our experiment, those given informational support performed better than those given esteem support because of taking more time prior to their kicking.

Given the surprising findings of the experiment, a replication of the key findings was in order (e.g., see Rozin, 2009). Experiment 2 was designed as a replication and as an extension. In it, we sought to further examine why in this context informational support was more effective than esteem support. Based upon the abovementioned, we reasoned that three explanatory mechanisms were worthy of further examination: (a) players' changes in self-belief, (b) players' attentional focus, and (c) players' preparation times. To investigate changes in players' changes in self-belief, we reasoned that the self-efficacy measure used in the first experiment was too long and too specific to complete twice in close succession. Instead, players completed a short measure of self-confidence prior to- and after the support manipulations. We assessed players' attentional focus during the task using a retrospective verbal thought questionnaire (e.g., Beilock, Kulp, Holt, & Carr, 2004). Players' preparation times were determined by observing video footage of players' performance routine.

Experiment 2

Method

The materials, procedures and methods of Experiment 2 followed those of Experiment 1 except where described below. These changes were made to accommodate the additional mechanisms explored in Experiment 2.

Participants

Eighty-four University football players ($M_{age} = 19.6$ years, $SD = 1.6$ years) recruited from University football teams of a University in the South-West of England took part in the study. Players had on average 11.8 years ($SD = 2.8$) of playing experience, and differed in playing position (goalkeeper, $n = 6$; defender, $n = 27$; midfielder, $n = 31$; attacker, $n = 20$), dominant foot (left, $n = 16$; right, $n = 68$) and self-

reported shooting ability (rated on a scale from 0 = *not skilled* to 10 = *very skilled*, $M = 6.1$, $SD = .99$, range 2-9). Players rated on average the task as being 'quite a bit' important (0 – 4 scale; $M = 2.7$, $SD = .85$). Playing experience, playing position, shooting ability, and task importance did not significantly alter the pattern of results.

Materials

In addition to the camera placed behind the kicking spot, another camera (Panasonic SDR-S26, 25 Hz) was placed in the opposite corner of the room to observe players' kicking in order to determine their preparation times. Furthermore, to add to the evaluative nature of the task, players were asked to wear a heart-rate monitor (Polar RS800CX). They were told that this was to evaluate their physiological responses throughout the experiment. Heart-rate was monitored during the test but not used for further analysis.

Procedure

The start of the procedure differed in that after participants received information about the task, gave written consent and completed the demographics forms, they were asked to fill out a baseline self-confidence measure (see measures section) prior to entering the testing area. The procedure was identical until after participants had received the detailed task instructions from the second experimenter, they were asked to put on a heart-rate monitor. The expert then provided one of the four support manipulations. Participants were again randomly assigned to one of four support conditions (per condition, $n = 21$). Hereafter, participants completed a final pre-task self-confidence measure (see measures section), turned on the heart-rate monitor, and performed the football aiming task. Following the task, they were asked to fill out a retrospective verbal report measure to get insight in their thoughts and attentional focus during the task. They then

completed the post-task manipulation check, took off the heart-rate monitor and were fully debriefed.

Measures

Self-confidence. Self-confidence was measured using the Immediate Anxiety Measurement Scale (IAMS; Thomas, Hanton, & Jones, 2002). The IAMS is a valid and reliable measure (Thomas et al., 2002) which has previously been utilised to examine the relationship of self-confidence on performance (Neil, Wilson, Mellalieu, Hanton, & Taylor, 2012). Participants read instructions defining self-confidence, after which they completed two items measuring the intensity and directional interpretation of self-confidence. The items were rated using a 7-point Likert scale for intensity ranging from 1 (*not at all*) to 7 (*extremely*) and for direction ranging from -3 (*very negative*) to +3 (*very positive*).

Preparation time. Preparation time was defined as the time taken from the moment the first experimenter had blown the whistle until a participant struck the ball with his foot. All preparation times were determined by totaling the frames between the start and end points (measured using the video processing utility *CyberLink PowerDirector*). Mean preparation times were calculated for each participant's ten kicks. One rater coded the complete sample of participants' preparation times. One additional independent rater analysed 50% of the participants' preparation times. Good interrater-reliability was obtained ($ICC_{2,1}, \alpha = .97$).

Performance. Target accuracy was again determined by frame-by-frame analysis of the camera recorded video file. One rater coded the complete sample of participants' shots. Two additional raters analysed 250 randomly chosen shots. Good interrater-reliability was obtained ($ICC_{2,1}, \alpha = .99$).

Verbal Thought Questionnaire. The Verbal Thought Questionnaire (VTQ) is an open-ended retrospective verbal report measure, which has previously been used by studies to assess the thoughts of individuals during high-pressure situations (Beilock et al., 2004; Oudejans, Kuijpers, Kooijman, & Bakker, 2011). Participants read the following: “We all have several thoughts that run through our minds at any given time. Please describe everything that you remember thinking about as you performed the task”. One observer coded all statements ($n = 296$). Two independent observers further categorised each statement. On average, participants reported 3.4 thoughts in total ($SE = .18$). Although the verbal reports could include more than one statement that fell into a specific category (e.g., a participant indicated he “was worried” and “nervous”), those statements only counted once for that specific category.

Interraters’ agreement varied from fair to very good (external task relevant thoughts, $ICC_{2,1}, \alpha = .98$; movement execution, $ICC_{2,1}, \alpha = .90$; positive monitoring, $ICC_{2,1}, \alpha = .91$; worries, $ICC_{2,1}, \alpha = .77$; external task irrelevant thoughts, $ICC_{2,1}, \alpha = .51$). Similar to Oudejans and colleagues (2011), each statement was categorised in one of the following five categories: *movement execution*, (e.g., “thought about technique and step pattern”); *worries*, (e.g., “I remember thinking I was most likely going to mess up the task”); *external task relevant thoughts*, (e.g., “concentrating on the target”); *external task-irrelevant thoughts* (e.g., “thought about the cash prize”); and, *positive monitoring*, (e.g., “taking my time between each kick to control my heart rate”).

Manipulation check. Similar to the previous experiment, support visibility was assessed with two items embedded in a 21-item questionnaire. In addition, we added a measure to determine how participants evaluated the overall ‘helpfulness’ and

'supportiveness' of the expert. The measure comprised six items adapted from a self-report questionnaire developed to evaluate exchanges of support (Goldsmith, McDermott, & Alexander, 2000). The instruction read: "Since today an expert was present during the task, we would like to know how you felt about his presence. Here is a list of words describing him. Please rate how well these words describe him". Participants rated the expert using a 7-point Likert scale ranging from, for example, 1 (hurtful) through 4 (neutral) to 7 (helpful). Though the measure assessed the expert's helpfulness (2 items) and supportiveness (4 items), a principal factor analysis only generated one factor (explaining 73.8% of the variance and an eigenvalue > 1). This factor, named supportiveness, comprised 3 items (communalities > .7); 'hurtful-helpful', 'unsupportive-supportive', and 'encouraging-discouraging'. Internal consistency reliability was good (Cronbach's $\alpha = .80$).

Data analysis

Two by two between-groups analyses of variance (ANOVA) were conducted to examine whether support type and support visibility affected supportiveness, kicking performance and preparation time. To analyse the effects of support type and support visibility on self-confidence, a two-way analysis of covariance (ANCOVA) was employed with baseline values of self-confidence as a covariate (as in Bolger & Amarel, 2007). To examine whether there was an association between the type of support and/or support visibility and players' attentional focus during the task, we performed Chi-square tests. Phi coefficients were calculated to determine the strength of the association between type of support given and players' attentional focus (.00 – .10 = low association; .11 – .30 = moderate to substantial association; .31 – .50 = substantial to strong association; .51 – 1.00 = strong to very strong association, Cohen, 1992). To determine whether the effects of support type and/or

support visibility on kicking performance could be explained by any of the pre-performance variables, mediation analyses were conducted using the PROCESS SPSS custom dialog developed by Hayes (2013). For self-confidence, baseline values were included as covariates in the mediation analyses. To analyse whether players' attentional focus (coded thoughts) could explain the effect of support type and/or support visibility on performance, we used the binary mediation command in STATA with percentile bootstrapping (based on 1000 samples, Hicks & Tingley, 2011).

Results

Manipulation check

The manipulation check revealed that in the visible informational support condition 16/21 participants correctly reported receiving advice while 14/21 felt encouraged by the expert. In the invisible informational support condition, 8/21 participants reported the receipt of advice and 8/21 felt encouraged. In the visible esteem support condition, 21/21 participants correctly felt encouraged by the expert whilst 11/21 reported the receipt of advice. In the invisible esteem support condition, 7/21 participants felt encouraged and 6/21 reported receiving advice from the expert.

The results of participants' ratings for the supportiveness of the expert as a function of the four support conditions are shown in Table 2. Data met the assumption of normality and homogeneity of variances ($p > .05$). For supportiveness, the two-way ANOVA revealed a significant main effect for support visibility ($F_{1, 80} = 19.12, p < .001, \eta_p^2 = .19$). Participants in the visible support conditions ($M = 5.08, SE = .12$) rated the expert as more supportive than those in the invisible support conditions ($M = 4.36, SE = .12$). There was no significant main effect for support type

($F_{1, 80} = 1.68$ $p = .20$, $\eta_p^2 = .02$), and no significant interaction ($F_{1, 80} = 1.02$ $p = .32$, $\eta_p^2 = .01$).

Performance

Means and standard deviations of kicking performance (target accuracy) as a function of the four support conditions are displayed in Table 2. Data met the assumption of normality and homogeneity of variances ($p > .05$). The two-way ANOVA revealed a significant main effect of support type on kicking performance ($F_{1, 80} = 7.48$, $p = .008$, $\eta_p^2 = .09$). Participants in the informational support conditions ($M = 48.24$ cm, $SE = 2.36$) performed significantly better than participants in the esteem support conditions ($M = 57.38$ cm, $SE = 2.36$). There was no significant main effect for support visibility ($F_{1, 80} = .001$ $p = .98$, $\eta_p^2 = .00$) and no interaction effect ($F_{1, 80} = .40$, $p = .53$, $\eta_p^2 = .01$).

Preparation time

Two participants had preparation times more than 3.3 standard deviation units from the grand mean ($Mean = 1.34$, $SE = .04$). We winsorised these values (3.18 s. and 4.07 s.) by changing the deviant raw score to a value 1% larger than the next most extreme score (as in Shimizu, Seery, Weisbuch, & Lupien, 2011). Means and standard deviations of preparation times as a function of the four support conditions are displayed in Table 2. Data met the assumption of normality and homogeneity of variances ($p > .05$). The two-way ANOVA revealed a non-significant main effect for support type ($F_{1, 80} = 3.13$, $p = .08$, $\eta_p^2 = .04$), a non-significant main effect for support visibility ($F_{1, 80} = .010$ $p = .75$, $\eta_p^2 = .00$), but a significant interaction ($F_{1, 80} = 4.73$, $p = .03$, $\eta_p^2 = .06$). Follow-up tests revealed that participants given visible informational support ($M = 1.48$ s, $SE = .07$) had significantly longer preparation times than participants given visible esteem support ($M = 1.21$ s, $SE = .07$), $t(40) =$

2.61, $p = .01$. Participants given invisible informational support ($M = 1.31$ s, $SE = .07$) did not have significantly longer preparation times than participants given invisible esteem support ($M = 1.34$ s, $SE = .06$), $t(40) = -.31$, $p = .76$. In addition, participants given visible informational support ($M = 1.48$ s, $SE = .10$) did not have longer preparation times than participants given invisible informational support ($M = 1.31$ s, $SE = .10$), $t(40) = 1.64$, $p = .11$. Participants given visible esteem support ($M = 1.21$ s, $SE = .09$) did not have significantly longer preparation times than participants given invisible esteem support ($M = 1.34$ s, $SE = .09$), $t(40) = 1.42$, $p = .16$.

Self-confidence

The results of self-confidence as a function of the four support conditions are shown in Table 2. The data met the assumption of normality and homogeneity of variances ($p > .05$). For the intensity of *self-confidence*, the two-way ANCOVA showed no significant main effect for support type ($F_{1, 79} = 1.50$, $p = .22$, $\eta_p^2 = .019$), no significant main effect for support visibility ($F_{1, 79} = .74$, $p = .39$, $\eta_p^2 = .009$), and no significant interaction ($F_{1, 79} = .08$, $p = .78$, $\eta_p^2 = .001$). For the direction of *self-confidence*, there was no significant main effect for support type ($F_{1, 79} = .06$, $p = .81$, $\eta_p^2 = .001$), no significant main effect for support visibility ($F_{1, 79} = .02$, $p = .88$, $\eta_p^2 = .000$), and no significant interaction ($F_{1, 79} = .20$, $p = .66$, $\eta_p^2 = .002$).

Verbal Thought Questionnaire

Chi-square tests revealed a significant association between the type of support given and participants' external task focus ($\chi^2(1, n = 84) = 7.68$, $p = .006$, $\Phi = .30$). Based on the odds ratio, participants were 4.5 times more likely to focus on the target if given advice compared to given encouragement. There was also a significant association between type of support and movement execution ($\chi^2(1, n = 84) = 4.04$, $p = .04$, $\Phi = .22$). Participants were 2.5 times more likely to focus on their

movement execution when given encouragement compared to when given advice. Type of support was not associated with worries, external task irrelevant thoughts, and positive monitoring (X^2 s (1, $n = 84$) = .05 – 2.36, $ps = .12 - .83$, Φ s = .02 – .17). Visibility of support was not associated with any of the thoughts experienced (X^2 s (1, $n = 84$) = .05 – 2.45, $ps = .12 - .83$, Φ s = .02 – .17).

Mediation analyses

The results from percentile bootstrapping (10,000 samples) revealed that for support type, there were no significant indirect effects of self-confidence intensity (.93, 95% CI = -2.90 to .60), self-confidence direction (-.01, 95% CI = -1.23 to .93), and preparation time (.09, 95% CI = -1.21 to 1.01) on performance. Furthermore, for support visibility, there were no significant indirect effects of self-confidence intensity (.52, 95% percentile CI = -.79 to 2.41), self-confidence direction (.00, 95% percentile CI = -.91 to 1.22), and preparation time (-.08, 95% percentile CI = -1.28 to .69) on performance (see Table 3).

The results of the binary mediation using percentile bootstrapping (1000 samples) revealed that for support type, there were no significant indirect effects of external task irrelevant thoughts (.00, 95% CI = -.03 to .06), worries (-.00, 95% CI = -.04 to .03), positive monitoring (-.01, 95% CI = -.06 to .04), movement execution (.04, 95% CI = -.01 to .13), and external task relevant focus (.06, 95% CI = -.01 to .15) on performance. However, both movement execution and external task focus were close to being significant mediators. Based upon opposing effects of an external task focus (positive) and movement execution (negative) on skill-based performance of skilled individuals (e.g., Jackson, Ashford, & Norsworthy, 2006; Wood & Wilson, 2012), we entered both variables simultaneously. The total indirect effect was significant (.10, 95% CI = .003 to .21) indicating that players who received informational support

performed better than those receiving esteem support because they adopted an external focus and avoided a focus on their movement execution (see table 4).

For support visibility, there were no significant indirect effects for external task irrelevant thoughts (.00, 95% CI = -.03 to .06), worries (.00, 95% CI = -.03 to .03), positive monitoring (-.00, 95% CI = -.05 to .04), movement execution (.04, 95% CI = -.02 to .13), external task relevant thoughts (.02, 95% CI = -.10 to .04), and the combination of external task relevant focus with movement execution focus (.02, 95% CI = -.07 to .12) on performance (see table 4).

Table 4. Binary mediation effects for players' attentional focus in experiment 2.

Factor	Mediators	Effect	S.E.	LL 95% CI	UL 95% CI
Support type	External task relevant focus	.06	.04	-.01	.15
Support visibility	External task relevant focus	.02	.04	-.10	.04
Support type	Movement execution	.04	.04	-.01	.13
Support visibility	Movement execution	.04	.04	-.02	.13
Support type	Worries	-.00	.01	-.04	.03
Support visibility	Worries	.00	.02	-.03	.03
Support type	Positive monitoring	-.01	.03	-.06	.04
Support visibility	Positive monitoring	-.00	.02	-.05	.04
Support type	External task irrelevant focus	.00	.02	-.03	.06
Support visibility	External task irrelevant focus	.00	.02	-.07	.03
Support type	External task relevant focus and movement execution	.10	.05	.00	.21
Support visibility	External task relevant focus and movement execution	.02	.05	-.07	.12

Note. LL: lower limit; CI: confidence interval; UL: upper limit.

Discussion

The experiment replicated the findings of Experiment 1 by showing that kicking performance was again significantly better for participants given informational support compared to those given esteem support regardless of whether the support was provided in a visible or invisible manner. In addition, players' self-confidence did not differ between the support conditions.

In contrast to earlier work of Bolger and Amarel (2007) showing the benefits of invisible support on emotional reactivity prior to a performance task, it seems thus that in the context of the current experiment(s), there are no benefits of invisibly providing informational support (or esteem support) for actual performance or any psychological variables.

The findings provide further evidence that giving informational support to players prior to the football aiming task was more effective than giving esteem support. Mediation analyses revealed that players' attentional focus plays a crucial role in explaining these findings. Players given informational support performed superior to those given esteem support through focusing their attention more externally on the target and less internally on their movement execution. These results fit well with studies that have shown that skilled players perform better on a pressuring aiming task when adopting an external task focus (e.g., Wood & Wilson, 2012) rather than an internal task focus (Beilock, Carr, MacMahon, & Starkes, 2002, Jackson et al., 2006).

When performing the pressuring kicking task in front of the expert, it seems thus that players given informational support implemented the advice of the expert, and focused their attention more on the target and, perhaps because of the advice, focused less on their movement execution. In contrast,

players may have felt an increased desire (and/or self-awareness) to perform well in front of the expert after receiving esteem support from him.

Consequently, players may have responded by focusing more internally on their movement execution and less on the target (Baumeister et al., 1990, Wallace, Baumeister, & Vohs, 2005).

The mediation analyses did not show that players' preparation times accounted for why players given informational support outperformed those given esteem support. It may be that in the present experiment, shorter preparation times did not reflect the avoidance coping strategy that is related to unsuccessful performance in high pressure football aiming tasks (penalty kicks, Jordet et al., 2009). Alternatively, it may be that the instruction 'focus on the target' was more influential than the instruction 'take your time' and helped players given informational support to outperform players given esteem support.

Similar to the findings in Experiment 1 regarding players' self-efficacy, no differences in players' self-confidence were found between esteem support and informational support. It seems that esteem support did not enhance players' self-confidence, and their performance in turn. At the same time, it is well known that visible informational support often comes with costs (undermined self-efficacy, self-confidence) and these costs may offset any benefits of this support given (Bolger & Amarel, 2007; Rafaeli & Gleason, 2009). It seems that these costs were not present and, therefore the benefits (changing players' attentional focus) of informational support may have been maximized.

General discussion

This research chapter documents how support type and support visibility influenced performance of skilled football players in a high-pressure football aiming task. In two experiments, we found strong support that the provision of informational support prior to the task was more effective for players' performance than the provision of esteem support. There was no evidence that support visibility influenced the effectiveness of these support types.

The finding that informational support was more effective than esteem support provides further evidence for the importance of distinguishing between support types (Uchino, 2009). The question arises however why informational support was more effective than esteem support given that previous studies have predominantly found benefits of esteem support and no- or negative effects of informational support on outcomes of interest (e.g., Cohen & Wills, 1985; Rees et al., 2007; Rees & Freeman, 2010; Uno et al., 2002). The analyses in Experiment 2 indicated the crucial mediational role of players' attentional focus. Players given informational support performed better compared to players given esteem support because they adopted a more external task focus on the target and less an internal task focus on their movement execution.

These findings are consistent with research showing that skilled individuals perform better on aiming tasks under pressure when they focus their attention externally rather than internally (Jackson et al., 2006; Wood & Wilson, 2010, 2012) and provide further support that one's attentional focus is key for successful performance (Liao & Masters, 2002). The question is,

however, why differences in players' attentional focus emerged between the informational and esteem support conditions.

It is well known that in high-pressure situations, (skilled) individuals may focus their attention internally on skill processes, which may lead to performance degradation by hindering the automaticity of movements (Beilock et al., 2002). When the players given informational support were told to focus on the target, it seems that the players implemented this advice and focused their attention more externally on the target. Perhaps this instruction also prevented them from focusing on their movement execution. It is worth noticing that an expert coach in football penalty taking giving such advice may have enhanced players' willingness to adopt this external focus (Cutrona & Suhr, 1992; Hassell et al. 2010). At the same time, in the pressuring situation, players given esteem support may have felt an increased desire (and/or self-awareness) to perform well in front of the expert after his encouraging words. Consequently, they may have responded by focusing more internally on their movement execution rather than externally on the target (Baumeister et al., 1990; Rosenfeld, Richman, & Hardy, 1989; Wallace et al., 2005).

An unanticipated finding of these experiments was that players given esteem support did not feel more efficacious or confident than players given informational support. This contrasts with previous work, which has observed beneficial effects of esteem support on performers' confidence and self-efficacy but negative effects of informational support on performers' efficacy (e.g., Bolger & Amarel, 2007; Rees & Freeman, 2007). Researchers have noted that informational support may be more appreciated and less likely to undermine feelings of efficacy or confidence when it comes from someone with

expertise (Cutrona & Suhr, 1994; Fisher, Nadler, & Witcher-Alagna, 1982). Furthermore, researchers have argued that esteem support (boost someone's confidence, Cutrona & Russell, 1990) may work best when given by a close other (Phillips, Gallagher, & Carroll, 2009; Thoits, 2011). Therefore, the provider characteristics in the present study may have influenced the extent to which informational and esteem support influenced players' efficacy/confidence and, in turn, players' kicking performance.

The findings of the present study oppose empirical evidence, which has suggested that support is best communicated in an invisible manner (Bolger & Amarel, 2007; Bolger et al., 2000; Howland & Simpson, 2010). We provide the following reasoning for our contrasting results. The main function of invisibility is to minimise the costs (i.e., lower self-efficacy) often associated with provided informational support (e.g., Bolger & Amarel, 2007; Nadler et al., 1983). When visible informational support does not come with costs (relative to esteem support), then invisibly providing this type of support may add little value to its effectiveness. The question is whether our results would have been different if someone with less expertise (teammate, non-expert coach) had given the support. In the threat-to-self-esteem model, Fisher and colleagues proposed that receiving support from a comparable individual is potentially more threatening because it may elicit more feelings of incompetence because of a negative social comparison (Fisher et al., 1982). If so, then the importance of support visibility under such conditions may be greater. Future research is needed to determine whether our findings hold across distinct providers particularly those with less expertise.

Our findings have important theoretical implications. First, our findings suggest that prior to skill-based tasks in high-pressure situations, it is better for skilled athletes to get informational support than to get esteem support. These findings thus imply that esteem support is not necessarily the most effective form of support in pressuring circumstances (Cohen & Wills, 1985) and the often negative connotations associated with informational support (Bolger & Amarel, 2007; Trobst, 2000) may be partially ungrounded. Second, the findings suggest that support invisibility does not necessarily enhance the effectiveness of provided support (Bolger & Amarel, 2007). Third, the results imply that attentional focus may be a central mechanism in explaining the effects of enacted support on performance in pressuring situations. This is an important finding given the failure of social support research to uncover psychological mechanisms for links between enacted support and outcomes (Uchino et al., 2012), and further emphasizes the need for studies to be sensitive to the specific context in which support is provided (Thoits, 2011).

The applied implication is that in high-pressure performance contexts involving skill-based tasks, expert support providers (e.g., coaches) should provide clear and concise advice in preference over words of encouragement. Specifically, they are advised to inform skilled individuals in a short message to focus their attention externally. Whether expert support providers direct this advice explicitly to the individual or convey this advice in a less direct manner does not seem to influence the effectiveness. In the present study, the skilled individuals were experienced football players. It is, however, conceivable that these findings also apply to other performance domains (e.g., other sports, military, surgery) in which attentional focus plays a prominent role.

A key strength of our studies is that we found robust performance effects across two experiments. However, we should note some potential limitations. The controlled nature of the experiments may have threatened ecological validity. In real-world situations, enacted support may not always be provided in a neutral manner and it is uncertain whether (informational) support then comes without costs (Hassell et al., 2010). Further, support is often provided by expert support providers (e.g., coaches) with whom athletes have established relationships. The non-existent relationship between the expert coach and the skilled players may not fully represent coach-athlete support exchanges in the real world and, therefore, may have influenced the effects of the different support types (Rees & Freeman, 2012; Thoits, 2011). To address these concerns, research is needed to examine the role of support type and support visibility on the effectiveness of support exchanges between coaches and athletes in more naturalistic settings (i.e. during half-time, prior to a penalty shootout). Finally, a limitation of the present study may be that there was no baseline performance condition to determine players' initial performance levels in our experiments. However, this baseline performance could have influenced players' feelings towards the actual task (Campbell & Stanley, 1966) and their interpretation of the support provided (cf. Baumeister et al., 1990), thereby confounding the effects of the support manipulations on performance.

In conclusion, across two experiments, we have shown that skilled football players performed better on a football aiming task when an expert support provider gave them informational support compared to when he gave them esteem support regardless of whether the support was given in a visible

or invisible manner. We have shown that a key reason why informational support is more effective is that it helps players to focus more externally on the target and less internally on their movement execution. Therefore, in high-pressure contexts involving skill-based tasks, expert support providers (e.g., coaches) should defer giving encouragement in preference for the provision of clear and concise advice.

Chapter 5: General Discussion

Discussion of results

Across four studies, this thesis examined the influence of support type and support visibility on the effects of enacted social support on performance and a number of key psychological and behavioural variables.

The first study examined how support exchanges of the four support types identified by Rees and Hardy (2000) influenced athletes' emotional states and self-confidence prior to an upcoming competition. Separate self-reports of recipients (athletes) and providers (their key support provider) were obtained to determine the extent to which athletes and key support providers agreed on the occurrence of support exchanges and to examine whether support visibility influenced the effectiveness of the four types of support. The results revealed high correlations between providers' and recipients' reports of all types of exchanged support indicating that athletes and support providers agreed substantially on the occurrence of support behaviours. Moderated hierarchical regression analyses revealed that all four support types positively predicted athletes' positive emotions and self-confidence. Except for one effect that was primarily attributable to the provision of informational support, all other effects were primarily attributable to the receipt of the four support types. There was one significant interaction effect but this effect did not reveal that invisibly provided support was most beneficial. Instead, the interaction underscored the particular harmful impact of both being isolated from and reporting a lack of emotional support. Implications were made, including the suggestion that receiving all four types of support from a key support provider may benefit athletes' self-confidence and positive emotions in the build up to a competition. A key limitation of this study was that by relying on provider and

recipient accounts of support exchanges, it was not possible to verify whether these support exchanges actually took place. Furthermore, given the correlational nature of the study, caution should be taken in inferring causal relationships. To address these concerns, Study 2 examined the influence of support type and support visibility on the effects of enacted support by studying actual observable supportive behaviours by systematically manipulating support under experimental conditions. That is, in Study 2, an experimental paradigm was used to examine how novices performed on a golf-putting task after being provided esteem support or informational support in a visible or invisible manner by a fellow novice golfer. Furthermore, participants' self-efficacy and emotions were assessed to determine whether these variables mediated the support-performance relationship. The results showed that participants given invisible informational support or visible esteem support performed superior to those given no support while participants given visible informational support or invisible esteem support did not. Participants' emotions or levels of self-efficacy could not explain these effects. It was concluded that the provision of support could enhance performance but that its effectiveness depends on the type and visibility of the support provided. To maximise the benefits of provided support, providers should give esteem support in a visible manner but give informational support in an invisible manner.

Study 2 was the first study to reveal that invisibility may enhance the effects of informational support on performance and that invisibility does not seem to enhance the effects of esteem support on performance. Still, there was no evidence why invisibly providing informational support enhanced its

effectiveness and invisibly providing esteem support did not. Study 3 used a different sample and a different task to test the robustness of these findings. The difference was that participants performed a task, which was believed to be more ego-relevant. It was expected that in this context, it would be more likely to observe efficacy costs associated with visible support (Fisher et al., 1982), and that, in turn, the role of invisibility would be greater. Study 3 focused on whether support visibility influenced the effectiveness of informational support and esteem support. Therefore, the no-support condition was redundant. Study 3 examined how the provision of esteem or informational support in a visible or invisible manner by an expert in penalty taking influenced skilled football players completing a football aiming task. Furthermore, the mediating role of self-efficacy was studied. The results revealed that the football players performed better when the expert provided them with informational support than when the expert provided them with esteem support. This effect occurred regardless of whether the support was provided in a visible or invisible manner. Self-efficacy did not explain these findings.

These findings clearly contrasted with the results of Study 2 and the findings of previous work (Bolger & Amarel, 2007; Rees, Hardy, & Freeman, 2007; Rees & Freeman, 2010) as: (a) invisibility did not enhance the effectiveness of informational support (and esteem support), and (b) informational support was more effective than esteem support. Therefore, a replication of the key findings was in order. Study 4 replicated and extended the design of Study 3 to further examine why in this context informational support was more effective than esteem support. To do so, players' self-

confidence prior to- and after the support manipulations was assessed, players' preparation time (Jordet, Hartman, & Sigmundstad, 2009) prior to each kick was measured, and a retrospective verbal thought questionnaire (e.g., Beilock, Kulp, Holt, & Carr, 2004) was used to determine players' attentional focus during the task. The results revealed again that skilled football players performed better when the expert gave them informational support than when the expert gave them esteem support regardless of whether the support was provided in a visible or invisible manner. There was some evidence that players given informational support performed better than those given esteem support because their attention was focused more externally on the target and less internally on their movement execution. With these findings replicating and extending the main findings of the third study, it was concluded that in high-pressure situations that involve skill-based tasks, expert support providers (e.g., coaches) should give athletes informational support in preference over esteem support. Finally, the findings imply that support invisibility does not necessarily enhance the benefits of provided informational support.

Theoretical Implications

As noted previously, despite the wealth of evidence highlighting the importance of social support (e.g., Kristiansen & Roberts, 2010; Rees & Hardy, 2000) and the consistent benefits of perceived social support on outcomes of interest (e.g., Freeman & Rees, 2008; Rees & Hardy, 2004; Uchino & Garvey, 1997), studies have reported inconsistent findings for enacted social support (Freeman, Rees, & Hardy, 2009; Bolger & Amarel, 2007). Several researchers, therefore, hold the premise that enacted support is not particularly useful for

individuals in demanding circumstances (e.g., Cohen, Lakey, Tiell, & Neely, 2005). Other researchers have argued that enacted support can be beneficial but they suggest that to maximize its potential, it is vital to consider the type of support and the visibility of the support enacted (Bolger & Amarel, 2007; Rafaeli & Gleason, 2009; Uchino, Carlisle, Birmingham, & Vaughn, 2011). The findings of this thesis suggest that enacted social support can be beneficial for athletes and thus can play an important role for individuals in performance contexts. However, the findings suggest that it is indeed important to consider the type of support and the visibility of the support.

A number of theoretical implications for social support research in sport were highlighted. First, the results of Study 1 demonstrated that the receipt of all types of support exchanged between athletes and their key support provider benefited athletes' positive emotions and self-confidence towards an upcoming competition. These findings seem to imply that the receipt of any of the four types of support identified by Rees and Hardy (2000) can be useful in aiding athletes' psychological states prior to performance situations. Study 2 further showed that the actual provision of esteem and informational support benefited athletes' actual performance. Consistent with previous work (e.g., Rees & Freeman, 2010; Rees et al., 2007), these findings suggest beneficial influences of esteem support on athletes' psychological states and performance. These findings further suggest that in contrast with previous work (Nadler, Fisher, & Ben-Izthak, 1983; Rees et al., 2007; Searle, Bright, & Bochner, 2001), informational support can be helpful in facilitating athletes' psychological states prior to performing and actual performance. The

overriding implication of these findings is that enacted social support can be helpful for athletes in demanding performance situations.

With all support types having beneficial effects, this may give the impression that the type of support exchanged is not such an important factor to consider in the support process. There are a number of reasons for why researchers should consider the support type exchanged when studying enacted support. First, in Study 1, the extent to which enacted support predicted athletes' emotional states and self-confidence differed as a function of the support type exchanged. Second, in Study 2, the effects of informational support and esteem support on performance depended on their visibility for the support recipient. Third, Study 3 and Study 4 showed that informational support and esteem support differed in effectiveness as skilled football players receiving informational support outperformed those receiving esteem support in a high-pressure football aiming task.

The findings of Study 3 and Study 4 have further implications. That is, revealing robust performance differences between football players given informational support and players given esteem support in favour of those given informational support goes against the widespread belief that esteem support is the most effective form of support in pressuring situations (e.g., Cohen & Wills, 1985; Rees et al., 2007, Rees & Freeman, 2010; Uchino, 2009). That esteem support (e.g., encouragement) is put forward as being *the* type of support to provide to help athletes in stressful circumstances may thus not be wholly justified. There appear to be performance contexts in which providing informational support is preferred over providing esteem support. The findings in Study 3 and 4 suggest that informational support is more

effective than esteem support in a high-pressure football aiming task. It is applicable that these findings have implications in other domains such as sports, military, and surgery as well.

The mediation analyses in Study 4 suggested that the reason why informational support was more effective than esteem support is that it helped players to focus more externally on the target and less internally on their movement execution. This finding is extremely important with decades of social support research failing to uncover psychological mechanisms for links between enacted support and outcomes (Uchino et al., 2012) and implies that players' attentional focus might be a central mechanism in the effects of different types of enacted support in pressuring performance situations.

This finding further emphasizes the need for studies to be sensitive to the specific context in which the specific type of support is provided (Thoits, 2011). In examining the mechanisms that underpin the support-performance relationship, In Study 2 and Study 3, the commonly studied psychological mechanisms emotions and self-efficacy were assessed as potential factors (Cohen, 1988; For a review, see Uchino, Bowen, Carlisle, & Birmingham, 2012). None of these mechanisms appeared to explain the performance effects observed in Study 2 and Study 3. Arguably, in Study 3, this was due to observing unanticipated findings of informational support being more effective than esteem support. When in Study 4 the specific situation was considered — performing pressuring aiming tasks in combination with the specific elements of the advice given ('focus on the target') (e.g., Beilock, 2007), it was possible to detect that players' attentional focus explained why informational support was more effective than esteem support.

Regarding the influence of support visibility on the effectiveness of enacted social support, Study 1 provided no evidence that invisibly providing any support type exerted beneficial effects upon athletes' psychological states. One could argue that the self-report measures employed were insufficient to capture invisible support acts and therefore no benefits of invisibility could be observed (Howland & Simpson, 2010; Shrout et al., 2010). However, Study 3 and 4 used experimental procedures and did not observe beneficial influences of invisibility either. Study 2 did demonstrate that invisibility enhanced the effectiveness of provided support but only for informational support. These findings oppose the suggestion by Bolger and colleagues that, generally, support acts are more effective when communicated in an invisible manner (Bolger et al., 2000). Instead, these findings imply that support visibility may influence the effects of enacted support but its influence seems to depend on the type of support provided. In line with the findings of recent studies (e.g., Bolger & Amarel, 2007; Howland & Simpson, 2010; Shrout et al., 2010), it appeared that invisibility was particularly useful for informational support.

Still, invisibility enhanced the effectiveness of informational support in Study 2 but not in the other studies. Thus, it appears that invisibility can benefit the provision of informational support but it depends on the context in which informational support is provided. The question is what the contextual differences were between the experiments that could explain the differential role of support visibility on provided informational support? One way to interpret the findings of the studies is that the importance to consider support visibility depends on whether the support provider is a fellow participant or an expert coach. According to the threat-to-self-esteem model, receiving support

for a specific issue from a comparable individual is potentially more threatening than from someone viewed with knowledge and expertise (Fisher et al., 1982). If so, then informational support is more likely to come with costs when given by a fellow participant as in Study 2 than an expert coach as in Study 3 and 4. This might imply that it would be more important to consider support visibility when informational support is provided by comparable individuals such as, teammates, fellow workers, or partners.

Applied implications

The findings from the four studies in this thesis have important implications for athletes and those working with athletes. The findings from Study 1 highlight the beneficial influences of support exchanges between key support providers and athletes with athletes' positive emotions and self-confidence being positively predicted by the receipt of support. The findings of Study 2 provide further (stronger) evidence that actual support exchanges may benefit athletes, and in fact, may improve athletes' performance. With the ability of enacted support to improve athletes' psychological states and performance, athletes need to be encouraged to seek, and use support (e.g., Hassell et al., 2010; Morgan & Giacobbi Jr., 2006; Connaughton, Wadey, Hanton, & Jones, 2008), and thus be made aware that asking for- or getting support is not a sign of weakness (e.g., Pensgaard & Roberts, 2003).

Although such recommendations may increase athletes' requests for help, in a sport context, oftentimes support exchanges between athletes and their coaches/ teammates may take place without athletes having asked for support (Rees & Freeman, 2012). Researchers have argued that in these situations, enacted support is more likely to entail costs, and in turn, have null-

or detrimental effects on outcomes (Bolger & Amarel, 2007). The findings of Study 2 point out that even without athletes' request for support, enacted support may still have beneficial effects upon performance. Thus, athletes do not have to ask for support to benefit from it as long as support providers give support.

It is therefore crucial that support providers are made aware of the role they may play in aiding athletes' performance and psychological states prior to performance. They need to be informed how important it is to actively give support to athletes (Connaughton et al., 2008). Although the findings of Study 1 may give the impression that this recommendation is only relevant for important members of athletes' support network, the findings of Study 2 (as well as Study 3 and 4) suggest that this recommendation also applies to support providers with whom athletes do not have a close relationship.

What all support providers have to realise though is that a number of factors determine the extent to which their enacted support is (most) beneficial for athletes. First, it is important for support providers to consider that they can give different types of support and that these may exert differential effects upon athletes' outcomes. Although, Study 1 revealed that each of the four support types identified by Rees and Hardy (2000) positively predicted athletes' happiness, excitement and/or self-confidence, the extent to which these outcomes were predicted differed per support type. For example, esteem support was a stronger predictor of athletes' happiness and excitement than informational support. Furthermore, Study 3 and 4 provide further evidence for the need to consider the type of support by showing that the

provision of informational support was more helpful than the provision of esteem support for football players' performance on a football aiming task.

In contrast with the widespread belief of researchers advocating esteem support as the most useful type of support in a wide range of performance situations (e.g., Cohen & Wills, 1985; Rees et al., 2007), the findings of Study 1, 3, and 4 further indicate that no specific support type may necessarily be considered the best for every situation. The recommendations of researchers (e.g., Connaughton et al., 2008) to unreservedly encourage athletes may thus not always lead to the most favourable outcomes (Study 3 and 4). An important task for sport practitioners is to help support providers identify which types of support are favourable for specific outcomes in specific contexts.

In the particular context of a pressuring football aiming task, the conclusion derived from Study 3 and 4 suggests that in high-pressure performance contexts involving aiming tasks, expert support providers (e.g., coaches) should provide clear and concise advice in preference over words of encouragement. Specifically, they should inform skilled individuals in a short message to focus their attention externally. The key reason why such informational support is more effective than esteem support is that it helps skilled individuals to adopt more of an external task focus and less of an internal task focus. In Study 3 and 4, these skilled individuals were experienced football players. It is, however, conceivable that these findings also apply to other performance domains (e.g., other sports, military, surgery) in which appropriate allocation of one's attentional focus plays a prominent role.

Besides considering the type of support given, support providers should further understand that they need to be mindful about the manner in which they provide different types of support. The findings from Study 2 revealed that esteem support and informational support were both useful in aiding athletes' performance, but it depended on their visibility for the support recipient whether they were helpful (Bolger & Amarel, 2007).

Specifically, the findings of Study 2 imply that, generally support providers should give esteem support in such a way that it is visible for athletes. In other words, it is important that support providers direct esteem support explicitly to athletes for it to benefit their performance.

For informational support, it appears to depend on the context as to whether visibility benefits its effectiveness. Namely, in Study 2, it was found that the informational support needed to be provided invisibly in order to be effective. The findings from Study 3 and Study 4 did not reveal that invisibly providing informational support enhanced its effectiveness. An important task for sport practitioners is to raise the awareness of support providers' awareness of giving advice in different manners.

The contrasting findings do make it difficult to give a clear recommendation of when providers should provide informational support visibly or invisibly. One way to interpret the findings of the studies is that the importance to consider support visibility depends on whether the support provider is a fellow participant or an expert coach. According to the threat-to-self-esteem model, receiving support for a specific issue from a comparable individual is potentially more threatening than from someone viewed with knowledge and expertise (Fisher et al., 1982). If so, then informational support

is more likely to come with costs when given by a fellow participant as in Study 2 than an expert coach as in Study 3 and 4. This implies that it would be more important to consider support visibility when informational support is provided by comparable individuals, such as teammates, fellow workers, or partners. Still, when in Study 3 and 4 an expert support provider (expert coach) gave informational support invisibly it was as effective for players' performance as when the expert support provider gave the informational support in a visible manner. Therefore, it may also be worthwhile for expert support providers to consider giving informational support in an invisible manner.

The question is how support providers can give informational support invisibly. In the experiments, we altered the visibility of support by conveying the same information more indirectly, by speaking to the experimenter rather than the participants. Translating this into the real world gives support providers a very simple method to improve the effectiveness of informational support. Namely, providers can easily direct their advice to someone of whom they know he/she can take the 'advice' without feeling undermined in his/her self-efficacy. In reality, the advice is meant for someone sitting close by who can listen and implement the advice without feeling threatened in his/her. Peter Schmeichel talks about a similar way of giving advice that Sir Alex Ferguson used in the dressing room during half time.

"I like Gary Pallister was given a kind of scapegoat role by Alex Ferguson ... It was not always pleasant, least of all at half time when your adrenaline is on the boil, but through these arguments with me he was, for example, able to point out things he was dissatisfied with so that everyone, without exception, understood what he meant without having to stand directly in the line of fire" (p. 105, Schmeichel, 1999).

Even when a third person is not available, support providers can avoid directing the support explicitly to the recipient. One way to do so is to tell a story about their own experiences or other more prominent individuals in which they disguise the message of advice (Goldsmith, 2004). Again, this is a fairly simple method to give advice (invisibly) to ensure that recipients remain relatively unaware of the advice given. Finally, supporters could approach a coach/superior for advice knowing that the advice they receive will (indirectly) be heard by the struggling individual without him/her feeling undermined in his/her competence (cf., Rees & Freeman, 2012, see also Howland & Simpson, 2010 for other ways of communicating support invisibly). There is an important role for sport psychologists to educate support providers of the possible methods to give informational support in an invisible manner.

Although this thesis observed the benefits of invisible informational support in a specific sport performance context, the importance of providing informational support invisibly may also be applicable to other contexts. Studies have already shown the benefits of invisibly providing informational support between comparable individuals such as partners (e.g., Howland & Simpson, 2010) and fellow participants (e.g., Bolger & Amarel, 2007). It is thus highly likely that in educational (e.g., fellow students exchanging advice) and business settings (e.g., fellow workers exchanging advice), invisibility could play an important role in enhancing the effectiveness of informational support as well.

Methodological limitations

An important limitation of Study 1 is that even though separate reports of providers and recipients were obtained to assess the exchanges of support,

these measures only reflect a subjective perception of the support exchanged. Both provider and recipient's accounts of the support occurrence may have been subject to recall bias and it is unknown to verify whether the support behaviours reportedly provided/received actually happened (e.g., Bolger et al., 2000). A further limitation of this study is its correlational nature. Therefore caution should be taken when inferring causal relationships from the data — rather than that received support led to happier athletes, happier athletes may have reported receiving more support. Another issue of Study 1 involves the items that made up the questionnaire. Some items could have been more behaviourally specific to minimize the need for subjective inferences (Barrera et al., 1981). This specifically refers to the items “take your mind of things” and “make you feel that he/she would always be there for you”. Furthermore, some of the items that captured esteem support — “boost your confidence” and “instil your confidence — may have confounded the relationship between esteem support and self-confidence due to an overlap in content in measurement (Barrera et al., 1981). It should, however, be noted that all these items were derived from the sport specific received support measures of Rees and colleagues (Rees & Freeman, 2008; Rees et al., 2007) and noted originally by Rees and Hardy (2000).

To address these concerns, the subsequent studies of this thesis employed an experimental research design to systematically manipulate the provision of social support. Despite that this design allowed for the examination of specific (and actual) supportive actions, and the inference of causal effects of these supportive actions on outcomes of interest, several limitations of the experiments need to be considered.

First, the context of the three experimental studies may limit the generalisability of the results (Burlison & MacGeorge, 2002). In the experiments, a confederate with no prior relationship with the participants was the support provider of the support manipulations. The strength of this set-up is the possibility to examine the effects of supportive actions on outcomes without the potential confound of provider-related factors (e.g., gender, expertise, manner of support provision) or relationship-related factors (e.g., relationship quality, closeness) (Rafaeli & Gleason, 2009; Uchino et al., 2011). A limitation is that such a set-up is perhaps not the most typical in the real world as athletes are more likely to receive support from individuals within their supportive network. Although it was not possible to overcome this problem, the experiments were designed in such a way that the supportive encounters between the confederate and participants closely resembled exchanges that could happen in the real world.

Furthermore, using an experimental design to examine how support visibility and support type influenced the effectiveness of enacted support permitted only a limited number of features to be changed and a limited number of messages to be tested at once (Burlison & MacGeorge, 2002). Given that the social support literature suggested that esteem and informational support were respectively the most and least effective type of support (e.g., Nadler et al., 1983; Rees & Freeman, 2010; Rees et al., 2007), it was decided to focus on these support types. This thus excluded the examination of how support visibility influenced the effectiveness of emotional and tangible support.

Related, to determine whether support visibility influenced the effectiveness of esteem and informational support, the experiments in this thesis adopted the same way of providing the support in a visible or invisible manner. That is, in each experiment, the provision of visible support was done by communicating the support directly to the participant. The invisible supportive message was similar in content to the visible supportive message but differed in that it was communicated to the recipient by directing the support to the experimenter rather than the participant. Although this consistency allowed for a comparison of the influence of support visibility between the experiments, it permitted us from testing any other ways of invisibly providing support (Bolger et al., 2000; Howland & Simpson, 2010). Therefore, despite that Study 3 and 4 revealed that invisibly providing informational or esteem support did not enhance the effectiveness of these support types, it is unclear whether other ways of invisibly providing these support types would have been able to do so.

To assess whether the manipulation of invisibly providing support was successful in the invisible support conditions, participants completed a manipulation check immediately after the experiment (as used by Bolger and Amarel, 2007) to indicate whether they had received support. One could argue that when recipients are not supposed to be aware of the support given (and not supposed to receive it), asking participants to indicate whether they have received support (yes/no) is slightly odd. In fact, it was exactly with this manipulation check that it was possible to determine whether the invisible support was invisible for participants. Namely, when participants reported the receipt of support from the confederate in the invisible support condition, then

the manipulation was not successful. The only issue with such a manipulation check is that it may have triggered participants to affirm that they had received support. This could explain why some participants felt receiving support in the invisible support conditions. There would be one other option to check whether the support manipulation in the (in)visible conditions was invisible. In order to study invisible support during spontaneous interactions, Howland and Simpson (2010) had trained observers code the visibility of the support behaviours. Following a similar method, judges could have rated the visibility of the support manipulation in the experiments too. However, such objective coding would only be able to look at the providers' (confederate) skilfulness (consistency) of providing invisible support but would not look at the recipients' unawareness of having been given support (Howland & Simpson, 2010). Furthermore, I believe that the rigorous scripting of the experiments and extensive pilot testing ensured consistency of the (in)visible support manipulations.

In examining the effects of enacted support on performance, the three experimental studies observed effects on recipients' performance without including a baseline measure. Although a baseline measure would have given insight as to whether the support manipulation improved/harmed recipients' performance, there are a number of reasons for why such a baseline measure was not included. First, a baseline measure could have confounded the effects of the support manipulations. That is, a good/poor performance on the baseline measure could have influenced athletes' psychological states towards their subsequent performance, which could have influenced their performance. Second, a good/poor performance on the baseline measure could have influenced how athletes perceived the supportive message (Baumeister et al.,

1990; Deelstra et al., 2003). For example, a football player, who kicked all his baseline shots close to the target, may have viewed the advice from the expert as unnecessary while a player, who landed all his baseline shots far from the target, may have been more open to receive advice. Third, another reason for not including a baseline performance was related to the rigorous planning of the experiments. To minimise any unwanted interactions between the participants, the experimenters, and the confederate, all experiments were scripted up until the debriefing of the participant. With inclusion of a baseline measure, it would have been highly likely for participants as well as experimenters to freely and automatically respond to participants' baseline performance. This may have influenced the social context in the experiments.

Similar to a baseline measure of performance, one could argue that in Study 2 and 3, it would have been better to include a baseline measure to determine whether the support manipulation changed participants' psychological states towards performing. However, pre- and post-measures of participants' psychological states closely prior to- and after the support manipulation might have placed an unwanted emphasis on the visible support manipulation. Furthermore, after being given invisible support, participants may have found it strange to complete the same self-efficacy measures in close succession. Study 4 did have a baseline measure of self-confidence but for the abovementioned reason, the baseline measure was completed by participants before they entered the testing site.

There may have been gender effects in this thesis. It has been noted that men may benefit more from direct types of support such as informational and tangible support (Craig & Deichert, 2002) while women may benefit more

from emotional and esteem support (Uno, Uchino, & Smith, 2002). Although Study 2 found similar effects of supportive messages on novice male and female golfers, Study 3 and 4 only used male participants. It is unclear whether the effects of the supportive messages may have been different with female participants.

Future research

This thesis aimed to examine the influence of support type and support visibility on the effects of enacted social support on performance and a number of key psychological and behavioural variables. It further aimed to determine through which underlying mechanisms support type and support visibility influenced the effects of enacted social support on performance. Each of these issues deserves further research.

It was previously noted that a limitation of the experimental studies in this thesis was the non-existent, unnatural relationship between providers and recipients. This was done in order to avoid any confounding effects of relationship factors (Uchino et al., 2011). To overcome this issue, studies may want to consider involving the support providers of athletes' support network. When doing so, researchers can choose to leave athletes free to decide whom they want to bring in as support provider or focus on specific support providers such as participants' coaches or teammates. With the provision of support being performed by athletes' natural social ties, researchers further need to decide whether they want to use scripted supportive messages that these support providers have to express towards athletes (e.g., Phillips, Gallagher, & Carroll, 2009) or whether they want to give support providers the freedom to communicate any support of their choice to help athletes. With the latter

option, these supportive actions could then be rated for their usefulness by objective coders (e.g., Reblin, Uchino, & Smith, 2010).

As previously noted, the three experimental studies were limited in the manipulation of support visibility. Future research could focus on testing the several forms of invisible support highlighted in the previous section. Studies may do so by employing experimental paradigms similar to the ones used in this thesis. Another, perhaps less time consuming option is to use vignettes of hypothetical demanding/stressful situations (Goldsmith, 2004) and to determine how certain forms of visibility influence the effects of specific types of support on participants' feelings towards the support message, the support provider, and the situation (Tardy, 1994).

In Chapter 4, it was highlighted that provider-related characteristics such as expertise may have played a role in explaining why players given informational support performed better than those given esteem support. To better understand the role of the provider, an important next step is to test how different providers conveying the same (informational) support message influence the effects of this support message on performance. One option would be to replicate the design of Study 4 but instead use a comparable football player as a confederate.

Besides using different providers, future research should consider using different tasks to determine how the effectiveness of different support types is influenced by the nature of the task. Wallace and colleagues (2005) highlighted that the benefits of support might differ between skill-based and effort-based tasks. Given the findings from Study 3 and 4 which fit with the results of previous studies (e.g., Baumeister, Hutton, & Cairns, 1990; Wood &

Wilson, 2010), it is conceivable that informational support might be more beneficial in tasks which are primarily skill-based. What happens though when performance situations require both effort and skill?

Although in Study 3 and 4, football players received support in the presence of the experimenters and the confederate, there were no other people present. When being viewed by, for example, an audience or teammates, support recipients may be more aware of what these spectators may think of them (Baumeister & Showers, 1986). This could influence the extent to which receiving support may undermine recipients' sense of self-worth and efficacy. Especially in team-sports, support attempts may often occur under such conditions. An interesting avenue for future research would be to determine how support acts conveyed in public (with audience, teammates) influence athletes' outcomes. Studies could create experimental designs that require participants to bring along a social tie/teammate and perform the task in front of them (Phillips et al., 2009).

Despite creating meaningful performance situations in the experimental studies, the football aiming task used in Study 3 and 4 could be viewed as a contrived task, which does not resemble a real-world situation. One could argue that many actions in football involve aiming (e.g., passing the ball to a teammate; shooting on goal) and taking a penalty kick involves a similar process as observed in the football aiming task. However, to address this issue, future studies may simply want to test the effects of the support messages in a more ecologically valid situation such as a soccer penalty kick (Wood & Wilson, 2010). Researchers do need to be aware then that any

factors (i.e. goalkeeper) added to the experimental set-up may confound the effects of the support messages.

Though focusing upon controlled experimental designs to disentangle the effects of different support types is one option, a different approach would be to study the effectiveness of enacted support in real-world performance settings. Oftentimes, coaches will convey final words of support to athletes prior to commencing their exercise (gymnastics), their run, or their match. Besides, in team-sports such as basketball and volleyball, coaches have the opportunity to call time-outs and influence the game. It would be possible to videotape support exchanges between coaches and athletes during such real-world situations and determine the influence of support type and support visibility of enacted support on outcomes of interest. Furthermore, with such observational data, it would be possible to examine the role of support visibility and support type using cued-recall procedures (see Waldron & Cegala, 1992). With such procedures, support recipients are asked about how specific support exchanges influenced their cognitive and emotional responses at certain points in time. This could help to get a better insight in which situations informational support comes with costs.

An issue revolving the self-report data in Study 1 is the possibility of recall bias due to obtaining retrospective global ratings of support. Even though dyads were asked about their support exchanges in a short time frame (i.e., week), there may still have been specific details of support efforts of which providers and/or recipients were not aware or did not remember. To minimise such bias, future studies could use daily diaries methods – detailed and repeated reports of support exchanges (e.g., Shrout et al., 2010).

Although the sample of student-athletes was not a suitable sample to use such a procedure with, this could be a useful method to get an insight into the effects of supportive exchanges occurring between elite athletes who train daily and their coaches and/or teammates.

An important avenue for future research remains the study of mediating processes underpinning the effects of social support on outcomes in a carefully structured and systematic manner (Uchino et al., 2012). Despite the important finding in Study 4 that players' attentional focus partly explained why informational support was more effective than esteem support, other mechanisms must have played a role in the support-performance relationship. Freeman and Rees (2009) showed that situational control mediated the effects of perceived support on golfers' performance. Furthermore, Wood and Wilson (2012) recently found that perceived control explained why a quiet-eye training intervention influenced players' kicking performance. Drawing upon these two lines of research, future research could examine whether perceived control plays a role in the enacted support-performance relationship (cf. Thoits, 2011).

Furthermore, the findings of Study 2 suggested that invisibly provided informational support helped novice golfers to outperform their non-supported counterparts whilst those given visible informational support did not. However, these findings could not be explained by differences in participants' self-efficacy. This was surprising given that Bolger & Amarel (2007) in their study observed similar results regarding the influence of support visibility on the effects of informational support but showed that these differences were explained by causing differences in efficacy levels. Future research is needed

to better understand how support invisibility functions to improve the effectiveness of informational support.

Moreover, with the design of the experimental studies including the invisible provision of support, it was not possible to ask participants how they felt about this (not) received support. Still, the responsiveness (Maisel & Gable, 2009), and the need for support (Bolger & Amarel, 2007) may moderate the effects of supportive messages on potential underpinning variables (i.e., happiness) and outcome variables (i.e., performance). Future research could incorporate these measures.

Finally, to study natural support exchanges between real dyadic relationships in a controlled setting, researchers should undertake studies using an interaction paradigm (Burlison & MacGeorge, 2002; Reis & Collins, 2000). With this method, dyads typically discuss a problem/issue one of them is experiencing. Participants are asked to interact freely for a standard, brief interval. The interactions are recorded, transcribed, and coded by trained raters to determine the support exchanged (e.g., Cutrona & Suhr, 1992). This approach has great appeal because it provides detailed objective data about 'natural' support encounters. It enables researchers to obtain self-reports of both providers and recipients on the support exchanges with minimal recall bias and allows the comparison of these reports with the objective data obtained. Furthermore, with this design, it is possible to look at real-world stressors/problems, and it gives researchers the possibility to tap into a wide range of outcome variables with the option to infer causal effects regarding the effects of the support exchanged (Reis & Collins, 2000). Such studies would

thus be able to examine the effects of enacted support from the recipient, the provider and the objective observer.

Conclusion

This thesis examined the influence support type and support visibility on the effects of enacted social support on performance and a number of key psychological and behavioural variables. The conclusion derived from the series of studies in this thesis is that support type is a crucial factor to consider when exchanging support. However, no support type is unvaryingly the best under all conditions. For example, Study 1 showed that athletes' pre-competitive levels of excitement were more strongly predicted by receiving esteem support from key support providers than receiving informational support from them. In Study 3 and 4 however, receiving a clear and concise message of advice from an expert support provider was more effective for athletes' performance in a skill-based task than receiving words of encouragement from the same expert support provider. In light of explaining the effects of different support types on performance, Study 4 revealed that attentional focus may be an important underlying mechanism. The results indicate that support visibility also plays an important role in the exchange of support. It depends however on the type of support provided and the context in which this type of support is provided whether support is best given in a visible or invisible manner. An overarching finding of the studies is that all types of enacted support (emotional, esteem, informational and tangible support) can have beneficial effects upon athletes. Enacted support can thus be a 'blessing'. Athletes and all of those working with them need to be made aware of this.

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Appendices

Appendix – I

Questionnaire Provider

As the key provider of support of [name] you may give different types of support (e.g. help and advice) the week before an upcoming competition. This questionnaire asks you to indicate how often you provided these different types of support to him/her over the course of a week.

Please make sure that you complete the questionnaire on the last day before the competition of the sportsperson who chose you as his/her key provider.

The information you provide will be used only for the purpose of this research and you will not be identified individually. As such, your confidentiality is assured – we are asking you to provide us with your name and contact details, only so that we can competition up questionnaires.

- **Be certain to answer ALL the questions. 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. I am interested in all responses.**
- **Please circle your responses. Only circle ONE response for each question, and use the scale provided (e.g., choose 2 or 3, please do not circle both or state 2½).**
- **If you wish to alter an answer, CLEARLY cross out your original choice, then circle your preferred response.**

First, please fill out the information below regarding yourself

Name: _____

Email: _____

Date and time of completion: _____

Age (in years): _____

Gender (please circle): Male or Female

Now carefully read the instructions before completion of the next set of items.

Below is a list of items referring to the **types of support** you may provide. Think back to the **actual interactions** you had with..... [name] last week. Using the following scale, **please indicate the frequency with which you provided these types of support during the last week.**

0 = Not at all

1 = Once

2 = Twice

3 = Three times

4 = Four or more times

In the last week, how often did you...

	Not at all	Once	Twice	3 times	4 or more times
1. take his/her mind off things	0	1	2	3	4
2. instil him/her with confidence	0	1	2	3	4
3. suggest a way he/she might do something	0	1	2	3	4
4. cheer him/her up	0	1	2	3	4
5. loan or give him/her something	0	1	2	3	4
6. offer him/her ideas and suggest actions	0	1	2	3	4
7. emphasise his/her abilities	0	1	2	3	4
8. help him/her with tasks	0	1	2	3	4
9. give him/her advice about what to do	0	1	2	3	4
10. arrange something for him/her	0	1	2	3	4
11. show concern for him/her	0	1	2	3	4
12. reinforce the positives	0	1	2	3	4
13. make him/her feel that you would always be there for him/her	0	1	2	3	4
14. give him/her constructive criticism	0	1	2	3	4
15. help him/her sort out practical matters	0	1	2	3	4
16. Boost his/her confidence	0	1	2	3	4

Please ensure that you:

- **have completed the consent form.**
- **seal the envelope with inclusion of both the consent form and this questionnaire.**
- **RETURN your envelope**

Thank you

Questionnaire Recipient

As you are aware now, the aim of this study is to examine what *your **most important (key) provider*** of support does and says to you over the course of a week and how this may affect *your feelings and expectations towards an upcoming competition.*

This questionnaire asks you to indicate how often your key provider of support did or said something to you last week. Further, you are asked to complete items regarding your thoughts and feelings towards the upcoming competition.

- **Be certain to answer ALL the questions. 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. I am interested in all responses.**
- **Please circle your responses. Only circle ONE response for each question, and use the scale provided (e.g., choose 2 or 3, please do not circle both or state 2½).**
- **If you wish to alter an answer, CLEARLY cross out your original choice, then circle your preferred response.**

First, please fill out the information below regarding yourself

Name: _____

Date and time of completion: _____

How important is the next competition to you:

Not at all A little Moderately Quite a bit Extremely

Now carefully read the instructions before completion of the next set of items.

Below is a list of items referring to **the types of support** you may receive as a sportsperson. Think back to **the actual interactions** you had with your key provider **last week**. Using the following scale, **please indicate the frequency with which you received these types of support during the last week from your key provider.**

0 = Not at all

1 = Once

2 = Twice

3 = Three times

4 = Four or more times

In the last week, how often did your key provider...

	Not at all	Once	Twice	3 times	4 or more times
1. take your mind off things	0	1	2	3	4
2. Instil you with confidence	0	1	2	3	4
3. suggest a way you might do something	0	1	2	3	4
4. cheer you up	0	1	2	3	4
5. loan or give you something	0	1	2	3	4
6. offer you ideas and suggest actions	0	1	2	3	4
7. emphasise your abilities	0	1	2	3	4
8. Help you with tasks	0	1	2	3	4
9. give you advice about what to do	0	1	2	3	4
10. arrange something for you	0	1	2	3	4
11. show concern for you	0	1	2	3	4
12. reinforce the positives	0	1	2	3	4
13. make you feel that he/she would always be there for you	0	1	2	3	4
14. give you constructive criticism	0	1	2	3	4
15. help you sort out practical matters	0	1	2	3	4
16. Boost your confidence	0	1	2	3	4

Below you will find a list of words that describe a range of feelings that you may experience. Please read each one carefully and then circle the appropriate number to the right of the statement to indicate how you feel **right now, at this moment, in relation to the upcoming competition**. Do not spend too much time on any one item, but choose the answer which best describes your feelings right now in relation to the upcoming competition.

- 0 = Not at all**
1 = A little
2 = Moderately
3 = Quite a bit
4 = Extremely

	<i>Not at all</i>	<i>A little</i>	<i>Moderately</i>	<i>Quite a bit</i>	<i>Extremely</i>
1. Upset	0	1	2	3	4
2. Exhilarated	0	1	2	3	4
3. Uneasy	0	1	2	3	4
4. Tense	0	1	2	3	4
5. Sad	0	1	2	3	4
6. Pleased	0	1	2	3	4
7. Nervous	0	1	2	3	4
8. Joyful	0	1	2	3	4
9. Irritated	0	1	2	3	4
10. Happy	0	1	2	3	4
11. Furious	0	1	2	3	4
12. Unhappy	0	1	2	3	4
13. Excited	0	1	2	3	4
14. Enthusiastic	0	1	2	3	4
15. Annoyed	0	1	2	3	4
16. Disappointed	0	1	2	3	4
17. Dejected	0	1	2	3	4
18. Cheerful	0	1	2	3	4
19. Apprehensive	0	1	2	3	4
20. Anxious	0	1	2	3	4
21. Energetic	0	1	2	3	4
22. Angry	0	1	2	3	4

A number of statements that athletes have used to describe their feelings before competition are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate **how you feel right now – at this moment in relation to the upcoming competition**. Do not spend too much time on any one statement, but choose the answer which describes your feelings right now.

0 = Not at all 1 = Somewhat 2 = Moderately so 3 = Very much so

	Not at all	Somewhat	Moderately so	Very much so
1. I feel self-confident	0	1	2	3
2. I'm confident that I can meet the challenge	0	1	2	3
3. I'm confident about performing well	0	1	2	3
4. I'm confident because I mentally picture myself reaching my goal	0	1	2	3
5. I'm confident of coming through under pressure	0	1	2	3

Please make sure that you:

- **have completed the consent form**
- **have sealed your RECIPIENT-ENVELOPE with inclusion of the questionnaire.**
- **collect the questionnaire from your key provider.**
- **RETURN both envelopes.**

Thank you

Appendix – II

Pre-performance measure

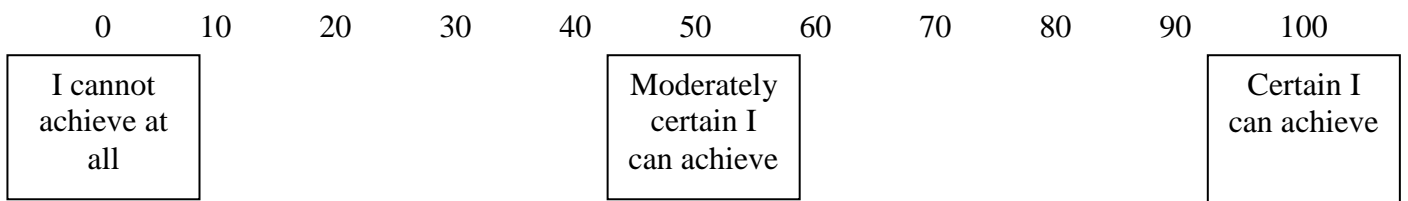
Below you will find a list of words that describe a range of feelings that you may experience. Please read each one carefully and indicate on the scale next to each item how you feel **right now, at this moment, in relation to the upcoming golf putting task**. There are no right or wrong answers. Do not spend too much time on any one item, but choose the answer which best describes your feelings right now in relation to the upcoming golf putting task.

	Not at all	A little	Moderately	Quite a bit	Extremely
Upset	0	1	2	3	4
Exhilarated	0	1	2	3	4
Uneasy	0	1	2	3	4
Tense	0	1	2	3	4
Sad	0	1	2	3	4
Pleased	0	1	2	3	4
Nervous	0	1	2	3	4
Joyful	0	1	2	3	4
Irritated	0	1	2	3	4
Happy	0	1	2	3	4
Furious	0	1	2	3	4
Unhappy	0	1	2	3	4
Excited	0	1	2	3	4
Enthusiastic	0	1	2	3	4
Annoyed	0	1	2	3	4
Disappointed	0	1	2	3	4
Dejected	0	1	2	3	4
Cheerful	0	1	2	3	4
Apprehensive	0	1	2	3	4
Anxious	0	1	2	3	4
Energetic	0	1	2	3	4
Angry	0	1	2	3	4

Right now, think about your golf putting task.....

- Notice that each band is 10 cm wide. In the column CAN YOU ACHIEVE IT, state **Yes** or **No** for each band (ranging from 1-10) with reference to whether you believe you can achieve an average score equal to or above the band.
- For those bands that you stated Yes to, in the adjacent column, labelled CONFIDENCE, rate how confident you can achieve an average score of this band. Rate your degree of confidence by recording a number from 0 to 100 using the scale given below.

CONFIDENCE SCALE



BAND	CAN YOU ACHIEVE IT? (YES / NO)	CONFIDENCE (0-100)
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____
5	_____	_____
6	_____	_____
7	_____	_____
8	_____	_____
9	_____	_____
10	_____	_____

Post-performance measure

Please answer the following questions, **by circling 'yes' or 'no'...**

“Please recall all your thoughts and actions that occurred prior to starting the golf putting task”...

Question	Answer	
I felt at ease with the experimenter	Yes	No
I thought about the best way to putt the ball	Yes	No
I thought the instructions were clear	Yes	No
The other student encouraged me to perform well	Yes	No
It was important to me to perform well on the golf task	Yes	No
I thought about my putting stroke	Yes	No
The presence of the other student worried me	Yes	No
I felt at ease with the lab environment	Yes	No
I pictured myself putting	Yes	No
I felt ready to do the golf task after the instructions	Yes	No
The other student offered me advice or guidance	Yes	No
I wanted to win the reward for performing best	Yes	No
I thought about the speed of the ball	Yes	No
The other student reassured me	Yes	No
I felt like I was going to perform well on the golf task	Yes	No
The scores on the leader board worried me	Yes	No
The presence of the other student calmed me down	Yes	No

THANK YOU FOR YOUR TIME

Appendix – III

Pre-performance measure

Right now, think about the football aiming task. Please look at the target and the meter ruler.....

- Notice that each band is 10 cm wide. In the column CAN YOU ACHIEVE IT, state **Yes** or **No** whether you believe on average your kicks (10) can achieve at least that band.
- ONLY FOR THOSE BANDS THAT YOU STATED **YES** TO, in the next column, labelled CONFIDENCE, rate how confident you can achieve this band. Rate your degree of confidence by recording a number from 0 to 100 using the scale given below.

CONFIDENCE SCALE

0 10 20 30 40 50 60 70 80 90 100

I cannot
achieve at
all

Moderately
certain I
can achieve

Certain I
can achieve

BAND (CM)	CAN YOU ACHIEVE IT? (YES / NO)	CONFIDENCE (0-100)
100-90	_____	_____
90-80	_____	_____
80-70	_____	_____
70-60	_____	_____
60-50	_____	_____
50-40	_____	_____
40-30	_____	_____
30-20	_____	_____
20-10	_____	_____
10-0	_____	_____

Post-performance measure

Please answer the following questions, **by circling 'yes' or 'no'...**

“Please recall all your thoughts and actions that occurred prior to starting the kicking task”...

Question	Answer	
I felt at ease with the experimenter	Yes	No
I thought about the best way to kick the ball	Yes	No
I thought the instructions were clear	Yes	No
The expert encouraged me to perform well	Yes	No
It was important for me to perform well on the kicking task	Yes	No
The presence of the assistant(s) worried me	Yes	No
I focused on the target	Yes	No
The expert gave me advice / guidance	Yes	No
I felt at ease with the test environment	Yes	No
I pictured myself kicking towards the target	Yes	No
I felt ready to do the kicking task after the instructions	Yes	No
The experimenter encouraged me	Yes	No
The presence of the camera worried me	Yes	No
I focused on the ball	Yes	No
I felt like I was going to perform well on the kicking task	Yes	No
The experimenter gave me advice / guidance	Yes	No
I thought about the speed of the ball	Yes	No
The expert reassured me	Yes	No
The presence of the experimenter calmed me down	Yes	No
The scores on the leader board worried me	Yes	No
I wanted to win the reward for performing best	Yes	No

THANK YOU FOR YOUR TIME

Appendix – IV

Pre-performance measure – Time 1

The questions below are designed to assess your pre-performance state. Please read the definitions provided and respond to the two questions that follow each of them. The first questions require you to indicate the amount or level of anxiety and confidence you are feeling **RIGHT NOW**. The second questions require you to indicate the extent to which you regard the amount or level of anxiety and confidence you are feeling as positive or negative towards your upcoming performance. Please respond to each question by circling one number.

- 1) **Cognitive anxiety is the mental component of anxiety and may be characterised by thoughts such as concerns or worries about your upcoming performance.**

a) **To what extent are you experiencing cognitive anxiety right now:**

1	2	3	4	5	6	7
---	---	---	---	---	---	---

NOT AT ALL

EXTREMELY

b) **What effect do you think this cognitive anxiety will have on your upcoming performance on the task:**

-3	-2	-1	0	+1	+2	+3
----	----	----	---	----	----	----

VERY NEGATIVE

VERY POSITIVE

- 2) **Somatic anxiety is the perception of your physical state and may be characterised by symptoms such as nervousness, butterflies in the stomach, tense muscles and increases in heart rate.**

a) **To what extent are you experiencing somatic anxiety right now:**

1	2	3	4	5	6	7
---	---	---	---	---	---	---

NOT AT ALL

EXTREMELY

b) **What effect do you think this somatic anxiety will have on your upcoming performance on the task:**

-3	-2	-1	0	+1	+2	+3
----	----	----	---	----	----	----

VERY NEGATIVE

VERY POSITIVE

- 3) **Self-confidence is how confident you are of performing well in the upcoming performance and may be characterised by factors such as achieving your performance goals and performing well under pressure.**

a) To what extent are you experiencing self-confidence right now:

1	2	3	4	5	6	7
---	---	---	---	---	---	---

NOT AT ALL

EXTREMELY

b) What effect do you think this self-confidence will have on your upcoming performance on the task:

-3	-2	-1	0	+1	+2	+3
----	----	----	---	----	----	----

VERY NEGATIVE

VERY POSITIVE

Pre-performance measure – time 2

The questions below are designed to assess your pre-performance state. Please read the definitions provided and respond to the two questions that follow each of them. The first questions require you to indicate the amount or level of anxiety and confidence you are feeling **RIGHT NOW**. The second questions require you to indicate the extent to which you regard the amount or level of anxiety and confidence you are feeling as positive or negative towards your upcoming performance. Please respond to each question by circling one number.

- 4) **Cognitive anxiety is the mental component of anxiety and may be characterised by thoughts such as concerns or worries about your upcoming performance.**

c) To what extent are you experiencing cognitive anxiety right now:

1	2	3	4	5	6	7
---	---	---	---	---	---	---

NOT AT ALL

EXTREMELY

d) What effect do you think this cognitive anxiety will have on your upcoming performance on the task:

-3	-2	-1	0	+1	+2	+3
----	----	----	---	----	----	----

VERY NEGATIVE

VERY POSITIVE

- 5) **Somatic anxiety is the perception of your physical state and may be characterised by symptoms such as nervousness, butterflies in the stomach, tense muscles and increases in heart rate.**

c) To what extent are you experiencing somatic anxiety right now:

1	2	3	4	5	6	7
---	---	---	---	---	---	---

NOT AT ALL

EXTREMELY

d) What effect do you think this somatic anxiety will have on your upcoming performance on the task:

-3	-2	-1	0	+1	+2	+3
----	----	----	---	----	----	----

VERY NEGATIVE

VERY POSITIVE

6) Self-confidence is how confident you are of performing well in the upcoming performance and may be characterised by factors such as achieving your performance goals and performing well under pressure.

c) To what extent are you experiencing self-confidence right now:

1	2	3	4	5	6	7
---	---	---	---	---	---	---

NOT AT ALL

EXTREMELY

d) What effect do you think this self-confidence will have on your upcoming performance on the task:

-3	-2	-1	0	+1	+2	+3
----	----	----	---	----	----	----

VERY NEGATIVE

VERY POSITIVE

POST-PERFORMANCE QUESTIONNAIRE

“We all have several thoughts that run through our mind at any given time. Please describe everything that you remember thinking about as you performed the kicking task”

10.	The presence of the cameras worried me	Yes	No
11.	The experimenters offered me advice / guidance	Yes	No
12.	The expert reassured me	Yes	No
13.	The presence of the experimenter calmed me down	Yes	No
14.	I wanted to win the reward for performing best	Yes	No

As today an expert was present during the task, we would like to know how you felt about his presence. Here is a list of words describing him. Please rate how well these words describe him:

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Hurtful Neutral Helpful

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Useless Neutral Useful

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Unsupportive Neutral Supportive

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Upsetting Neutral Reassuring

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Distressing Neutral Comforting

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Discouraging Neutral Encouraging

Thanks for your participation.