AN INVESTIGATION INTO THE NATURE AND ROLE OF THE CLIENT-TRAINER RELATIONSHIP IN EXERCISE: APPLYING THE 3 + 1CS MODEL

By

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Dedication

To Dad,

I wish you could have been here to see this completed. I know you would have been proud.

Acknowledgements.

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Abstract

This thesis is offered as a series of three studies which applies the 3 + 1Cs relationship model (Jowett, 2007) to the study of the trainer-client interpersonal relationship in structured health-related fitness environments. The proposition that a rewarding and enjoyable working relationship should play an essential role in developing a client's motivation for, and commitment to, exercise is intuitive. However, the conceptual basis of this relationship, along with its determinants and consequences, remains to be investigated in trainer-led exercise settings. By establishing the theoretical suitability of the 3 + 1Cs model for this context, the thesis provides a valid framework for future study of this topic. It addresses a gap in the extant research by investigating whether the trainer-client relationship is a significant social variable which has the potential to promote adaptive motivation towards exercise and psychological well-being. The first study interviewed trainer – client dyads to determine how the underlying constructs of the 3 + 1Cs model were expressed in the context of their interpersonal working relationship and to evaluate the applicability of the model. The second study used the code categories generated in the first study to develop and validate a questionnaire designed to measure relationship quality in client-trainer dyads. Evaluation of the structural validity of the questionnaire was used to provide further confirmation of the relevance of the 3C + 1 relationship model to this context. The third study used this questionnaire to investigate some of the antecedents and determinants of the trainer-client relationship in a sample of exercisers. Client perceptions of the trainer's trait emotional intelligence was investigated as a relationship antecedent. The psychological consequences of the relationship were tested using Self-Determination Theory (SDT: Deci & Ryan, 2000) by examining the association of relationship perceptions with need satisfaction, intrinsic and identified motivational regulation and psychological well-being (subjective vitality). The findings of these studies support the conceptual validity of the 3Cs for the study of client-trainer relationships in health-related exercise. The validation of the 12-item Client-Trainer Relationship Questionnaire (CTR-Q) and confirmation of its structural and criterion validity endorses this conclusion. Clients' perceptions of their working relationship were found to be significantly and positively related to their perceptions of their trainer's trait emotional intelligence (a relationship antecedent). Relationship quality was also significantly and positively associated with the psychological consequences of psychological need satisfaction. In turn psychological need satisfaction was significantly associated with autonomous motivational regulation and subjective vitality. In conclusion, the thesis has shown that the

client-trainer relationship operates as a key social variable congruent with SDT propositions to affect clients' motivation and psychological well-being. The effectiveness of this relationship can be influenced by a potentially modifiable personal characteristic of the trainer, namely trait emotional intelligence.

Publications arising from this thesis.

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List of Abbreviations

3 + 1Cs	Closeness, Commitment, Complementarity (3Cs) and Co-orientation (+1)
AIC	Akaike Information Criterion
BOS	Bristol Online Survey
BREQ	Behavioural Regulation in Exercise Questionnaire
CART-Q	Coach-Athlete Relationship Questionnaire
CFA	Confirmatory Factor Analysis
CI	Confidence Interval
CTR-Q	Client-Trainer Relationship Questionnaire
EFHA	European Health and Fitness Association (EFHA)
EI	Emotional Intelligence
EQF	European Quality Framework
GFP	Global Factor of Personality
IMS	Investment Model Scale
LM	Lagrange Multiplier test
MSCEIT2	Mayer-Salovey-Caruso Emotional Intelligence Test
NNFI	Non-Normed Fit Index
NOS	National Occupational Standards
PARS	Physical Activity on Referral Schemes
PNSE	Psychological Need Satisfaction in Exercise Questionnaire
RCFI	Robust Confirmatory Fit Index
RMSEA	Robust Root Mean Square Error of Approximation
SDT	Self-Determination Theory
SEM	Structural Equation Modelling
SRMR	Standardised Root Mean Square Residual
TEIQue	Trait Emotional Intelligence Questionnaire
VIF	Variance Inflation Factor
WA	Working Alliance
WAEIS	Wong and Law Emotional Intelligence Scale
WAI	Working Alliance Inventory

Chapter One: Literature Review.

1.1. Introduction and context for the study.

Physical inactivity has been irrefutably linked to chronic disease and premature death (Warburton, Nicol & Bredin, 2006). An active lifestyle is more likely to lead to a reduced risk of many chronic and potentially fatal conditions including stroke, diabetes, osteoporosis, osteoarthritis, obesity, depression and certain cancers (Janssen & LeBlanc, 2010; Myers et al., 2004). Given that physical activity is the most modifiable risk factor for ill health in developed countries (Thornton et al., 2016), guidelines have been developed for the promotion of health-enhancing physical activity. However, recent estimates from England suggest that 1 in 4 women and 1 in 5 men fail to meet these recommendations (Public Health England, 2016). A significant proportion of the population, therefore, need to become more active on a regular basis to stay healthy.

Although the benefits of exercise are now well publicised, people can find it difficult to make permanent lifestyle changes due to a number of personal and environmental constraints. Cognitive and motivational variables have been identified as influential predictors of exercise adoption, participation and drop-out (Gidlow, Johnston, Crone & James, 2015; Tobi, Estacio, Yu, Renton, & Foster, 2012) and so a lack of motivation, misconceptions about exercise and low levels of confidence are important barriers to physical activity. Some will make the decision to enlist the help of an exercise professional and hire a personal trainer or attend instructor-led exercise classes in order to overcome these difficulties.

Exercise professionals, therefore, can assume an influential role in helping clients adopt and maintain lifelong exercise habits. Although some clients achieve their goals, others will drop out and client retention and adherence have been identified as significant problems for the health and fitness industry as a whole. Health and fitness clubs in the United Kingdom lose about 50% of their members each year (Fricker, 2017) with worse adherence for individuals with poor health status (Warburton et al., 2006). An evaluation of Physical Activity on Referral Schemes (PARS) reported pooled adherence rates of 43% from 8 randomised controlled trials (Pavey et al., 2013), although dropout rates of up to 96% for some groups have been cited elsewhere (Gidlow et al., 2015). Adherence data shows convincingly that both normal and clinical populations find it difficult to adhere to regular

exercise and this illustrates the need for further research to identify factors which can enhance behaviour change and adherence.

Exercise psychologists have previously used a range of theoretical frameworks to identify factors associated with the adoption and maintenance of physical activity. These include Self-efficacy theory (Bandura, 1977), Self-determination theory (Deci & Ryan, 1985) and attitudinal models like the theory of planned behaviour (Ajzen, 1988). The transtheoretical model (Prochaska and Diclemente, 1983) describes the process of becoming more physically active as a dynamic passage through a series of stages which are characterised by changes in behaviour (increased physical activity) and exercise-related cognitions. These theories have improved understanding about how individual cognitions and emotions of the exerciser can be influenced to promote exercise (Biddle, Mutrie, & Gorely, 2014; Haggar, Chatzisarantis, & Biddle, 2002; Lowther, Mutrie, & Scott, 2007). Whilst these models all recognise that individuals are influenced by the social environment and significant others, research has so far failed to address directly the role of interpersonal relationships in the adoption and maintenance of exercise. In particular, the quantity and quality of instructor support has been uniformly neglected in previous evaluations of exercise programmes (Pavey et al., 2013), even though the relationship established between clients and their trainers could be a potent variable in supporting retention and adherence. Jowett (2005; 2007) defined the dyadic interpersonal relationship as a social situation where the thoughts, feelings and behaviours of both trainer and client are interdependent. Thus the relationship is a constantly evolving product of the reciprocal interactions between the cognitive, affective and behavioural states of both dyad members: what the trainer thinks, does and feels affects what the client thinks, does and feels and vice-versa. In successful relationships this interdependent process leads to shared goals, reciprocal liking and harmonious ways of working. This thesis is based on the premise that the nature of this working relationship has a significant impact on exercisers' cognitive, affective and behavioural dispositions towards physical activity.

1.1.1. Exercise professional training and certification.

Approved qualifications exist which equip exercise professionals with the knowledge and skills they require to work in the industry. The European Health and Fitness Association (EFHA) has produced a European Quality Framework (EQF) which regulates fitness certification across Europe. These guidelines are expressed in the National Occupational Standards (NOS) which are produced by Skillsactive and govern qualifications in the United

Kingdom. The benchmarks set out the skills, competencies and curricula for qualifications for group exercise instructors, personal trainers and those working with specialist populations (such as the elderly or obese). The first behavioural competency, which underpins every qualification, states that exercise professionals should *"seek to nurture healthy relationships with participants and other health professionals by supporting, coordinating and managing the fitness/exercise process effectively, keeping the participant at the centre of the process"* (Skillsactive.com, *n.d.*).

Despite this statement, no unit includes any reference to theoretical models or knowledge about interpersonal relationships in the curriculum.

1.1.2. The role of professional interpersonal relationships in exercise and fitness.

Regardless of the context, supervision by an exercise professional has claimed to be instrumental in helping clients to achieve their goals (Coutts, Murphy, & Dascombe, 2004; Mazetti et al., 2000). They provide expert coaching, facilitate commitment to change and help the client to develop coping strategies which can overcome personal barriers to an active and healthy lifestyle (Wen-Yu, Yuan-Den, & Tsai-Yuan, 2010). This requires a collaborative and trusting working relationship which has been recognised in the behavioural competencies listed by the EQS and NOS. However, there is a dearth of research investigating the impact of the client-practitioner relationship on behavioural and psychological outcomes associated with adopting and maintaining health-related physical activity. This thesis aims to address this deficiency by conducting a conceptually driven investigation into the nature of the client-trainer relationship and by testing its relationship with some theoretically relevant antecedents and outcomes. This chapter aims to provide a review of three key areas of research. The first section will examine the conceptual basis of the dyadic interpersonal relationship, the second will evaluate the role of trait emotional intelligence as an antecedent of relationship quality and the third section will discuss the function of relationship quality as a situational variable which can shape adaptive motivational outcomes and psychological well-being in exercisers.

1.2. The nature of the dyadic interpersonal relationship

In contrast to physical activity settings, other contexts such as medicine, nursing, psychotherapy, coaching and executive coaching have acknowledged the importance of interpersonal relationships to effective practice. However, the range of contexts and professions studied has spawned a diversity of theoretical approaches and methodologies.

There is a long history of research into the client-therapist interpersonal relationship in psychotherapy due to the emphasis on the therapeutic bond in counselling approaches (Duquette, 1993; Rogers, 1983). In addition, interpersonal relationships have been studied in doctor-patient interactions (Fuertes, Toporovsky, Reyes, & Osborne, 2017; Kiesler & Auerbach, 2003), and in coach-athlete relationships (Jowett, 2007; 2009a). The two most prominent conceptual approaches that have emerged are Bordin's (1983) working alliance and the 3 + 1Cs model of the coach-athlete relationship (Jowett, 2007; Jowett & Ntoumanis, 2004). Given that both counselling and sports coaching require the client and professional to collaborate on regular and extended work together to reach a common goal, either could be considered as a potential theoretical framework for further study in trainer-led health-related physical activity. The aim of the next section is to review these two models, to identify the similarities and differences between them and to discuss their applicability to the physical activity context.

1.2.1. The working alliance.

The relationship between client and practitioner has been extensively studied in the area of psychotherapy. Bordin (1983) gave rise to the term 'working alliance' (WA) claiming that the therapist-client relationship was central to the process of psychological change. The alliance was proposed to '*be'* the treatment, assuming at least as much importance as the specific methods used by the psychotherapist. Like exercise instruction, this is a field of health and wellness in which the client and practitioner work together to change aspects of the client's behaviour. Indeed, Bordin (1983) proposed that the WA could be applied to any situation in which a person seeking change was guided by a change agent. Subsequent empirical work has confirmed Bordin's proposition that the quality of the therapist – client relationship is more strongly related to therapy outcomes than the specific techniques employed (Horvath & Symonds, 1991). The WA is therefore considered an essential part of counselling and psychotherapy effectiveness and viewed as pan-theoretical in nature.

WA is characterised by three distinct functions of the relationship. The first of these is the mutual agreement and understanding between the therapist and patient on the goals of treatment. The second is the understanding of, and cooperation on, the tasks necessary to reach the agreed goals and the third is an affective bond consisting of trust, care and liking. In an effort to operationally define and measure these three dimensions, Horvath and Greenberg (1986) developed the Working Alliance Inventory (WAI). This instrument has separate

versions which can be completed by both client and therapist and contains 36 parallel items. It contains three sub-scales which correspond to Bordin's tripartite definition given earlier. The subscales however are not independent; instead total score is used to indicate alliance strength.

WA is one of the most frequently investigated variables in psychotherapy (Castonguay, Constantino, & Holtforth, 2006). It has been found to reliably relate to treatment outcomes and effect sizes for the alliance-outcome relationship have been reported as ranging between 0.22 – 0.26 (Horvath, Del Re, Flückiger, & Symonds, 2011). Cohen (1969) would classify this as fairly small but the relationship has been found to be robust and reliable. In particular, WA during the early stages of therapy seems to be more predictive of outcome (Reandeau & Wampold, 1991) and poor alliance scores recorded in initial sessions have been related to client termination of sessions (Sandell Sachs, 1983).

Questions have been raised about the direction of causality since it is possible that improvements in outcomes cause more favourable ratings of WA rather than the other way around (Castonguay *et al.*, 2006). The former explanation would mean that the influence of WA on outcomes could be overstated. Xu and Tracey (2015) recently expounded this argument and compared the 'relationship as strategy' hypothesis (where WA leads to symptom change) to the 'relationship as outcome' (where symptom change leads to improvements in WA) to a third reciprocal influence model using a longitudinal research design. They found support for a significant positive relationship between WA and decreasing symptomology with the reciprocal influence model providing the best explanation for symptom improvements. The relative effects of WA on symptom change and vice-versa were found to be similar and therefore equally important and so relationship outcomes and working alliance are two mutually enhancing simultaneous processes.

The pan-theoretical nature of the WA concept could render it useful for physical activity settings. Like psychotherapy, the exercise professional and client work in a collaborative way to help the latter clarify their goals and empower them to make progress towards them. Research is needed to identify the impact of this relationship on psychological and behavioural outcomes in exercise. If effective working relationships are shown to have a meaningful impact on outcomes as they have in psychotherapy, then exercise professionals will need to place equal emphasis on developing a good working relationship as well as the

planning and teaching of exercise techniques. It is incumbent on practitioner qualifications to enable trainers to do this through the inclusion of relevant theory and application.

WA has also been applied to medicine by Fuertes et al. (2017) who validated a version of the WAI to use in physician-patient relationships (Fuertes et al., 2007). In a recent meta-analysis of 7 studies they found medium to large effect sizes for a range of outcome measures (ranging from 0.38 for adherence to treatment to 1.00 for patient satisfaction). It was noted that these are larger than those cited in psychotherapy and so the effect of the working relationship might be even more potent in this setting. However, the authors caution that in comparison to the psychotherapy literature, few studies in their review reported objective therapeutic outcomes and the effect of prior symptomology was not considered. Despite these limitations however, the findings extend the range of contexts in which the quality of working relationships have been shown to be important.

Despite the ubiquity of the WA in psychotherapy, some consider it to be an impediment to understanding the therapeutic relationship. Safran and Muran (2006) argue that the WA concept is too narrow and argue that more relational concepts (like authentic relatedness and inter-subjectivity) should be considered. A more expansive model of therapeutic relationships in psychotherapy has been proposed (Gelso; 1994; 2009; Gelso & Carter, 2012) which suggests that two other components, the real relationship and transference work alongside WA. However, empirical research has focused almost exclusively on WA (Xu & Tracey, 2015), probably because it is the easiest to define and measure. An incorporation of a measure of the real relationship has been found to add significantly to the prediction of therapy outcome in addition to WA (LoCoco, Gullo, Prestano & Gelso, 2011). The true impact of the working relationship may therefore have been underestimated by past research using the WAI because it does not capture all dimensions of the relationship. A further criticism of the WA model is that it does not account for the way in which the independent perceptions of both therapist and client combine to influence relationship quality. Relationships are characterised by interdependence and the working alliance literature generally has ignored this by adopting research methods which average scores across groups rather than considering dyadic interactions (Kivlighan, 2007).

1.2.2. The 3 + 1Cs model.

One approach which adopts a more relational stance has been developed by Jowett (2007) in the study of interpersonal relationships in sport, namely coach-athlete dyads. The 3 + 1Cs model was developed from interdependence theory (Kelly & Thibaut, 1978) and is based on the premise that relationships should recognise interpersonal emotions, cognitions and behaviours of the members involved. Following two qualitative studies (Jowett & Cockerill, 2003; Jowett & Meek 2000) the four Cs were operationally defined as Closeness, Commitment, Complementarity and Co-orientation. Closeness relates to each member's perceptions of the affective dimension of the relationship including trust, caring and respect. Commitment relates to the cognitions of each member of the dyad about the nature and future direction of the relationship and Complementarity refers to the behavioural transactions (or cooperation) which occur in the dyad to facilitate a good working relationship.

The extra (+1) dimension is Co-orientation and accommodates the perceptual agreement of both coach and athlete on their relationship. This is done through the comparison of each member's direct perceptions about the nature of their relationship with the other to their meta-perceptions about how the other views their relationship with them. The exact nature of these similarities and discrepancies can illuminate in more detail the complexities of a relationship and may play an important role in predicting its effectiveness. This consideration of the mutual and collective nature of relationship perceptions gives rise to 3 separate dimensions of co-orientation.

Actual similarity is a comparison of the direct perceptions of both coach and athlete. Assumed similarity assesses the extent to which each member of the dyad believes that their perceptions about the relationship are reciprocated by the other member. Empathic accuracy assesses the extent to which each member of the dyad is able to 'read' the thoughts feelings and behaviours of the other. The incorporation of this extra dimension goes some way to addressing the criticisms of the working alliance measure raised earlier by capturing some of the more complex relational issues involved in dyadic relationships. For example, dyads high in empathic accuracy might be better placed to make accurate judgments of their partner's authenticity and actual similarity could be argued to reflect transference of one member's personal characteristics onto the other. The 3 + 1Cs model could therefore be considered a suitable framework for exploring client-practitioner relationships in a health related setting.

The construct validity for the model has been derived from a range of qualitative studies which have observed experiences related to the 3 + 1Cs in coaches' and athletes' experiences (Antonini-Philippe & Seiler, 2006; Jowett & Cockerill, 2003; Jowett & Frost, 2007). In addition, the factorial validity for the model has been confirmed in the validation of both a direct and meta-perspective version of the 11 item Coach-Athlete Relationship Questionnaire (CART-Q; Jowett, 2009a; Jowett, 2009b; Jowett & Ntoumanis, 2004). In these studies, closeness, commitment and complementarity were shown to exist as separate but highly correlated factors. Measures of relationship quality using these instruments has been significantly correlated with other indices of healthy relationships including perceptions of relationship depth and support and relationship conflict (Jowett, 2009b), relationship satisfaction (Jowett & Ntoumanis, 2003) and coach behaviours (Balduck & Jowett, 2010) thus providing good evidence for their criterion validity. Confirmatory factor analysis has been used to validate versions of the CART-Q in several languages including Greek (Jowett & Ntoumanis, 2003), Dutch (Balduck & Jowett, 2010) and Chinese (Yang & Jowett, 2013) which suggests that the conceptual and operational definition of the 3 + 1Cs model is valid in these cultures.

The constructs in this framework bear some similarity to the three dimensions of WA and the conceptual overlaps have been discussed (Jowett, O'Broin, & Palmer, 2009). Both models include constructs relating to emotional connection or affiliation (Closeness and Bond). However, the 3Cs +1 model does not focus on the specific goals and tasks which are negotiated in the relationship as does WA. Instead it emphasises a more general feeling of closeness to the other. The tasks and goals constructs do however overlap with co-orientation and complementarity since a shared understanding and the ability to co-operate are necessary for agreeing tasks and negotiating progress towards goals. Commitment is not explicitly included in WA and this might be due to the more transient nature and shorter contact times inherent in therapeutic setting (Jowett et al., 2009).

In general, WA seems to define the product or outcome of the working relationship whereas the 3 +1Cs model focuses on the underlying quality of the relationship, which might extend to thoughts and feelings beyond the immediate workplace. Additionally, by capturing aspects of the underlying relationship quality, it might include aspects of the real relationship which is absent from the WA. Finally, the inclusion of commitment might be expected to be important in personal training and class instruction contexts because exercise needs to be maintained indefinitely to promote health benefits. In summary the 3 + 1Cs model defines the

key properties of the underlying relationship, is broader in scope and is able to capture the interdependent components of dyadic relationships in comparison to WA. In common with WA, the model may have more generic properties which make it relevant to other situations like the trainer-client relationship. This has been supported by Jowett and Passmore (2012), who applied the model to the field of executive coaching.

1.3. Psychological outcomes associated with the 3 + 1Cs.

Following the publication of the first empirical paper (Jowett & Meek, 2000) research into the role of the coach-athlete relationship using the 3 + 1Cs model has gathered momentum. The CART-Q was developed based on the underlying constructs of the model (Jowett, 2009a; Jowett, 2009b; Jowett & Ntoumanis, 2004) and subsequent studies have identified that relationship quality is positively correlated with a range of outcomes in sport including performance satisfaction (Rhind, Jowett, & Yang, 2012) and relationship satisfaction (Jowett, 2008; Jowett & Ntoumanis, 2004). Moreover, coach-athlete relationships have been shown to affect cohesion in team sports (Jowett & Chaundy, 2004) and be an important contributor to collective self-efficacy (Hampson & Jowett, 2014; Jowett, Shanmugam, & Caccoulis, 2012).

Several studies have also focused on athlete motivation. Adie and Jowett (2010) investigated the effect of athletes' meta-perceptions of their relationship with their coach on achievement goals and intrinsic motivation. Using a sample of adult track and field athletes with well established relationships, meta-perceptions were found to be positively related to athletes' endorsement of mastery approach goals and negatively related to performance avoidance goals. In turn, mastery approach goals partially mediated the effect of relationship quality on intrinsic motivation. Jowett et al. (2017) also found direct relationship perceptions to predict both self-determined motivation and psychological well-being across samples of athletes from a variety of cultures demonstrating the cross-cultural stability of relationship effects on motivational outcomes. Both papers inferred causal relationships based on predictions from self-determination theory but recognised that athlete characteristics such as achievement goal orientation or well-being could affect their relationship perceptions rather than vice-versa.

Collectively these studies illustrate that an effective coach-athlete relationship can positively influence individual and group psychological outcomes in sport and is worthy of further study. Furthermore, evidence that strong interpersonal working relationships might

result in more adaptive motivational profiles is similarly worthy of investigation in health-related fitness contexts because of the copious evidence that intrinsic motivation promotes adherence to exercise and physical activity (Miquelon & Castonguay, 2017; Teixeira, Carraca, Markland, Silva, & Ryan, 2012).

As mentioned previously, and in common with the corpus of research into working alliance, these studies have employed cross-sectional research designs There is a need for longitudinal designs to further examine the contribution of relationship quality to relevant outcome variables so that cause-effect relationships can be confirmed. More studies are also needed which explore the interdependent aspects of co-orientation as few studies have used the dyad as the unit of analysis. Exceptions are the study by Jowett and Clark-Carter, (2006) who used actor-partner analysis (Kenny & Acitelli, 2001) to show that assumed similarity and empathic accuracy exist in established coach-athlete relationships and may change according to relationship length and gender. In addition, Jowett and Nezlek (2010) used multilevel modelling to reveal that more interdependent relationships were related to higher levels of relationship satisfaction and this relationship was moderated by relationship length and the gender constitution of dyads. Interdependence was more strongly related to satisfaction in longer relationships proving the importance of mutual perceptions in maintaining an effective partnership. An interesting finding was the weaker relationship between interdependence and satisfaction for female coach-male athlete dyads which the authors speculate may relate to sex-role stereotyping. More specifically they argued that male athletes may view female coaches as less effective role models than their male counterparts making them less satisfied in relationships. Like coaching, females are under-represented amongst personal trainers resulting in many male trainer - female client partnerships.

1.4. Summary

In conclusion, the 3 + 1Cs model has been shown to provide a valid and reliable conceptual representation of the coach-athlete relationship. Research using this model, and the associated CART-Q, has shown the central role of this co-created working relationship in producing success for their athletes. As a result, it has been proposed that both coach and athlete should act intentionally and strategically to strengthen their relationship (Jowett, 2017). In contrast to the concept of working alliance the coach-athlete relationship model enables both separate and mutually dependent relationship constructs to be evaluated through the measurement of both direct and meta-perceptions. It may also be better placed to capture

aspects of the real relationship and is focused on personal growth and development through physical training. It therefore seems to be a suitable conceptual framework to use in trainer-led health-related fitness and so research is required to determine whether it can be transferred to this context.

1.5. Relationship antecedents: Emotional intelligence.

The individual characteristics of both professionals and clients in working relationships have the potential to influence the relationships they establish. Jowett and Poczwardowski, (2007) highlighted several antecedents, including the personality and characteristics of dyad members in addition to situational variables, which could hypothetically affect relationship quality. Some attention has been conducted on the working alliance in psychotherapy which has focused on therapist and client variables such as attachment style (e.g. Bucci, Seymour-Hyde, Harris, & Berry, 2016) but generally, the impact of individual characteristics on relationship perceptions has been under-explored. Trainers bear the personal responsibility for initiating and maintaining effective interpersonal relationships with their clients and so it would be useful to identify those traits or abilities which trainers need to have, or could develop in order to facilitate this process. One characteristic which might logically have a powerful effect on relationship quality is the construct of Emotional Intelligence (EI).

The term was defined by Mayer & Salovey (1997) as:-

> ***the ability to perceive, assess and express emotions with accuracy, the ability to access and generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge, and the ability to regulate emotions to promote emotional and intellectual growth (p.10).***

In essence, it encompasses the interpersonal and intrapersonal variables which enable people to navigate the social world effectively and could reasonably be hypothesised to influence the exercise professional's ability to establish and maintain effective relationships with their clients. In support of this proposal, EI has been found to influence work-related performance in a number of social occupations including clinical, educational and health-related settings (Andrei, Siegling, Aloe, Baldaro, & Petrides, 2015; Benson, Fearon, McLaughlin, & Garrett, 2014; O'Boyle, Humphrey, Pollack, Hawver, & Storey, 2011). Since being popularised by Goleman (1995), emotional intelligence training has proliferated in

organisations despite accusations from some that such a construct fails to exist (Ashkanasy & Daus, 2005).

As mentioned previously, EI has proved to be a controversial topic in the psychological literature over the last few decades (Juravich & Babiak, 2015; Zeidner, Matthews, & Roberts, 2004). Continued discussion surrounding its conceptual definition and measurement exist and several competing models have emerged over the last two decades (Petrides & Furnham, 2000, Zeidner et al., 2004). The proliferation of measurement tools has obfuscated conceptual development and contributed to contradictory research outcomes (Laborde, Dosseville, & Allen, 2016). These models have gradually evolved into divergent accounts (Bänziger, 2016) which are usually distinguished as ability vs trait approaches.

1.5.1. The abilities approach.

The human abilities model was proposed by Mayer and Salvoley (1990). They highlighted the importance of emotions in facilitating personal and social interaction and believed that one's skill in recognising, processing and applying affective information was important to social integration, well-being and success. It was conceived as a true intelligence and, in common with intellectual intelligence (IQ), it involves abstract thought and enables people to learn and adapt to their environment (Mayer et al., 2004). The model presents four related, but separate, abilities which can be objectively measured through tests (in a similar manner to intelligence or other cognitive abilities). Perceiving emotions relates to a person's ability to read the emotional states of others through non-verbal cues; facilitating thoughts relates to a person's ability to use their emotions to think positively; understanding emotions relates to one's ability to identify, label and monitor emotions and predict their outcomes; managing emotions refers to a person's ability to control and channel their emotions effectively.

Mayer, Salovey and Caruso (2002) developed a commercially available emotional intelligence test (the Mayer-Salovey-Caruso Emotional Intelligence Test: MSCEIT2) that is computer generated and objectively scored. The 4 factors of emotional intelligence exhibit correlational patterns like other intelligences and, although correlated with cognitive ability, relationships are found to be modest (O'Boyle et al., 2011) thus legitimising it as a distinct intelligence. Proponents of this approach cite the clear conceptual definition and objective scoring system as further proof of its validity (Zeidner et al., 2004). As a consequence this model has been used extensively in research, although a number of criticisms have been

levelled at the validity of the scoring and interpretation of the MSCEIT2 (Laborde et al., 2016; Petrides, 2009). On a practical front, administration of the test battery can also be time-consuming and so a number of self-report measures such as the Wong and Law Emotional Intelligence Scale (WAEIS; Wong & Law, 2002) have been developed which retain the theoretical framework of the MSCEIT2. However, Mayer and Salovey (1990) propose that self-report measures with subjective ratings scales are not compatible with the abilities model because abilities can only be measured objectively; hence EI estimates obtained from both these methods may diverge.

Ability emotional intelligence has been found to vary according to sex with women achieving significantly higher scores with a moderate effect size (Cabello et al., 2016). In particular results show that women have an advantage over men in the ability to understand emotions echoing findings from previous studies (Tsoausis & Kazi, 2013). It has been claimed however that this results from a difference in motivation rather than innate ability and gender differences have been eliminated when both males and females are motivated to be empathic (ref needed). This suggests that contextual factors may interact with an individual's ability to use their emotional intelligence in real-world settings.

1.5.2. Trait Emotional Intelligence.

In contrast to ability models, the trait approach uses a broader definition of emotional intelligence as a collection of trait-like qualities and competencies. Petrides, Pérez-González and Furnham (2007) define this as "*a constellation of emotional self-perceptions and dispositions located at lower levels of personality hierarchies*" (pg. 26).

Following the tradition of trait approaches, it is assessed through self-report questionnaires of which a number have been developed (e.g. Bar-On, 1997). Petrides (2009) operationalised emotional intelligence in the Trait Emotional Intelligence Questionnaire (TEIQue). It identifies 15 facets of emotional intelligence which contribute to four factors, which in turn make up a global EI score. The facets and factors are described in Table 1.1. Self-motivation and adaptability do not load highly onto any factor but do contribute to global EI.

A recent review of the TEIQue's validity was based on 20 peer-reviewed studies and concluded that both long and short forms of the instrument were robust, with the short form being comparable to its longer counterpart (Andrei et al., 2015). Laborde et al. (2016) states

that this instrument, in comparison to other self-report measures, has the best theoretical basis and most robust psychometric properties.

Table 1.1: Description of Trait Emotional Intelligence factors and their constituent facets (adapted from Petrides, 2009)

Facet name. High scorers view themselves as…	**Factor name and description.**
Emotion perception (self and others). Clear about their own and other people's feelings **Relationships**. Capable of maintaining fulfilling personal relationships **Emotion expression**. Capable of communicating their feelings to others **Trait empathy**. Capable of taking someone else's perspective	**Emotionality** (able to perceive, understand and express one's own and others' emotions and to use this quality to foster satisfying relationships.
Stress Management. Capable of withstanding pressure and regulating stress **Impulsiveness (low).** Reflective and less likely to give in to their urges **Emotion regulation.** Capable of controlling their emotions	**Self-control** (able to maintain a healthy balance between repression and expression of emotions and maintain control in response to external pressures)
Assertiveness. Forthright, frank and willing to stand up for their rights **Emotion management (others).** Capable of influencing other people's feelings **Social awareness.** Accomplished networkers with superior social skills	**Sociability** (able to interact effectively in a diverse range of social situations. Able to communicate and negotiate well)
Self-esteem. Successful and self-confident **Trait happiness.** Cheerful and satisfied with their lives **Trait optimism**. Confident and usually looks on the bright side of life	**Well-being** (experiences robust sense of well-being and is happy, optimistic and fulfilled)
Adaptability. Flexible and willing to adapt to new situations **Self-motivation.** Driven and unlikely to give up in the face of adversity	

Due to the substantial amount of correlations between EI and the Big Five personality traits, particularly extroversion and neuroticism, it has been proposed that trait EI is not a trait

in its own right (Laborde et al., 2016). However, the argument that it exists as a separate personality construct has been defended by Petrides, Pita and Kokkinaki (2007) who demonstrated that it could be identified in factor space. The relationships noted between EI and Big Five traits is also theoretically defensible because it integrates the affective dimensions of personality (Andrei et al., 2015). In addition, trait measures of EI have been shown to demonstrate incremental validity by explaining additional variance in emotional and well-being outcomes above and beyond the personality traits and coping strategies combined (Andrei et al., 2015; Petrides, Pérez-González, & Furnham, 2007).

The substantial variance shared with the Big Five led Musek (2007) to argue that EI actually represents a higher order or Global Factor of Personality (GFP) in the same way that the general intelligence factor (g) represents a higher order factor for cognitive abilities. Specifically, high GFP is characterised by high scores in extroversion, conscientiousness, openness and agreeableness and low scores in neuroticism and represents general social effectiveness. A recent meta-analysis by Van Der Linden et al. (2017) explored the relationship between EI and this hypothesised GFP. They found a very high overlap between trait EI and GFP leading them to conclude that they should be considered synonymous.

Critics of the trait approach claim that self-report measures will always be confounded by social desirability and state that the overlap with other traits and competencies indicates inadequate theoretical rigour (Bänziger, 2016; Martos, Lopez-Zafra, & Pulido-Martos, 2013). It is worth noting that comparisons of trait and ability measures reveal relatively weak correlations ($r = .20 - .30$), indicating considerable divergence between what each is measuring, but also suggesting some overlap in constructs (Van Der Linden, 2017).

These differences also result in divergent findings in studies which have examined gender differences. Research employing trait EI measures consistently reveals that women score more highly than men on emotionality but men score more highly than women on sociability and self-control (Petrides and Furnham, 2000; Petrides, 2009, Pererra, 2015). Although mean scores on factor sub-scales vary, results have been less consistent in identifying gender differences in total EI scores (Petrides, 2009, Tsoausis and Kazi, 2013) and may depend on which trait inventory is being used.

In order to reconcile these two approaches, a tripartite model of EI has been proposed (Mikolacjzak, 2009). The model explains that EI consists of three related domains: knowledge, abilities, and traits. Knowledge refers to one's declarative information about how

to control and express emotion whilst abilities refer to one's capability to execute that knowledge when required. Therefore knowing how to control one's emotions does not always guarantee that it will happen in practice. The third (or trait) level relates to one's general tendency or predisposition to behave in a certain way in emotional situations.

This distinction implies that ability tests measure knowledge and ability whereas the trait-like measures assess emotional behaviour (Mikolajczak, 2009). Based in this distinction, a logical assumption is that an exercise professional's behaviours would have the most proximal impact on their client's perceptions of relationship quality and therefore trait measures would have the most influence on their client's perception of relationship quality. Indeed, trait measures of EI have previously been shown to have better predictive validity for job performance compared to ability measures (O'Boyle et al., 2011).

1.6. Emotional Intelligence and job performance.

EI has become a popular term in business and organisational management based on claims about its impact on job effectiveness and career progression. However, these claims have been accused of being sensationalised and lacking empirical support (Ackley, 2016; O'Boyle et al., 2011). EI has been consistently linked to higher levels of employee job satisfaction and commitment (Joseph, Jin, Newman, & O'Boyle, 2015; Newman, Joseph, & McCann, 2010). Ways in which EI can enhance job performance however, are likely to be complex and consistent mechanisms have yet to be identified.

It is proposed that EI can enhance an employee's ability to recognise and use both their own and others' emotions to foster good interpersonal relationships with co-workers, clients or customers. Newman et al. (2010) claimed that EI is a valuable commodity in jobs which require a high degree of emotional labour and demonstrated that it was positively associated with performance in service industry jobs. Employees engage in emotional labour when they interact directly with customers or clients and are expected to influence their emotions as part of their professional role (Hochschild, 2003). Leaders can use EI to transmit positive affect to their subordinates through emotional contagion, are proposed to be able to use their emotions to transmit authentic care and concern for others and are better placed to know when to empathise with others to demonstrate concern and understanding (Jadhav & Muller, 2010; Miao, Humphrey, & Qian, 2016). In addition, EI has been found to confer good skills of negotiation which depends, at least in part, on the ability to accurately perceive and respond to the emotions of others (Schmid Mast & Latu, 2016), although Farh, Seo and

Tesluk (2012) suggested that emotional regulation rather than emotional recognition was more important when emotional labour was involved. Regardless of the mechanisms however, EI is considered to be more useful in professions which require a high degree of interpersonal interaction. Therefore, a client who works with an emotionally intelligent trainer could be expected to enjoy a close and trusting relationship in which problems or differences are resolved easily and to experience positive emotions when they work together.

Due to the conceptual overlap with personality traits, attempts have been made to uncover the unique contribution made by trait EI to job-related outcomes. The comprehensive meta-analysis by O'Boyle et al. (2011) quantified incremental validity in addition to cognitive abilities and Big Five traits. They differentiated studies based on whether a trait or ability definition of EI was used and carried out a dominance analysis to estimate the relative importance of EI over other variables. They concluded that EI made an incremental contribution to job performance irrespective of which conceptualisation was used. Based on 43 effect sizes a significant positive relationship was identified between EI and performance. However self-report measures methods provided the largest incremental gain (13.2 – 13.6% of the explained variance in performance) and was second only to cognitive ability.

The authors caution that more research into moderating contextual factors is needed. For example, EI may only prove to be beneficial in some situations. To illustrate this point, Farh et al. (2012) found that EI was positively related to teamwork but only in contexts with high managerial demands. When this demand was low there was actually a negative association with performance and so EI may only enhance job related social relationships in certain situations. Further, the relationship may be more complex because the different facets that comprise EI might relate differently to performance under different conditions. For example, in some situations, a trainer high in emotional perception may be more likely to pick up on negative cues from their client which could have a detrimental effect on their personal functioning. Therefore, it cannot be assumed that EI will enhance inter-personal relationships in all professions and in all contexts.

More recently Newman et al. (2015) challenged the claim that trait EI is positively related to job performance in an updated meta-analysis. They controlled for a wider range of conceptually overlapping constructs by including self-perceptions of ability and ability EI as co-variates in addition to personality variables and coping strategies. They also used a more stringent definition of performance by narrowing their inclusion criteria to supervisor ratings

of performance only and excluded self-rated performance and objective performance measures (the former because of a lack of objectivity and the latter because of its contamination with environmental factors).

With this more rigorous approach, incremental value of trait measures of EI to performance reduced to virtually nothing. The authors conclude that the superior performance of trait measures identified in previous meta-analyses lies in their sampling from a range of mixed competencies already known to be related to job performance. These results contribute to the debate about the discriminant and construct validity of trait measures of EI but they do not discount the heuristic value of using such tools in the selection and training of employees, because trait EI avoids the need to deploy a lengthy series of psychometric tests (Ashkanasy & Daus, 2005).

1.6.1. Emotional intelligence in sport and physical activity.

Laborde et al. (2016) note that most forms of sport and physical activity involve interpersonal interaction with instructors, coaches, team-mates or other exercisers. O'Neil (2011) proposed that emotional intelligence is a necessary attribute for coaches because it equips them with the ability to empathise with their athletes, to portray an optimistic outlook in times of challenge and convey this to their teams through emotional contagion. The process of coaching is high in emotional labour because of the interdependence between coach and athlete (Juravich & Babiak, 2015). Coaches need to navigate sensitive emotional environments to identify and feedback on weaknesses in their athletes and provide positive challenge (Gregory & Levy, 2011), all of which could be said to apply to the trainer-client relationship. In sport settings, the constant demands of competition place additional emotional demands on players and coaches.

Juravich and Babiak (2015) proposed a model in which the EI of both coach and players influences the performance of sports teams through mediator of positive affect. More specifically, coaches and players with higher EI are better equipped to regulate their emotions thus leading to broader and more flexible behavioural repertoires and an ability to enhance positive emotions and minimise negative ones. The model remains untested and so the mechanisms unproved. In a review of the emotional intelligence research in sport and physical activity, Laborde et al. (2016) noted that only 3 studies have investigated EI in coaches and none of these evaluated how the coach's EI impacted on their athletes or on athletes' perceptions of their coach. Both Hwang, Feltz and Lee (2013) and Thelwell, Lane,

Weston and Greenlees (2008) found a coach's self-rated EI was positively related to their coaching efficacy and the former study also showed that coaching efficacy acted as a mediator for the coaches' leadership style. None of these studies however, included inter-personal relationship measures.

The three papers in health-related physical activity focused only on the effects of the exerciser's EI on physical activity participation and all provided evidence that EI is related to higher levels of physical activity (Laborde et al., 2016). This is worth noting because Miao et al. (2016) found that leaders high in EI can increase EI in their followers, although the mechanism for this remains unclear. It is possible that this influence operates through the interpersonal relationship. Therefore, although EI has obvious conceptual relevance to relationships, there has been relatively little research examining its impact on interpersonal relationship quality and satisfaction (Laborde et al., 2016; Smith, Heaven, & Ciarrochi, 2008).

1.6.2. Emotional intelligence and relationship quality.

Good theoretical grounds exist to propose that those high in EI are able to create and maintain good quality relationships with others (Farh al., 2012; Morales, 2014; Reick & Callahan, 2013). However, there are relatively few studies which examine the relationship between these two variables specifically. In addition, some studies have been criticised for averaging EI across groups which masks the specific effect that EI has on individuals (Reick, Hausdorf, & Callahan, 2015). A solution to this problem is to use dyadic research designs and one such study in the context of romantic relationships yielded some interesting findings. Zeidner and Kloda (2013) executed an actor-partner analysis in married couples to determine the relative effects of ability EI on relationship satisfaction and conflict resolution patterns. In common with a previous study (Smith et al., 2008) they identified significant actor effects but no partner effects. In addition, having partners with matching levels of EI conferred no benefits to relationship satisfaction. Those in possession of high EI therefore may report stronger relationship satisfaction because they view their interactions with their partner in the best light but they do not transmit higher levels of satisfaction to their partners. There are clear differences between romantic and professional relationships in their overall significance to the individual and the degree of interaction between partners and so research into the impact of EI on relationship dynamics may not transfer to professional working relationships.

However, similar effects have been observed in dyadic studies conducted in other settings. Rieck, Hausblas and Callahan (2015) conducted a controlled experiment which assigned undergraduate students to supervisor-supervisee dyads to complete a tower building task. A range of supervisor variables, including emotional intelligence, also failed to influence supervisee's satisfaction with their supervisor. Only supervisee emotional intelligence affected their reported satisfaction with their supervisor and this was mediated through their perceptions of their supervisor's behavioural processes during the task. It should also be noted that both these studies used a measure of relationship satisfaction rather than relationship quality.

The impact of ability EI on relationship quality in real work-based supervision was evaluated by Rieck, Callahan and Watkins (2015) when they studied the relationships between trainee clinical psychotherapists and their supervisors. Two measures of relationship quality were used; working alliance (Bordin, 1983) and a questionnaire based on Leader-member exchange theory (Graen & Uhl-Bien, 1995). EI was found to be unrelated to either members' relationship perceptions. Instead, only the supervisee's personality (extraversion and openness to experience) influenced perceptions of the relationship with their supervisor and no supervisor characteristics predicted the supervisee's relationship perceptions.

Studies which have defined and measured EI as a trait, though, have yielded different outcomes. A meta-analysis of research investigating EI in romantic partnerships revealed a significant meta-analytic association between an individual's satisfaction with their relationship and their partner's EI, but a larger effect size was noted for the association between an individual's own EI and their relationship satisfaction (Malouff, Schutte, & Thorsteinsson, 2014). The analysis showed that trait EI contributed significant additional variance to relationship satisfaction in comparison to the Big Five traits which implies that the difference in the findings cannot be solely explained by the conceptual overlaps between trait EI and personality. Although this review was able to demonstrate that a person's satisfaction with their relationship is associated with their partner's EI, the authors cautioned that cause-effect could not be proved. In addition, dyadic designs were not included due to the insufficient numbers of studies using this approach. Therefore, the significance values for same source relationships (partner's EI on own satisfaction) could be inflated due to their non-independence, a problem which is removed in dyadic designs. Recall, however, that the ability EI studies reviewed earlier in this section also found same source relationships to have a stronger influence which suggests that this effect is not a statistical artefact.

Clark and Mahadi (2017) did use a dyadic design to evaluate the contribution of trait EI to mutual recognition respect in manager – subordinate dyads in a large company. This property was defined as a perception of the moral fairness and unconditional regard shown by one dyad member to the other and as such is similar to the closeness construct from the 3 + 1Cs model. Structural equation modelling showed that both managers and subordinates' trait EI made independent and significant contributions to mutual recognition respect and this in turn contributed to employees' job satisfaction and commitment. This model was not supported in dyads with divergent recognition respect leading to the conclusion that trait EI supports the development of this important relational variable in the workplace. In common with findings from the studies reviewed earlier, a much stronger relationship was found for the effect of the subordinate's EI on their recognition respect in comparison to the managers.

In clinical settings EI has been linked hypothetically to some factors which contribute to relationship quality. Both self-reported and observer reported EI has been related to higher levels of trust between physicians and their patients and trust produces a range of beneficial outcomes in patients (Morales, 2014), although more research is needed to confirm these relationships. Empathy has been more extensively researched but Feller and Rocco Cottone (2003) note that studies have been plagued by conceptual and methodological weaknesses making conclusions difficult to draw. Weng et al. (2011) evaluated the effect of surgeons' EI and empathy as predictors of patient-surgeon relationships and patient satisfaction both before and after surgery and found partial support for hypothesised effects of EI on surgeon-patient relationship quality. EI was found to positively relate to relationship quality and this predicted patient satisfaction before surgery but not at the longer term post-surgery assessment. Patients' perceptions of relationship quality was unrelated to surgeon's self-reported empathy but this variable did predict long term satisfaction, albeit indirectly through patients' reported health status. The authors cautioned that a self-report measure of empathy only was used and the ability of individuals to evaluate their own levels of empathy have previously been found to be poor (Yu & Kirk, 2008).

1.7. Summary

To conclude, there is very good evidence that emotional intelligence is reliably related to performance in jobs which involve a high degree of interpersonal interaction. Trait measures are stronger predictors of job performance compared to other models due to the broader definition and inclusion of other competencies. As such it has been proposed to be

more suitable in applied settings. The theoretical basis of EI suggests that it serves to improve social functioning including the ability to read and understand ones-self and others, can facilitate social interactions and promote positive relationships. Others have suggested that those with high EI are able to maintain positive affective states and are more likely to transmit these to those they work with through emotional contagion. However, these mechanisms remain relatively untested. The limited research which has addressed EI and interpersonal relationships directly has not always found that EI affects perceptions of relationship quality or relationship satisfaction when ability definitions and measures are used. In contrast, trait EI does appear to affect relationship quality and outcomes with a weaker (but still significant) effect for between-partner relationships (one dyad member's EI related to the other's relationship satisfaction) emerging in comparison to the within-partner effects (one dyad member's EI related to their own relationship satisfaction). Trait EI could therefore be an antecedent of interdependent dyadic relationship quality. Further work is required in professional relationships to establish their cause-effect nature and investigate the mechanisms through which instructor or mentor trait EI can influence their mentees' relationship perceptions. The resultant knowledge could be used to help both new and existing trainers be more effective in their jobs by facilitating interpersonal relationships with clients.

1.8. Relationship outcomes: Self-determined motivation.

Self-determination theory (Deci & Ryan, 1985; Ryan & Deci, 2000) is a theory of motivation which has been used extensively to explain behaviours related to sport, exercise and health (Bartholomew, Ntoumanis, Ryan, Bosch, & Thørgersen-Ntoumani, 1999; Fortier, Guerin, Duda, & Teixera, 2012; Teixera et. al., 2012; Vallerand, Pelletier & Koestner, 2008). It adopts the humanistic principle of self-actualisation and supports the suggestion by deCharms (1968) (as cited in Deci & Ryan, 2000) that it is a fundamental human need and a precursor of intrinsic motivation. When people engage in sport or exercise for intrinsic motives they are indulging their sense of curiosity and spontaneity (Vansteenkiste and Ryan, 2013). Therefore, the degree to which an individual undertakes exercise and physical activities of their own volition and to fulfil personal challenge, interest and enjoyment will determine the quality of their motivation (Biddle, Mutrie, & Gorely, 2015).

It is a multidimensional model which includes a number of motivational regulations that govern health-related behaviour. These are organised on a continuum of self-

determination ranging from amotivation through to external, introjected, identified and intrinsic. The latter two regulations are considered to be autonomous and authentic to the self, with individuals choosing to engage in that behaviour for a sense of pleasure (intrinsic) or as a way of achieving authentically valued goals (identified). The remaining categories (external, introjected) are considered to be controlled or externally regulated because the individual feels they are obliged to engage in that behaviour to avoid punishment, gain contingencies or avoid shame or guilt. Amotivation, as the least self-determined behavioural regulation, represents an absence of motivation. Autonomous motivational regulation has consistently been shown to be associated with adaptive behavioural and health outcomes because it is associated with proactivity, integration and well-being (Silva et al., 2014; Vansteenkiste & Ryan, 2013).

Deci and Ryan (1985) postulated that autonomous regulation results when the basic human needs for competence, autonomy and relatedness are satisfied. Perceived competence is the need to experience mastery and accomplishment in an activity and to experience control over desired outcomes. Perceived autonomy is the need to feel that actions are volitional and to perceive that one can choose what to do, whilst perceived relatedness is the need to experience connectedness with others through satisfying human relationships. Need satisfaction provides the mechanism by which more controlling behaviours are internalised or transformed into more autonomous regulation, a process which is essential in behaviour change (Silva et al., 2014).

The social environment, including the behaviour of the exercise trainer, exercise peers and other influential relationships has the ability to influence the degree to which these basic needs are satisfied in an individual, which in turn will increase self-determination (Vallerand, 2000). Empirical evidence is plentiful showing that a variety of social variables impact on need satisfaction and intrinsic motivation. Examples are coach-created and peer-created motivational climate, friendship relationships and coach autonomy supportive behaviour (Harwood, Keegan, Smith, & Raine, 2015). There is a substantial corpus of research which supports the tenets of self-determination theory, the ability of motivational regulations to predict behaviour and the integration of basic psychological needs in exercise (Teixera et al., 2012) prompting Sheldon and Davies (2003) to state that it is *"one of the most comprehensively integrated and well supported theories of human nature in existence" pg. 184.* It can be argued that the trainer-client relationship assumes a significant social influence in the exercise context. Consequently it can be logically proposed that it should affect clients'

needs satisfaction and self-determined motivation which is the mechanism through which adherence to exercise and health-enhancing physical activity is likely to be produced.

1.8.1. Basic psychological needs and motivational regulation in physical activity.

Need satisfaction is positively associated with autonomous (intrinsic and identified) regulation in exercise contexts (Edmunds, Ntoumanis, & Duda, 2006; Klain, de Matos, Leitao, & Moutao, 2015) as well as other domains such as friendships, school and work (Milyavskaya & Koestner, 2011). In turn, autonomous regulation has been shown to translate into higher levels of physical activity or exercise participation (Duda et al., 2014; Gunnell, Crocker, Mack, Wilson, & Zumbo, 2014; Palmer, 2016). This finding is widely supported across a range of exercise contexts and samples and is consistently evidenced when different research designs are used (Teixera et al., 2012). Identified regulation has been shown to be important in the adoption of exercise or short-term exercise participation whereas intrinsic regulation is a stronger predictor of longer term adherence (Gunnell & Gaudreau, 2015; Teixera et al. 2012; Rahman, Hudson, Thørgersen-Ntoumani, & Doust, 2015). This suggests that the early stage of exercise adoption is important for the integration of exercise goals (Rahman et al., 2015) with the satisfaction of basic needs central to this process.

However, studies which have evaluated the separate contribution of each basic need to motivational regulations have not always produced consistent findings. Edmunds et al. (2006) hypothesised that the relative contribution of needs satisfaction to each type of behavioural regulation may be different. Specifically, it was proposed that perceptions of autonomy and competence are crucial to the development of intrinsic motivation but for identified motivation (which is a more self-determined form of extrinsic motivation) autonomy and relatedness are more salient. These propositions were partly supported by a longitudinal study of patients on a cardiac rehabilitation programme (Rahman et al., 2015). Intrinsic motivation was positively associated with increases in autonomy and competence satisfaction, whereas identified motivation was predicted by increases in relatedness only.

The need for relatedness was also found to have a critical role in exercise adoption by Springer, Lambord and Pollard (2013). They used grounded theory to investigate how need satisfaction functioned to form motivational regulations in gym attendees. The results established that relatedness could function to endorse extrinsic motivation because the relationships formed in the gym environment were often used as a form of peer pressure which persuaded people to attend even when motivation waned.

A different pattern of relationships was shown by Wilson and Rogers (2008), who found that perceptions of competence had the greatest influence on autonomous regulations by affecting both intrinsic and identified regulation over a 12 week structured exercise programme. Perceptions of autonomy were related to intrinsic, but not identified, regulation and perceptions of relatedness were significantly associated with intrinsic motivation. In addition, perceptions of relatedness evidenced a weak positive relationship with external regulation. Therefore, all three needs affected intrinsic motivation but it was autonomy and not relatedness that influenced identified motivation. Finally, using a novel design which examined motivational regulations after acute bouts of exercise, Schneider and Kwan (2013) also found that satisfaction of all three needs predicted post-exercise intrinsic motivation. In contrast to Wilson and Rogers (2008), however, competence and relatedness only predicted identified regulation.

Although most studies have confirmed that perceptions of competence predict intrinsic motivation, an exception does exist. Gourlan, Trouilloud and Sarrazin (2013) found that satisfaction of competence was unrelated to intrinsic, integrated or identified motivation, whereas autonomy and relatedness predicted intrinsic and identified regulation. They used a sample of obese adolescents on an obesity treatment programme and postulated that the nature of the sample may have led to these unexpected findings. However, in agreement with Wilson and Rogers (2008), they too found a significant positive relationship between perceptions of relatedness and external regulation. The study also measured physical activity behaviour and it was observed that perceptions of relatedness had no impact on this variable because the effect on external regulation counteracted the positive effects on autonomous regulation. These findings also add weight to the proposal by Springer et al. (2013) that that relationships with significant others in the exercise environment might have both positive and negative effects on behavioural regulation and physical activity behaviour, perhaps through peer pressure or the transmission of less intrinsic norms or values.

These contradictions deserve further investigation to elucidate the mechanisms through which needs fulfilment can enhance autonomous regulations and exercise behaviour. If the trainer-client relationship acts as a vehicle to increase motivation for exercise it would be useful to know how it should be applied to meet clients' basic needs at different stages of exercise adoption. It is therefore critical that future studies should retain separate measures of basic needs. Given that identified and intrinsic motivational regulations have been posited as having different roles in the adoption and maintenance of exercise (Teixera et al., 2012) the

influence of each need satisfaction to both these behavioural regulations should be examined. More longitudinal research designs are also needed to examine whether different needs become more prominent at particular stages of exercise adoption. In addition, the impact of participant characteristics (such as initial motivations) and context needs further investigation since this might account for the contradictory findings.

1.8.2. SDT & well-being.

The extant literature suggests that habitual physical activity contributes to good mental health and psychological well-being (Bertheussen et al. 2011; Penedo & Dahn, 2005). However, the term psychological well-being is multi-faceted and encompasses cognitions about life satisfaction, happiness, and the dominance of positive affective states over negative ones (Dodge, Daly, Huyton, & Sanders, 2012). Dolan and Metcalfe (2012) differentiate between three contributory domains to subjective (or psychological) well-being, each with their own measures. 'Evaluations' assess life satisfaction, 'experiences' evaluate positive and negative affective states and 'eudemonic' measures are concerned with capturing autonomy control and connectedness. The different ways in which this concept has been operationalised has led to inconsistent findings in the research which has focused on the relationship between health-related exercise and well-being (Sylvester, Mack, Busseri, Wilson, & Beauchamp, 2012).

Ryan, Huta and Deci (2008) discuss the position of self-determination theory in respect to explaining psychological well-being. They distinguish between hedonic well-being (which occurs when positive affective states predominate over negative ones) and eudemonic well-being (which is associated with the realisation of one's life goals or human potential). It is only intrinsic aspirations which encompass generativity, life goals and personal development and so intrinsic motivation should lead to eudemonic well-being. In addition, this process of 'living well' is more likely to result in more frequently experienced positive feelings and less negative ones and so eudemonic well-being should in turn give rise to hedonic well-being. In contrast, extrinsic behavioural regulation can lead to short term pleasure or hedonic well-being without the corresponding development of eudemonic well-being. Deci and Ryan (1995) propose that when basic needs are fulfilled people are imbued with vitality, defined as an "*energy available to the self*" (pg. 184). In contrast, controlled regulation is energy depleting.

This implies that extrinsically regulated exercise goals and motives (such as weight-loss or body image transformation) are unlikely to produce sustainable increases in psychological well-being. Whilst completing an exercise session might result in temporary short-term satisfaction, the long term effect of trying to achieve these goals by pursuing an inherently unenjoyable behaviour will ultimately be energy depleting. Hence, in order to promote needs fulfilment, the exercise environment should encourage the adoption of more authentic motivational regulations by encouraging intrinsic goals and this in turn should promote positive psychological functioning and adaptive behaviour. This prediction has been borne out empirically in a range of different contexts (Bartholomew et al., 2011; Gunnell et al., 2014; Sebire, Standage, & Vansteenkiste, 2009). This leads to the logical prediction that eudemonic well-being is also an outcome for clients who experience a good working relationship with their trainer in addition to autonomous regulation. This hypothesis was recently supported in coach-athlete relationships across samples from different cultures (Jowett et al., 2017).

1.8.3. Needs satisfaction and well-being in sport and exercise.

Research tends to provide good evidence for the relationship between basic need fulfilment and subjective well-being (Vasteenkiste & Ryan, 2013) in a wide range of life domains. In a direct comparison of the contribution across domains, Milavskaya et al. (2011) found that a composite measure of need satisfaction contributed more strongly to vitality in work, family, school and relationships in comparison to leisure activities and friendships. However, relationships in leisure activities (including sport and exercise) were still significant. They also found that the need satisfaction – vitality relationship was only partially mediated by autonomous motivation and suggested that need fulfilment in itself is experienced as energising.

Despite the growing evidence that need satisfaction promotes psychological well-being, some contradictory findings have emerged regarding the relative influence of the three psychological needs on various indices of well-being in competitive sport. Perceptions of competence and autonomy, but not relatedness, were shown to be predictors of vitality in a cross-sectional study with cricketers (Reinboth, Duda, & Ntoumanis, 2004). Stronger support for the causal relationship between need satisfaction and psychological well-being has been provided by longitudinal studies. Amorose, Anderson-Butcher and Cooper (2009) assessed how changes in need satisfaction related to self-esteem and burnout. In common with the

previous study, only competence and autonomy predicted self-esteem, although changes in all three needs predicted burnout. A longitudinal design was also employed by Reinboth and Duda (2006) but the effect of pre-season scores on need satisfaction was accounted for by using them as a control variable. Once this was added, only changes in autonomy and relatedness predicted changes in subjective vitality. Therefore, whilst perceptions of autonomy have consistently predicted well-being, competence and relatedness have not. A range of factors could explain these discrepancies including the different characteristics of the samples used (e.g., team vs individual sports, competitive level, age) or the differences in well-being indices used. Amorose et al. (2009) also suggest that there may be other variables, such as coach behaviour or peer interaction, that influence the need satisfaction – well-being relationship. Participants in health and fitness activities will have different goals and motives which could reasonably change how needs satisfaction contributes to well-being. For example, seeking mastery through skill development may be less important for those exercising for health reasons and initial motives for participation may be more externally regulated.

There are a number of studies which have investigated the effect of needs satisfaction on measures of psychological well-being. Wilson et al. (2006) conducted two studies using both eudemonic and hedonic measures of well-being. At the end of a 12 week resistance training programme, eudemonic well-being (subjective vitality) was predicted by changes in perceptions of competence and autonomy. Perceptions of relatedness actually decreased from start to finish and were not related to vitality. In the second study, all three psychological needs were positively related to hedonic well-being (reports of positive affect) with competence contributing the strongest effect. Wilson, Longley, Muon, Rodgers and Murray (2008) noted that although relatedness has less frequently been found to be associated with well-being, more research was needed in longitudinal studies to untangle the dynamic interplay between need satisfaction and well-being. Wilson et al. (2006) proposed that perceptions of relatedness might only make a significant contribution to well-being during the initial phase of exercise adoption when physical activity is being integrated into the self. The habitual exercisers used in their study had already internalised exercise behaviour and so relatedness ceased to be relevant. If relatedness functions in this way, different results might be expected in more general health-related physical activity settings, particularly with individuals that do not commit to regular structured exercise.

In support of these contentions, relatedness along with competence were found to predict autonomous behavioural regulations and changes in quality of life and depression indices in a group of patients embarking on a cardiac rehabilitation programme (Rahman et al., 2015). Variables were measured before and after the structured programme and after six months as a follow-up and a linear regression analysis was used to examine how changes in variables at programme entry predicted later outcomes. Perceptions of autonomy predicted changes in autonomous regulation but not any of the wellness indicators.

Similar results were identified in another longitudinal study but using different measures of well-being. Gunnell, Crocker, Mack, Wilson and Zumbo (2014) recruited a sample of 203 adults from the general population to conduct a test of self-determination theory. They evaluated the specific relationships between the changes in goals, motivational regulations, need satisfaction, well-being and behaviour over a six month period. Only perceptions of competence and relatedness emerged as predictors of both positive affect and vitality. Relatedness fully mediated the relationship between changes in autonomous motivation and vitality and partially mediated the relationship between autonomous motivation and positive affect. This supports the role of relatedness in more general health-related physical activity.

Another study which used general health-related activity rather than structured exercise was undertaken by Mack et al. (2012). They measured the change in health-related physical activity in undergraduate students over six months and investigated how this was related to a comprehensive range of well-being indices at the end of this period. They also looked at the mediational role of need satisfaction which was measured at the beginning of this period. Increase in habitual physical activity was positively related to a range of evaluative, eudemonic and hedonic well-being indices. In contrast to the previous two studies, all three basic needs mediated the relationships between activity and well-being with the exception of positive affect and positive growth, which the authors attributed to the more transient nature of these measures in comparison with the others.

The failure of past research to take account of more changeable aspects of well-being was highlighted by Sylvester et al. (2012). They advocated using methods which identify how moment to moment variations in well-being co-vary with changes in feelings and intentions. They used the episodic method of day reconstruction to investigate how needs perception is affected by daily activity and in turn impacts on well-being. Three measures of

hedonic well-being (satisfaction, positive and negative affect) and personal expressiveness and a measure of eudemonic well-being were assessed retrospectively by asking participants to reconstruct their experiences for the previous twenty four hours. A path analysis found that all three psychological needs were related to positive affect. Satisfaction was only related to perceptions of autonomy and personal expressivity was only related to perceptions of relatedness and only perceptions of relatedness predicted both hedonic and eudemonic well-being. The authors stress that this highlights the importance of forming connected interpersonal relationships with others to maximise well-being outcomes in activity and so research which includes measurements of relationship quality is needed to test this argument.

It is clear from the preceding examples that need satisfaction has been shown to lead to more self-determined motivations and that these give rise to psychological well-being. Concordant with predictions from SDT, autonomous behavioural regulations have resulted in increases in eudemonic well-being measures. The satisfaction of competence has predicted measures of well-being in all studies with the exception of Reinboth and Duda (2006) showing that this might be the predominant need through which well-being is promoted. Therefore, the primary way that trainers might promote well-being in their clients is through their ability to develop their clients' perceptions of competence. The role of relatedness has proved particularly contentious. Several studies conducted in less structured physical activity contexts have shown that relatedness predominates over competence and autonomy in its impact on a range of well-being indices (Rahman et al. 2015; Sylvester et al. 2012). However, the diverse range of samples and methodologies used, along with the differences in the operational definitions of psychological well-being makes it difficult to make direct comparisons. As a final consideration, Rouse, Ntoumanis, Duda, Jolly and Williams (2011) demonstrated that the impact of social influence on self-determined motivation, behaviour and well-being differs according to the role and status of the person doing the influencing. Although this study did not measure need satisfaction, they speculated that significant others, such as coaches and exercise instructors, are more likely to influence well-being through perceptions of autonomy and competence because of their status and expertise, whereas close relationships with friends and family are more likely to influence well-being through perceptions of relatedness.

In conclusion, the studies reviewed in this section have shown that positive increases in psychological well-being result from need satisfaction in sport and exercise contexts although these benefits are often conveyed through competence and autonomy. However,

contradictory findings exist in relation to the mechanisms through which well-being benefits are conferred. Relatedness has been shown to be more significant at the start of exercise programmes and in some contexts like self-directed physical activity. Research that is focused on the initial stage of exercise adoption is required to resolve these controversies. Studies are also warranted which measure perceptions of relatedness provided by the exercise professional, peers, family and friends to discover different sources of need fulfilment. Examination of the role of interpersonal relationship quality could also help to understand the complex range of social factors that contribute to both need satisfaction and well-being. Answering these questions is important because trainers need to know when to prioritise a client's need for relatedness with themselves or others (by establishing friendly and sociable relationships); need for competence (by teaching appropriate techniques and using sensitive instruction) or need for autonomy (by providing the client with plenty of control and choice).

1.9. The role of interpersonal relationships in self-determination theory.

Self-determination theory posits that autonomous behavioural regulation is influenced by social experiences mediated through the satisfaction of psychological needs. There is a need to explore the influence of relationships within the SDT framework as previous studies have been more concerned with studying the isolated behaviours of social agents (Riley & Smith, 2011). For example, more attention has been focused on the effect of controlling and autonomy promoting coach behaviours or types of training, instruction and feedback behaviour rather than relationship quality. Although no studies have evaluated the effect of the trainer-client relationship on exercise outcomes, expectations of socialisation have been shown to be important in the long-term maintenance of exercise and are independent of starting motivations (Rosa et al., 2015). In addition peer relationships have been found to affect self-determined motivation by meeting relatedness needs in physical education (Cox, Duncheon & McDavid, 2009). Intuitively, a client who experiences a highly interdependent relationship with their trainer might be more likely to report a high level of relatedness because of the affective bond (or closeness). Finally, if that relationship is important to the client (as evidenced by high levels of commitment) then relatedness may also be a vehicle to increased well-being.

Two studies to date have explored the impact of relationships using an SDT framework, both within competitive sport. Riley and Smith (2011) examined the contribution of peer acceptance, friendship quality and the coach-athlete relationship to self-determined

motivation in a sample of adolescent school basketball players. The coach-athlete relationship was operationalised through the 3 + 1Cs model (Jowett, 2007) and significantly associated with self-regulated motivation. This relationship was partially mediated through the three basic needs of competence, relatedness and autonomy in line with the theoretical predictions of SDT. Peer acceptance did not relate to motivation at all although friendship quality did, but was partially mediated by perceptions of competence only. This demonstrates that the coach-athlete relationship, in sport contexts at least, is a validating and supporting one which can fulfil all three basic needs and in turn promote autonomous motivational regulations.

Felton and Jowett (2013) also examined the impact of the coach-athlete relationship in adult performers engaged in competitive sport. They examined the independent contribution of controlling and autonomy enhancing coach behaviours and relationship quality to need satisfaction and psychological well-being but not motivational regulations. Relationship quality was as important as coach behaviour in predicting need satisfaction and contributed significantly to all three psychological needs. However, the effect of the relationship on psychological well-being and ill-being was only mediated through perceptions of competence. The results of the last two studies provide preliminary evidence that athletes' reported relationship quality with their coach positively influences need satisfaction. However, the effect of relationship perceptions on psychological outcomes may not be mediated by all three psychological needs and so further studies are warranted to explore these relationships.

1.10. Summary.

This section has established that high quality professional working relationships can positively influence autonomous regulation and well-being in line with the predictions of self-determination theory. Relationship quality has been shown to have a significant impact on perceptions of competency, autonomy and relatedness but findings in relation to the exact mechanism through which satisfaction of each of these needs conveys benefits to motivation and well-being has been unclear. The role played by relatedness has yielded particularly contradictory findings with some studies showing that it has no significant impact on motivational and well-being outcomes and others suggesting that it has a pivotal role to play in the integration of exercise behaviour into the self. Further research is needed to examine the specific role of interpersonal relationships on need satisfaction, well-being and motivation in exercise contexts to understand the process. It is important to know which relationships in

the exercise environment are important and how trainers can exploit them to create adaptive motivational outcomes in health-related physical activity.

1.11. Thesis Aim.

The overarching aim for this thesis is to study the role of the exercise professional - client interpersonal relationship in exercise and health settings. It will investigate the construct and predictive validity of the 3 + 1Cs model in this context and explore the role of the relationship (defined as closeness, complementarity and commitment) in fostering positive psychological outcomes in exercisers within a self-determination theory framework. It will examine the influence of the exercise professional's emotional intelligence as a salient personal characteristic capable of promoting effective interpersonal relationships and evaluate the impact of relationship quality on need satisfaction, autonomous motivational regulation and psychological well-being.

1.11.1. Rationale for study one.

Interpersonal relationships between clients and practitioners have been shown to have a significant bearing on outcomes in a range of contexts such as psychotherapy (Horvath et al. 2011), patient-physician interactions (Fuertes et al., 2016) and sports coaching (Jowett & Shanmugam, 2016). The client-trainer relationship in health-related physical activity has the potential to help clients to attain the benefits associated with regular physical activity by increasing adherence to exercise. Since no research has examined this relationship in trainer-led physical activity, this study will make an original contribution to empirical work on the social influences which affect exercise participation and experiences. The study will take a qualitative approach to obtain a detailed narrative description reflecting the subjective experiences of both trainers and their clients in the development of their working relationship. These accounts will be analysed both inductively and deductively to confirm whether the 3 + 1Cs model provides a suitable theoretical framework in health-related fitness. This will further extend the applications of this model and enable future research in health-related fitness to be conceptually driven. Since athletes might differ from exercisers in variables such as motives, age, initial health and fitness status and self-efficacy there is a need to investigate specifically how aspects of closeness, commitment, complementarity and co-orientation might be contextualised in the exercise environment. The results of the study will have practical significance because they can provide guidance to exercise professionals who are interested in enhancing their interpersonal relationships with their clients. Further, an

examination of the relationship between the model constructs in the narratives from this study can also be used to create novel hypotheses for testing in future empirical work.

Study One. Aims:-

- To explain how trainers and clients perceive and understand their interpersonal working relationship
- To determine whether the 3 + 1Cs relationship model offers a valid explanation for the relationships developed between trainers and their clients in health-related physical activity settings
- To identify how the central constructs of the 3 + 1Cs model are expressed by both trainers and clients in health-related physical activity

1.11.2. Rationale for study two.

This study aims to build upon the results from study one by using the findings to develop a valid psychometric questionnaire which can be used to measure the quality of the interpersonal relationship between clients and trainers. Versions of this tool will be developed which measure both direct and meta-perceptions of relationship quality for both trainers and clients. No questionnaire currently exists which has been specifically validated for use in trainer-led exercise. The development of such an instrument will therefore enable quantitative studies to be conducted in the future which can shed light on the function of the client-trainer working relationship and the variables which influence its development. The questionnaire will be conceptually grounded in the 3 + 1Cs model and so this study will also contribute to the existing literature by providing further confirmation for its multidimensional structure. It will also supply evidence that it can be more generically applied to relational situations beyond sports coaching.

Study Two. Aims:-

- To develop a set of questionnaires which measure the quality of the trainer-client relationship from both direct and meta-perspectives for the trainer and client.
- To find evidence for the structural validity of the three factors of closeness, commitment and complementarity specified by the 3 + 1Cs relationship model.

- To establish the internal consistency of the sub-scales identified.
- To test the criterion validity of the questionnaires by examining the association with a concurrent validated measure of relationship satisfaction.

1.11.3. Rationale for study three.

This study will utilise the context-specific conceptual and operational definition of the 3 + 1Cs model that was developed in the first two studies to evaluate the role of the trainer-client relationship in promoting positive outcomes for clients. It will also examine the association between clients' perceptions of their interpersonal relationship with their trainer and a characteristic of their trainer which has been shown to be relevant to job roles that involve interpersonal interaction; namely trait emotional intelligence.

By developing logical hypotheses about both the causes and outcomes of the trainer-client relationship, the study will provide further confirmation for the construct validity of the questionnaires developed in study two and the conceptual basis of the relationship. The results generated will make an original contribution to the literature on positive social-cognitive outcomes in health-related physical activity by being the first to investigate the impact of the trainer-client relationship on clients' motivation and well-being. The findings will also have practical significance by establishing how this important partnership can contribute to the experience and outcomes of exercisers and by determining whether trainers who develop their emotional intelligence might be more adept at facilitating effective working relationships with their clients.

Although trait emotional intelligence has been proposed to contribute to job performance through the promotion of effective social and interpersonal functioning in a wide range of contexts (Laborde et al., 2016; O'Boyle et al., 2011), very little research has addressed the direct effect of trait emotional intelligence on perceptions of relationship quality. This work will therefore also make a theoretical contribution to the extant literature which addresses how this personal characteristic might enhance work effectiveness. It will also be the first study to the author's knowledge which focuses on the relationship of the trainer's emotional intelligence on client perceptions in the context of physical activity (Laborde et al., 2016).

Study three will use a self-determination framework to investigate whether the interpersonal relationship functions as an influential social variable and affects need

satisfaction, autonomous motivational regulations and eudemonic well-being in a manner consistent with the theory. It will extend the limited research to date which has confirmed that interdependent relationships are aligned with SDT processes (Felton & Jowett, 2013; Jowett et al., 2017) and uniquely demonstrate that this is also true in trainer-led health-related fitness. In addition, previous research in physical activity has disagreed about the relative contribution of each basic psychological need to motivation and well-being, with the role of relatedness in particular being relatively underexplored (Teixera et al., 2012). This study will add to this debate by clarifying the role of relatedness in structured exercise settings.

Study Three. Aims:-

- To investigate whether clients' perceptions of their trainer's trait emotional intelligence are associated with their direct and meta-perceptions of relationship quality.
- To investigate the association of the trainer-client interpersonal relationship with clients' perceptions of competence, autonomy and relatedness.
- To investigate the association of clients' perceptions of competence, autonomy and relatedness with autonomous motivational regulation and subjective vitality.
- To identify how each of the three basic needs acts to mediate the relationship between client perceptions of relationship quality and the outcomes of intrinsic motivation, identified motivation and subjective vitality.

Chapter Two: Study One.
Exploring the nature of the client-trainer interpersonal relationship in structured health-related physical activity.

Abstract.

The aim of this qualitative study was to explore the important components of the working relationship between exercise professionals and their clients in health-related fitness settings. Semi-structured interviews were performed with exercise professionals and clients (n=15) which were audio-recorded and transcribed verbatim. Transcripts were used to inductively generate code categories. These were then content analysed and fitted deductively to the constructs of Closeness, Commitment, Complementarity and Co-orientation in the 3 + 1Cs relationship model. Analysis showed that Closeness was expressed as mutual respect, care and trust that was perceived to be genuine. Commitment was defined by mutual dedication, belief in each other's expertise and motivation to pursue future goals and complementarity by a relaxed, responsive and supportive cooperation on the programme activities. Co-orientation was described as understanding and openness which was created by good communication. Results show that the 3 + 1Cs model can be applied to systematically guide future research into inter-personal relationships in health-fitness settings. Code frequencies revealed that the personal or affective aspect of the relationship (closeness) was as important as the working aspect (complementarity) in good quality relationships even in the early stages of the relationship. Behaviours which build mutual respect emerged as very important to both clients and trainers with clients also valuing genuine expressions of care and concern from their trainer. Both clients and trainers emphasised these as important when deciding to trust their partner and trust was seen as an important construct which impacted on commitment to the relationship. An individual's perception of their partner's expertise or ability also influenced trust. Inductive coding also identified factors which act as antecedents of relationship quality for both trainer and client, the most important of which was the perception that the relationship was producing results. The findings suggest that trainers working in health-related fitness need to be equipped with interpersonal skills that enable them to build affectively close relationships with their clients and support clients' perceptions of progress as quickly as possible.

2.1. Introduction

In the last 30 years the personal training industry has expanded significantly. In the UK alone, Fricker (2017) reports that 1 in 7 of the adult population belong to a private health club and that the private and public sectors combined have a market value of £4.7 billion. Many individuals choose to work in this industry as an exercise trainer to meet the demand for advice and instruction (Waryasz, Daniels, Gil, Suric, & Eberson, 2016). Trainers are also employed in a range of primary care settings including cardiac rehabilitation and Physical Activity on Referral Schemes (PARS) since exercise has been recognised as significant in managing a wide range of chronic health conditions (NICE, 2014). Regardless of the context, assistance from the trainer can be instrumental in helping clients to achieve their goals (Coutts et al., 2004; Mazetti et al., 2000). They provide expert coaching, facilitate commitment to change and help the client to develop coping strategies which can overcome personal barriers to an active and healthy lifestyle (O'Sullivan, Schmitz, & Fulk, 2013; Wen-Yu et al., 2010). Although some clients achieve their goals, client retention and adherence remains problematic across the health and fitness industry. In primary care, pooled adherence rates from 8 randomised controlled trials of 43% have been noted (Pavey et al., 2013) but the research has given little attention to identifying predictors of adherence beyond simple demographic factors. Socio-environmental factors like the quantity and quality of instructor support have been uniformly neglected, even though the quality of the relationship established between clients and their trainer could be a potent variable in supporting retention and adherence.

Despite the dearth of research in this area, a recent study by Vinson and Parker (2012) investigated client perceptions about relationships with staff on five PARS in England. Participants reported that their overall experience was greatly improved by consistent and individualised counselling with experienced instructors. They particularly valued authentic and personal interactions with staff. The trainer was also expected to have knowledge and expertise in clients' medical conditions and demonstrate a professional approach. This supports the contention that relationship quality is an important predictor of positive outcomes in physical activity settings and should be subjected to more detailed study. A clear conceptual framework is needed to guide future research and advance knowledge and understanding in this field in a systematic way.

Numerous conceptual models have been developed and applied, both in sport and other 'helping professions'. For example, in psychotherapy and counselling Bordin (1983) introduced the Working Alliance (WA) model. The strength of WA in therapist-client dyads has been found to relate to treatment outcomes, with a meta-analysis of 40 studies reporting a small but consistent effect size of 0.28 (Horvath, 2005). In particular, good working alliance during the early stages of therapy seems to predict positive outcomes (Reandeau & Wampold, 1991) whilst poor alliance scores reported in initial sessions have been related to client termination of sessions (Sharf, Primavera, & Diener, 2010). This underscores the value of creating good working relationships as soon as interactions and consultations begin.

Some authors have suggested that WA ignores the extent to which therapist and client connect at a personal level, which is independent from, but related to, WA (Gelso, 2009; LoCoco et al., 2011). Gelso (2009) contends that this 'real relationship' is created when both members interact in a genuine way and have realistic and accurate perceptions of the other. Client perceptions of their therapist's genuineness significantly contributed to the prediction of positive therapeutic outcomes (LoCoco et al., 2011), a finding which resonates with Vinson and Parker's claim that sincere and authentic interactions with staff are essential.

The 3 +1Cs relationship model is an alternative conceptualisation of two-person relationships and was developed in competitive sport. It has parallels with WA (Jowett et al., 2009) but was created to capture both the working relationship and the personal relationship between dyad members, thereby offering a more holistic explanation of the inter-personal bond. The 3 + 1Cs model (Jowett, 2007) is grounded in interdependence theory (Kelly & Thibault, 1978) which is based on the premise that satisfying and fulfilling relationships are ones in which both members develop interconnected feelings, thoughts and behaviours (Jowett, 2007). These three facets have been operationally defined as Closeness, Commitment and Complementarity respectively. Closeness relates to each member's perceptions of the affective bond, including trust appreciation and respect. Commitment relates to the cognitions of each member of the dyad about the nature and future direction of the relationship whilst Complementarity refers to the behavioural transactions which occur in the dyad to facilitate a good working relationship.

The final dimension (the +1C) describes the degree of co-orientation or perceptual congruence between members about the relationship. Co-orientation incorporates not only each member's direct perceptions about the nature of their relationship with the other but also

their meta-perceptions. Meta-perceptions are concerned with a member's perceptions about how the other member views the relationship and can be similar to, or different from, the direct perceptions reported. The exact nature of these similarities and discrepancies can illuminate the complexities of a relationship and may play an important role in predicting its effectiveness.

Co-orientation has 3 separate dimensions (Jowett, 2005). Actual similarity is a comparison of the direct perceptions of both coach and athlete about the relationship quality. Assumed similarity assesses the extent to which each member of the dyad believes their perceptions about the relationship are reciprocated by the other member. Empathic accuracy assesses the extent to which each member of the dyad is able to 'read' the thoughts, feelings and behaviours of the other with some degree of precision. Arguably, it is these dimensions which reflect the genuine consideration, attention, interest and care shown between clients and trainers, a feature of the 'real relationship' that is claimed to be missing from working alliance.

Since the publication of the first empirical paper in 2000 (Jowett & Meek, 2000), research into the role of relationship quality using the 3 + 1Cs model has gathered momentum. With the development and validation of Coach-Athlete Relationship Questionnaires (CART-Q: Jowett, 2009a; Jowett, 2009b; Jowett & Ntoumanis, 2004), research has identified that relationship quality is positively correlated with outcomes in sport including performance satisfaction (Rhind, Jowett, & Yang, 2012) and relationship satisfaction (Jowett, 2008; Jowett & Ntoumanis, 2004), motivation (Adie & Jowett, 2010), team cohesion (Jowett & Chaundy, 2004) and collective efficacy (Hampson & Jowett, 2014). Additionally, both direct and meta-perspective versions of the CART-Q were found to positively relate to social support and relationship significance and negatively relate to interpersonal conflict for athletes (Jowett, 2009a). Collectively these provide convincing support for the construct validity of the model and demonstrate the value of effective working relationships in sport.

Although there are similarities between sport and physical activity contexts there are some important differences, most notably in the initial goals and motivations of the clients as well as their age and health status. Research is needed to discover if the 3 + 1Cs framework describes the important features of the inter-personal working relationship in health-related physical activity. Therefore, the aim of this study is to examine whether trainers and clients

within the health-fitness setting understand their working relationship in terms of Closeness, Commitment, Complementarity and Co-orientation by gathering qualitative data to provide rich and meaningful information.

2.2. Methods

Participants.

Fifteen trainers participated in this study in addition to one of their clients. Participants were drawn from two different settings with seven self-employed personal trainers hired privately by their clients. It also included trainers who were contracted by fitness clubs and operated within that facility. In this group clients selected their trainer. The remaining eight trainers and clients came from three PARS schemes operated by local Councils. Clients were referred by their medical practitioner for various conditions including obesity, type 2 diabetes, cardio-pulmonary disease, drug rehabilitation, and arthritis and given access to subsidised exercise opportunities at local leisure centres. They were allocated a trainer who conducted an initial review meeting and provided them with exercise advice and guidance. Initially, they received a number of one-to-one training sessions with their trainer according to their needs; later interactions took place in group exercise classes and regular review meetings. Participants had to have maintained their relationship for a minimum of 5 weeks for inclusion in the study although there was no maximum length of time (see Table 2.1 for participant information).

Table 2.1: Participant profiles

Context	**Privately hired (PH) exercise trainers**	
	Trainers	**Clients**
Gender	6 male / 1 female	2 male / 5 female
Age range (mean) in yrs.	34 – 46 (38.8)	26 – 50 (36.8)
Contact time in hrs / wk. (mean)	1 – 4hrs (2.3)	
Relationship length	5 weeks to 8.5 years	
Context	**PARS exercise trainers**	
	Trainers	**Clients**
Gender	5 male / 3 female	3 male / 5 female
Age range (mean) in yrs.	41 – 46 (43.7)	44 – 83 (64.7)
Contact time in hrs / wk. (mean)	40mins – 2hrs (1.2)	
Relationship length	10wks – 4yrs (1.7yrs)	

Study design.

An interview schedule was drawn up following a semi-structured approach (see Appendix 3 for client and trainer interview schedules). Participants were encouraged to tell the story of their relationship as it developed with the use of 4 prompts:

1. I'd like you to reflect on how you decided to hire a personal trainer or join this scheme and how you chose the person you did?

2. I'd like you to think back to the initial consultation you had and describe your experiences in as much detail as possible. In particular I'd like you to concentrate on your initial thoughts and feelings towards the trainer and what you felt about your relationship.

3. Next I would like you to reflect on the way in which your relationship with the PT has evolved over your time together, how things have changed and developed between the two of you.

4. Now I'd like you to tell me about the future course of this relationship. Where do you see things going in the future?

Unstructured prompts were used throughout to encourage participants to elaborate on their views.

Procedure.

Trainers and clients were interviewed separately at the leisure centre or the participant's home address. Ethical approval was granted in line with University procedures. Participants were provided with an information leaflet prior to the interview (see Appendix 1) and questions were invited. The researcher began each interview by reading a statement of consent and participants gave verbal consent that they understood and consented to have their interviews recorded. As each interview was concluded participants were reminded that they could withdraw permission for their data to be used by contacting the researcher using contact details in the information leaflet. Background information about the participants' age, relationship length, frequency of sessions and reasons for beginning the relationship were noted immediately before recording. A code was assigned to each participant's data to ensure anonymity. The mean duration of interviews was 34 minutes.

Data analysis.

Interviews were transcribed verbatim, uploaded into ATLAS Ti (version 6.2) and analysed by the first author in 3 stages. The first stage used inductive analysis to generate code categories which reflected relationship quality in this context. Initially transcripts were read and raw data units were coded openly. As data collection progressed the definitions were refined to produce a final series of codes. In stage two, the codes representing relationship quality were categorised deductively using content analysis (Krippendorf, 2004) to determine whether they could be reliably expressed by the constructs of the 3 + 1Cs model. Codes were allocated to the a-priori themes of Closeness, Commitment, Complementarity and Co-orientation using definitions drawn from the literature. The final stage employed an inductive approach by using selective coding within in each theme for both clients and trainers. Associations between codes across the model constructs were sought to identify examples of interdependence and produce a clearer narrative for the nature of the working relationship from each dyad member's perspective. This was achieved by searching for frequently co-occurring codes and then reading the relevant text passages to understand the ways in which interdependence was experienced by each client.

Reliability was evaluated by calculating the degree of inter-coder agreement. Since expert coders can improve the validity of inferences made (Krippendorf, 2004), the second author (the originator of the 3 + 1Cs model) was asked to independently allocate a sample of quotations from each code into the themes representing the 4Cs. Acceptable agreement was determined using recommendations set out by Lombard, Snyder-Duch and Bracken (2002) and Mouter and Vonk-Noordegraff (2012) with 10% of quotations from each code category chosen for the sample. Agreement was calculated using Cohen's Kappa (κ) (Cohen, 1960) and found to be 0.61. This represents a good level of agreement, particularly for non-clinical studies (Cicchetti, 1994).

2.3. Results.

Content Analysis.

The initial coding produced 1397 raw data units which yielded 28 codes. Of these, 7 were placed in Closeness, 5 in Commitment, 8 in Complementarity and 2 in Co-orientation (Table 2.2). A fourth and separate theme relating to relationship antecedents was identified containing the remaining 6 codes (Table 2.3). The reader is signposted to Appendix 4 for a

definition of the final codes in these tables. Relationship quality codes were well represented in terms of frequency across clients and practitioners. This, combined with the good inter-coder agreement suggests that the 3 + 1 Cs model provides a good conceptual description of client-trainer relationships in this context.

Table 2.2: Codes and code frequencies contributing to the 4Cs

	Clients		**Trainers**		**Total**	
Sub-themes	N	%	N	%	N	%
			Closeness			
Caring	29	3.6	45	5.6	74	9.2
Liking	33	4.1	33	4.1	66	8.2
Bond	21	2.6	44	5.5	65	8.1
Respect	35	4.4	52	6.5	87	10.8
Trust	18	2.2	32	4.0	50	6.2
Genuineness	26	3.2	17	2.1	43	5.3
Friendship	10	1.2	13	1.6	23	2.8
			Closeness total = 33.1% (n = 408)			
			Commitment			
Dedication	25	3.1	56	7.0	81	10.1
Belief in expertise	52	6.6	21	2.6	74	9.2
Goals	21	2.6	34	4.2	55	6.8
Confidence	29	3.6	8	1.0	37	4.6
Personal development	5	0.6	6	0.8	11	1.4
			Commitment total = 20.9% (n = 257)			
			Complementarity			
Tasks and roles	46	5.7	67	8.4	113	14.1
Make comfortable	41	5.1	56	7.0	97	12.1
Giving & following advice	26	3.2	32	4.0	58	7.2
Investing effort	12	1.5	28	3.5	40	5.0
Friendly behaviour	21	2.6	19	2.4	40	5.0
Encouragement	20	2.5	16	2.0	36	4.5
Listening	6	0.8	19	2.4	25	3.2
Responsiveness	5	0.6	16	2.0	21	2.6
			Complementarity total = 34.9% (n =430)			
			Co-orientation			
Understanding	21	2.6	49	6.1	70	8.7
Openness	14	1.7	47	5.9	61	7.6
			Co-orientation total = 11% (n = 35)			
Note: See appendix 4 for code definitions						

Closeness included codes that related to the emotional bond between dyad members and contributed 33.1% of those that defined relationship quality. The most frequently

occurring code was respect although this was expressed differently by clients and trainers. The trainers expected clients to respect their expertise and open expressions of disrespect were likely to cause the relationship to fail *("It's like they're kind of not, I don't know, doubting the ability in you but making out you don't really know what you're talking about*": Female PARS Trainer 5).

Clients were more concerned with avoiding embarrassment, worried that they would find interactions humiliating and talked about how relieved they were when this did not happen *("If I thought were going training and when I were walking out he were just going fat cow, you know, or something like that it would make me feel uncomfortable….but the fact I knew he weren't like that, that helped"*: Female PH Client 8). Shows of care and concern for the other also featured strongly; EPs talked about their concern for their client's health and well-being *("you do have a role in caring….and it is important that you show that"*: Male PH Trainer 7), and clients valued the care shown to them by the trainer *("it really comes across that he does care……and he's not dismissive if you couldn't make it or if you've got a problem"*: Female PH Client 7).

Both dyad members reported that inter-personal liking enhanced the relationship but it made a greater contribution to closeness for clients. EPs were more likely to emphasise a close or intimate working relationship (Bond). In some dyads the interpersonal liking was close enough to develop into a friendship which extended to varying degrees of contact outside of the working environment, although this was more likely to have happened in the private personal training context *("we've become more friends rather than, you know, just training client"*: Male PARS Client 3).

Mutual trust was an important aspect of closeness for each dyad member with trainers striving to establish trust from the first meeting. Participants also wanted interactions to be sincere (genuineness) but again this was expressed differently by clients and trainers. Clients stated more frequently that they wanted their trainer's care, respect and interest to be real *("I've got to feel as though they're going to be honest with me and not just train me for the money"*: Female PH Client 2). Trainers, in contrast, were less preoccupied with their partner's genuine care for them, but needed clients to be honest about their behaviours, motivation and commitment to the programme *("I think honest is nice. It's like that instructor bias thing where they try and impress you so they might not want to sort of say that they're not enjoying it"*: Female PARS Trainer 5).

Commitment included codes which related to the long term desire of either dyad member to maintain the relationship and contributed 20.9% of the codes defining relationship quality. It was important for clients to believe that the trainer had the relevant knowledge and skills to help them achieve their goals and instil confidence. Trainers were more likely to talk about their general dedication to the future of the relationship and their interest and motivation in pursuing new goals and seeing the client improve *("I would like to continue with her and try new things"*: Male PH Trainer 3). The trainer's ability to continually provide motivating and interesting goals was valued by clients as well *("He's given me the thought of maybe going for some competitive side of exercise whether it be cycling or rowing. I'm just having to decide which of those I actually enjoy doing"*: Male PH Client 6). Development was a smaller sub-theme which, although not mentioned by all clients, was seen as highly influential to commitment to those that did. For some clients and trainers, a relationship has a particularly transformative role and contributed to their overall personal development. This added significance of the relationship contributed to the participant's commitment.

Complementarity included codes that described reciprocal behavioural exchanges within the relationship. These contributed the highest number of data units (34.9%) to relationship quality. Participants were most concerned with their ability to negotiate and co-operate on the exercise activities in a flexible and responsive manner (tasks and roles), *("If they come back in a day and say they have, something hasn't been quite right then I'll make sure that's adjusted"*: Female PARS Trainer 6). In good relationships these interactions were relaxed and made both dyad members feel comfortable *("If there was something I didn't want to do or I didn't feel comfortable on he seemed to pick up on that and say alright that's what you need to do, that's the bit of equipment you should go on"* : Female PARS Client 4) . The codes of friendly stance, responsiveness and encouragement also relate to behaviours which are instrumental in providing emotional support to the other dyad member *("If I ever put myself down he'd say 'oh don't be daft you're doing really well with that"*: Female PH Client 8). Collectively these appear to be just as important as co-operation on exercise tasks. The ability of each dyad member to listen to the other (Listening) enhanced both task-related behaviour and emotional support.

Co-orientation comprised of 2 codes which referred exclusively to shared knowledge and perceptions within the relationship and included 11% of the data units defining relationship quality. All participants talked directly about understanding the other *("Right*

from the initial assessment I realised she understood my concerns": Female PARS Client 5), but trainers specifically saw this as pivotal to the relationship *("If you're not empathetic towards that person they probably won't open up to you again and you'll lose that connection"*: Female PARS Trainer 8). Openness described one dyad member's perception that it was safe to disclose personal information to the other *("he's made me feel comfortable enough to be open with him and talk to him about different things"*: Male PH Client 5). Clients talked about their ability to be open with their trainer and the trainer required their clients to be open with them from the start to be able to provide the right support, *("She was quite an open person, I didn't think that she was, you know, I didn't see her as someone that I was going to find hard to work with"*: Female PARS Trainer 4).

Antecedents.

Several codes related to personal and environmental factors which affected participants' perceptions of relationship quality (Table 2.3). Getting results, the participants' view that progress was being made, dominated this theme e.g., *("I'd just be generally pleased that he's achieved what he's wanted and he's in a better place, 'cos of what he's done and what, you know, of what we've built up*": Female PARS Trainer 3) and *("Yeah, it [the relationship] has given me more than I thought I could achieve. Far more than I thought I could achieve"*: Female PARS Client 5).

Table 2.3: Codes and code frequencies for relationship antecedents

	Clients		Trainers		Total	
Sub-themes	N	%	N	%	N	%
Antecedents						
Getting results	25	15.5	46	27.9	71	43.4
Things in Common	5	3.0	26	15.8	31	18.8
Personality / Style	10	6.1	11	6.7	21	12.8
Relationship length	11	6.7	6	3.6	17	10.3
Role model	11	6.7	3	1.8	14	8.5
Personal challenge	2	1.2	9	5.5	11	6.7
Note: See appendix 3 for code definitions						

Things in common referred to participants' observations about similarities in age, gender, background or personal interests which were believed to facilitate the relationship, ("*When I read about* [trainer's name] *track record and his background of ex-forces, and also the fact that he is still an active athlete himself, it suited what I had done personally in the*

past……that really attracted me to [trainer's name]*"*: Male PH Client 6). Trainers recognised this with many describing their attempts to find common ground to develop the relationship *("I think it's important to try and find some common ground, but I think that's... you can use tricks for that. I think we... someone told me early on in here just to try and relax people; just to mention something that you're both likely to be interested in, like the weather"*: Male PARS Trainer 1).

Participants often commented favourably on their partner's personality or style of interaction, an individual characteristic that was also perceived to affect relationship quality. Examples of this were well represented in both clients (*"everything's simple, there's no problems…….we both go in, both seem to be happy-go-lucky people and just get on and do what we do":* Female PH Client 4) and trainers (*"He's got a good sense of humour, he's slightly eccentric. Ermm…he's obviously an intelligent man, he's worked around the world, I like just picking people's brains I just find people interesting":* Male PARS Trainer 2).

Clients also made judgements about the likely success of the relationship based on the professionals' appearance and lifestyle behaviours (Role Model). This was important particularly for clients in both settings *("He was fit himself and I always think a role model is a good… You know, I couldn't train with somebody that was fat and uninspiring"*: Female PH Client 3). Relationship length was associated with a closer bond because it enhanced familiarity for trainers, *("you do feel I suppose more personally bound with some more than others because I suppose you become closer with them, you know, you've probably seen them on a more regular basis so, sort of, the more regularly you see somebody, you know, you're going to build stronger bonds"*: Male PARS Trainer 3), and clients (*"I think that the more you know somebody, the more you want to come and do it. It, like… It's a friend… It's, like, a friendship type thing, so it makes you feel more settled"*: Female PH Client 4).

The code frequencies were also examined for notable gender differences. This was done separately for trainers and clients due to the gender imbalance between the two samples. Only two code categories exhibited large differences of more than 15%. These were confidence (males 21% vs females 79%) and encouragement (males 20% vs females 80%). This shows that female clients are more reliant on their relationship with their trainer to develop confidence and value greater levels of encouragement from them in comparison to males.

Selective coding.

Clients

Selective coding identified consistent passages of text in which interactions between the model constructs were shown. Commitment / Complementarity associations were noted by clients where dedication to the relationship was influenced by their perception of how well the trainer performed the task-related activities of exercise programming, teaching and advising in a way that met their needs (*"Cos I think that sometimes I don't have a lot of confidence in the younger fitness instructors because they don't…they don't appear to me recognise that when somebody is actually older, they aren't as able as younger people because they've got other health issues you know. They can't just perform like a robot to do this, this, this and this on a machine. Do you know what I mean? And things do need to be tweaked, worked with so that person can literally get something out of it. But with him, he'd give me an alternative that I could do whilst other people were doing that and so it really worked you know and he included me in it which, you know, really worked"*: Female PH Client 7).

Commitment / Closeness associations were also evident as clients had to like their trainer (liking) and believe they had genuine respect (genuineness; respect) for them if they were to commit to the relationship (dedication), (*"as soon as we met I felt like I would be friends with you…you know, if I knew you for a long time we would be friends, she was the sort of person I'd knock about with so I automatically opened up to her and I never held anything back from her. And it was the fact that she sat and listened. She sat and listened to my story and I could tell she was happy to do so and…some people. If you tell your story to some people you can tell they're not really interested. You know, they're listening and just being polite but I could tell, she……she give an air out that she was interested and she was happy to help me. So therefore, she's….I find her very, very, very engaging you know"*: Male PARS Client 3). In fact, genuine respect and belief in the trainer's expertise appeared to be essential pre-cursors to trust which in turn determined intentions to continue (*"They do care. They're not just coming to work, you know, that you build up like a friendship over the years definitely. Like I say to sort of know a bit about their family, they know about mine. We don't just talk about exercise full stop, you know, there's like a friendly rapport, definitely, …….because it boosts your confidence in them, doesn't it really? I mean I wouldn't think that [Trainer's name] would ever put me on a piece of gym equipment that wouldn't be good*

for me or anything. I mean you've got that confidence in them, you know": Female PARS Client 8).

Co-orientation in the form of mutual understanding often appeared to facilitate these associations (*"After* [Trainer's name] *obviously found out a little bit more about my character and my background, what I've done in the past, I'm sure* [Trainer's name] *has developed his training procedure to suit my character, I'm pretty sure that that's what he's done. So that in itself has built up the trust."*: Male PH Client 6). The data therefore suggests that understanding and empathy is needed between trainer and client to agree on the type of training and develop perceptions of genuine respect.

A number of relationship antecedents were associated with commitment codes. At the beginning of the relationship clients expected the trainer to model appropriate behaviours and to look fit and healthy (role model). Unexpectedly this was true even for some of the older and more sedentary PARS participants *("She obviously is quite fit herself and she obviously does practice what she preaches. Yeah, I suppose the key thing is she looks the part and she herself looks the part. Not just that she's dressed appropriately, yeah, that she does look the part and you're confident. If it was somebody who was overweight and unfit you wouldn't maybe take as much notice"*: Female PARS Client 5). Recognition of progress (getting results) was more often linked to statements of dedication particularly as the relationship developed (*"Well she made me feel like I have really conquered something. I've come a long way. And it's very difficult in your head, even when you have, it's very, very difficult for it actually to sink in yer head":* Male PARS Client 3). This finding could be explained by clients making judgements about the future success of the relationship on the trainer's appearance or first impressions initially when they have less information. Antecedents relating to the client's perception of the trainer's personality as well as having things in common were more likely to be associated with codes from Closeness and Complementarity, particularly liking and feeling at ease (make comfortable), (*"he's very calm, open, approachable, he's friendly, but he's not over-familiar. And he's not, he doesn't chitter-chatter about his family, his life. Do you know what I mean? He keeps it professional. You do chat a little bit which, you know is fine…. is good to build a relationship but he doesn't go into the nth….about himself which I found sort of, I found that really comfortable. I liked that":* Female PH Client 7)

Trainers

A Commitment / Closeness association was also evident for trainers but their dedication to the future of the relationship was more likely to be influenced by their perceptions of the degree to which they had established a close working relationship (Bond) with their client (*"You know it's* [client's name] *is the kind of person who you like to, who you look forward to having you know, the training sessions with. You know it's going be A, which is our job, it's going to be productive, there's going to be a good outcome at the end of it. But* [client's name]*, again, is the kind of personality that is instantly warming, you know, makes you feel relaxed. She engages with you. She'll tell you about her day and about her week and…..and, you know, she'll tell you about her family, she'll ask you about her family and how your week's been and to have a relationship like that, sometimes you do have a client-trainer relationship where it is just, you know, just to train them, where-as you do have others you find out quite a lot about, about their backgrounds. And that's definitely the best way to be with a client":* Male PH Trainer 7).

They showed more commitment to clients that reported their intentions and lifestyle behaviours honestly (genuineness). Closeness / Complementarity links were seen in examples where the trainer judged the client's respect for them by how readily the client responded to advice (listening; following advice) and the effort they put into prescribed exercises and tasks (investing effort). An example is described below:-

"I mean there is that as well, sometimes in some instances I do feel that the, let's say the higher up the chain they think they are in their job-wise, there seem to be a lack of respect for what a personal trainer or as a personal trainer, the knowledge that we have to impart to them. Sometimes the other way is they're getting a personal trainer because somebody else has got a personal trainer and what they want to do is say 'yeah well I've got a personal trainer'. Maybe the other thing is they don't want to do the work of the training of those individuals that you can soon tell after you question them that well they put barriers in the way to different training sessions. So if they're putting barriers in the way then again I'm just saying, 'well you know, I don't really want to do that. I don't think that we should work together" (Male PH Trainer 8)

Trainers also trusted clients that responded and co-operated well. Again, Co-orientation often featured in this inter-dependence. Honest interactions were facilitated by

openness and practitioners tried to make clients feel comfortable enough to disclose information (*"Open communication, I think them being able to tell me, for example, if someone's not enjoying a piece of equipment in there, I want them to feel that they're able to tell me they're not enjoying it rather than it just stop coming or, so that's important because if it's something we can change, if it's something, it could be they absolutely hate the rowing machine but if we just swap them onto a bike they might suddenly really start enjoying the exercise rather than dreading coming. So yeah, I think, you know, it's about communication really. It's about a bit of trust as well and just being open":* Female PARS Trainer 4). Trainers on PARs schemes were more likely to tolerate low commitment or non-compliance from clients and empathise with their difficulties and they often made reference to behaviour change models in their narratives. The contrast between these two settings is illustrated in the two following quotes.

"I've always sort of liked to give people more and more chances, because it's all about where they are in the cycle of change, and if we can get them... if they're close to getting to that point where they're going to do it, it would be great to let them come back. So we have had a lot of people come back, and wherever we can do that, we do that. I try... it's not sort of trusting the clients, it's more, from my point of view, not judging the clients, you know." (Male PARS Trainer 1).

"If I find I start working with a client as soon as they come in through the door they could actually, they're not serious about it then I find it difficult to take them on and sort of.....get …motivated myself": Male PH Trainer 6)

Antecedents were also associated with constructs of relationship quality and, like clients, getting results was frequently associated with dedication to the relationship (*"Well, with* [client's name]*, it would be nice to see her carry on and achieve even more, because we've already done the job for the wedding, that's done. So we've achieved what she set out to achieve, and it'd be nice to see her carry on and develop her knowledge of training now and of training systems etc. So it would be really nice to see her carry on, yes"*: Male PH Trainer 2). Additionally, the nature of the client's case was seen to contribute to commitment. Clients that presented unusual or novel challenges due to their medical conditions, personal characteristics or goals were perceived as more interesting and this motivated trainers to invest more effort (*"it's always a good challenge to have a client in front of you who's slightly different or who wants something….it doesn't necessarily have to be a medical*

condition or a specialist population, whether they just want something more challenging to a lot of the generic stuff that we do tend to meet quite a lot as trainers. But equally as a trainer, and as a personal trainer, that's why they come to you because you stand out from other…you know from instructors in general and they know you're gonna have that little bit more knowledge, but equally at times you can't know everything so you do, as with B, do a little bit of research and know what you need to do to achieve what goals you're gonna set.": Male PH Trainer 7).

2.4. Discussion.

Previous research has suggested that the quality of the client-trainer relationship is important to the processes and outcomes of interpersonal relationships in physical activity settings, but none has taken a conceptually driven approach to its investigation. This study demonstrated that trainers and their clients understand their inter-personal relationships in terms of Closeness, Commitment, Complementarity and Co-orientation. It suggests that the 3 + 1Cs model can be applied more generically to other professional contexts where dyadic relationships are involved (Jowett & Passmore, 2012) and can be used as a framework for future research in this area.

Client-trainer relationships are characterised by a relaxed and supportive co-operation on exercise activities, respect, mutual dedication, genuine respect and caring, trust, and liking. There was also strong evidence of interdependence, a central tenet of the 3 + 1 Cs model (Jowett, 2009a) with several important associations between constructs emerging. Similar results have emerged from previous research in coach-athlete dyads (Jowett & Cockerill, 2003; Jowett & Nezlek, 2012)

Complementarity was found to play a central role in the relationship through the selection and teaching of appropriate exercises, giving and following advice and exchange of feedback. Meta-perceptions of this construct have also been found to be highly predictive of relationship depth and low conflict in sport coaching relationships (Jowett, 2009b), an activity that also emphasises practical skills teaching. In contrast, complementarity has been less frequently reported in comparison to closeness and commitment in executive coaching relationships (Jowett & Passmore, 2012), although direct comparison is difficult because the former study used frequency counts based on qualitative data whereas the latter employed the CART-Q to measure relationship quality (Jowett & Chaundy, 2004). Future research is

needed in health-related fitness settings to quantify the relative contribution of the relational constructs in the 3 + 1Cs model to measures of relationship outcome.

Affective Closeness, which included feelings of genuine respect, caring, trust and inter-personal liking, featured strongly showing that both personal and working aspects of the relationship are important. The emphasis on genuine interactions by dyad members, supports previous research indicating that 'realness' may be a key to establishing positive inter-personal relationships, particularly in the first meeting (Bryan, Lindo, Anderson-Johnson, & Weaver, 2015). This implies that exercise professionals should display Rogerian qualities (Rogers, 2004) of positive regard and empathy for their clients (Gavin & Gavin, 1995). However, the health-fitness industry commonly employs sport graduates and Chambliss, Finley and Blair, (2004) have shown that they can hold unfavourable and stereotypical views about overweight individuals; the very clients that are most likely to seek their help. In the previous study overweight clients were viewed as 'lazy' so it could be suggested that a good understanding of the behaviour change process is needed to help trainers to interpret lack of effort from clients more appropriately rather than being seen as a lack of commitment and reinforcing negative stereotypes. Clients with low motivation, high levels of anxiety and a high expectancy for structure are the most challenging to empower and place most demand on counselling skills (Mearns, 1997). Collectively this information suggests that the exercise professionals should have appropriate motivations and realistic expectancies for the job and counselling skills should be embedded in training courses.

Commitment to the relationship was expressed through a mutual dedication to pursue the partnership, the ability to form motivating goals and to inspire each other with the confidence that progress would be made. The client's belief in their trainer's expertise contributed substantially to the relationship, supporting past research (Vinson & Parker, 2012; Wormald, Waters, Sleap, & Ingle, 2006). It may be possible to improve a client's belief in their trainer's expertise by providing them with better information at the initial meeting. On PARS, where uptake is likely to be low, information about their trainer's credentials should be given to clients at the referral process (Wormald et al., 2006). The role of the relationship in building confidence was more important to females as indicated by the much higher frequency of codes in this category compared to males. Females who exercise for either health or appearance have been found to have significantly lower self-efficacy for exercise in relation to males (Yan, Berger, Tobar, & Cardinal, 2015). Thus, trainers need to

recognise that their ability to instil self-efficacy is particularly important in enhancing relationship quality with female clients. Females were also more likely to talk about how they valued encouragement from their trainer and so this is an important behaviour that trainers can use to achieve this.

In addition to beliefs about expertise, aspects of affective closeness, (e.g. genuineness, respect and liking) were also described by clients as contributing to perceptions of trust and trust was described as essential for commitment. There is scope therefore to expound these mechanisms during the early stages of relationship development in future research. For the trainer, commitment was more likely to be influenced by achieving a good working partnership with someone that respects their advice and this was indicated when clients responded with interest and effort. Although trainers admitted that liking a client improved the relationship it was not so important for them to perceive that clients liked them, probably reflecting their professional orientation.

Co-orientation formed a central role in the relationship in the form of understanding and openness and was often associated with complementarity. This shows that it is not teaching skills and knowledge per se that is important to a successful relationship but the trainer's ability to form an understanding of a client's circumstances in order to offer personalised and flexible support. Only then will clients value their trainer's expertise and commit to the relationship. Professionals endeavoured to increase empathic accuracy for their client by creating open lines of communication. The importance of communication as a tool for developing and maintaining relationships has been noted in coach-athlete research (Rhind et al., 2012) and plays a central role in Jowett's conceptual model (Jowett, 2009a). This is a skill that should be developed in the exercise professional's training.

As well as specific knowledge about their client, general and contextual knowledge is used to enhance empathic responding (Lorimer, 2013). Contextual and general knowledge comes from experience both in and outside of the fitness industry and several clients in this study referred to their appreciation of their trainers 'life experience' and maturity and supports clients' mistrust of younger instructors reported elsewhere (Vinson & Parker, 2012). A priority for the fitness industry should be to offer career structures and remuneration which attract and retain older and more experienced staff. Arguably, making work-experience a pre-requisite for higher awards would enable trainers to gain contextual knowledge and develop empathy.

Several antecedents were identified which could impact on relationship quality and are worthy of future study. Getting results, a relationship outcome, reinforced commitment for both dyad members. Perceptions of relationship satisfaction and success have been associated with commitment in coach-athlete research (Jackson, Knapp, & Beauchamp, 2009; Jowett & Nezlek, 2012). Future studies should seek to verify the relative contribution of both subjective and objective measures of relationship outcome to commitment. If tangible results are more important than relationship satisfaction then trainers must be able to negotiate quantifiable short-term goals initially to provide early indicators of progress.

Perception of trainers as role models also enhanced commitment at the start of the relationship. First impressions can influence expectancies which have been shown to affect intervention effectiveness in psychotherapy (Hubble, Duncan, & Miller, 1999; Wampold, 2001). Client expectancies could be improved by providing new starters with positive messages about the reputation of the staff, company or scheme. This proposition has been supported in a study showing that athletes respond more favourably to coaches that have had their reputation artificially enhanced (Manley, Greenlees, Smith, Batten, & Birch, 2014). Client testimonials could also provide positive messages about the trainer.

Past research has investigated the impact of socio-demographic and personality variables on outcomes in executive coaching and psychotherapy with mixed results (DeHaan, Duckworth, Birch, & Jones, 2013; Leibert & Dunne-Bryant, 2015). The finding that dyad members valued things in common with their partner therefore needs further investigation, as does the perception that some personality types are more likeable. Personality has been proposed to influence relationships in the early stages predominantly, (DeHaan et al., 2013) and a client's personality has been shown to affect perceived relationship quality but not overall retention in personal training (Schneider, 2015). Future studies should identify important relationship antecedents in this setting and determine how they influence relationship outcomes through 3Cs +1 model constructs.

There were several limitations to this study. The dyads had well-established, close and successful partnerships which do not represent all working relationships. Members of long-term relationships are also inclined to respond in a socially desirable way and over-report closeness, commitment and complementarity (Jowett, 2008). Recall accuracy may be impaired in longer relationships, particularly when talking about the initial stages of relationship formation. There were also various combinations of same-sex and different sex

dyads although male trainers and female clients predominated. This is typical of the sector (Hanson, Allan, Ellis, & Dodd-Reynolds, 2013; Register of Exercise Professionals, 2015), but does bias the findings towards the preferences of female clients and male practitioners. Research is needed to explore the influence of individual difference characteristics like gender, age and cultural backgrounds on relational properties. Finally, although the clients were asked to talk about the development of the relationship, a more accurate depiction of its dynamic evolution would have been provided by repeated interviews with newly formed dyads.

In conclusion this study has shown that the 3 + 1Cs model can be used to effectively capture important characteristics of the client-trainer working relationship in health-fitness settings. The findings support previous research in related areas (Horvath, 2005; Jowett & Ntoumanis, 2004; Vinson & Parker, 2012), suggesting that both clients and professionals believe that good quality interpersonal relationships make an important contribution to client progress and satisfaction. Participants in this study enjoyed high quality interpersonal relationships which were enhanced by the development of mutual respect and good communication skills. The ability of the trainer to create a relationship that is affectively close and able to facilitate openness and understanding, particularly in the first encounter, was stressed by participants. Future research should utilise this framework to determine how relational quality affects important relationship outcomes like adherence, client satisfaction and health outcomes and to identify important relationship antecedents in this context.

Chapter Three. Study Two.
Validation of a relationship quality measure in health-related fitness contexts based on the 3Cs +1 model: The Client-Trainer Relationship Questionnaire (CTR-Q).

Abstract

This study aimed to validate a direct and meta-perspective questionnaire to measure the quality of the client-trainer relationship in structured exercise settings. The instruments were developed from the 3 + 1Cs relationship model (Jowett, 2007). Question items were derived from the qualitative results of the first study in this thesis and from existing versions of the long and short Coach-Athlete Relationship Questionnaire (CART-Q: Jowett, 2009a; Rhind & Jowett, 2010; Jowett & Ntoumanis, 2004). The questions were refined following a review by expert panels and an item analysis was performed on the final item pool. Based on this analysis a long (23 item) and short (12 item) direct and meta-perspective questionnaire was produced. Confirmatory Factor Analysis was employed to evaluate the structural validity of the model using a sample of 164 personal trainers and 179 clients. Results supported the 3-factor model for the client's direct and meta-perspective versions and trainer's direct perspective versions of the 12-item version whilst the trainer's meta-perspective version approached acceptable fit. The 23-item questionnaire failed to reach acceptable fit levels. The 12 item version demonstrated good scale reliability and criterion validity was evidenced through strong concurrent validity with relationship satisfaction.

3.1. Introduction

Many individuals find it difficult to undertake enough regular exercise to maintain their health and well-being. Ill-health, ageing, social identity and past negative experiences in physical education are some of the significant barriers to the adoption and maintenance of exercise (Buman, Daphna, & Giacobbi, 2010; Daly et al., 2002; Kosteli, Williams, & Cumming; 2016). Qualitative studies evaluating clients' experiences have revealed that individuals need to reconfigure their personal identity in order to change from a sedentary to an active lifestyle (Hudson, Day, & Oliver, 2015; Toft & Uhrenfeldt, 2015), and suggested that relationships with clinicians and exercise trainers have the capacity to support this process of personal development (Simony, Dreyer, Perderson, & Birkelund, 2015; Stelter, 2015). However, no quantitative studies have explored the nature of this variable, its antecedents and outcomes in comparison to other professional settings such as education, social work and psychotherapy. Korthagen, Attema-Noordeweir and Zwart (2014) identify a number of theoretical perspectives which propose that relationships play a key role in assisting personal growth. These include attachment theory (Bowlby, 2005), self-determination theory (Deci & Ryan, 2000), systems theory (Parsons, 1951) and relational cultural theory (Miller, 1986). As a result a number of relationship models have been developed in professional settings with concomitant measures which quantify their quality.

One example of these is the 3 + 1Cs relationship model (Jowett, 2007) which was developed to study coach-athlete relationships. Coaching and personal training or exercise instruction have much in common, even though the age, health status and motives of participants in health-related exercise may be quite different from those in competitive sport. Both settings require the professional and client (athlete) to collaborate on activities which involve physical exercise with the aim of achieving long term and mutually agreed goals.

Jowett (2007) specified that the two person (or dyadic) interpersonal relationship was highly interdependent, a concept first introduced by Kelly and Thibaut (1978). Interdependence exists when the feelings, thoughts and behaviours of one dyad member (the exercise trainer) are highly interrelated with those of the other dyad member (the client). These elements were later operationalised as the 3Cs: Closeness, Commitment and Complementarity (Jowett & Ntoumanis, 2004). Closeness represents the affective dimension

of the relationship and encompasses feelings of liking, respect, trust and appreciation. Commitment refers to the cognitive dimension and relates to perceptions about the longer term direction and stability of the relationship. The behavioural aspect is complementarity and includes the degree of co-operation and ease of interaction when both dyad members work together.

Interdependent dyadic relationships are co-created meaning that relationship quality does not solely consist of each member's direct perception of their relationship with the other (e.g. I trust my trainer). It is also affected by what each person perceives the other thinks about their relationship with them (e.g. my trainer trusts me). This latter view is termed meta-perception. The congruence between direct and meta-perceptions for both dyad members gives rise to the final (or +1) C called co-orientation (Jowett, 2007). There are three ways in which the direct and meta-perspectives for each dyad member can be configured to reveal the complexities of the working relationship. Assumed Similarity is a comparison of the trainer (or client's) direct and meta-perspectives and reflects the degree to which one dyad member assumes the other dyad member feels the same towards the relationship. Actual Similarity is a comparison of the direct perceptions of client to those of the trainer. Finally, Empathic Accuracy is obtained by comparing the client's direct perception about their relationship with the trainer to the trainer's meta-perspective or the trainer's direct perception about their relationship with the client to the client's meta-perspective. This final dimension reflects the ability of one dyad member to read the thoughts, feelings and behaviours of their partner. These co-orientation dimensions have been proposed to have diagnostic utility in identifying dysfunctional relationships (Jowett, 2005).

Based on this model, the 11 item Coach-Athlete Relationship Questionnaire (CART-Q) was validated to measure direct and meta-perceptions of relationship quality for both coach and athlete (Jowett, 2009a; Jowett & Ntoumanis, 2004). The existence of three separate but correlated factors representing closeness, commitment and complementarity has been consistently replicated in subsequent research. Several adaptations of the original CART-Q have subsequently been produced with translations into several languages including Greek, Chinese and Dutch (Balduck & Jowett, 2010; Jowett & Ntoumanis, 2003; Yang & Jowett, 2013). Although the 11-item CART-Q has been shown to perform well across different cultures, Yang and Jowett (2013) found weaker evidence for the psychometric properties of a long questionnaire (29 items) in a sample of Chinese coaches and athletes. This was

attributed to the greater likelihood of cultural nuances being detected with an instrument that has more items. Further evidence that cultural and contextual factors can impact on the structure of interpersonal relationships come from the validation of other versions. Balduck and Jowett (2010) made changes to the error specification between two closeness items on the Belgian translation of the 11-item coach CART-Q to achieve good structural validity and the Greek CART-Q was validated with 13 items (Jowett & Ntoumanis, 2004). Since situational differences have been shown to exist, it cannot be assumed that the 11 item CART-Q can be directly transferred to health and fitness.

Research generated from the CART-Q in sport has shown that athletes experiencing a high quality relationship with their coach will report higher satisfaction with their performance (Rhind & Jowett, 2010), more adaptive motivations (Adie & Jowett, 2010), higher levels of cohesion and self-efficacy in teams (Hampson & Jowett, 2014; Jowett & Chaundy, 2004; Jowett et al., 2012) and greater psychological well-being (Jowett et al., 2017). It could be logically proposed that the trainer-client relationship would have similar positive benefits in structured exercise settings and the 3 + 1Cs model could provide a suitable conceptual framework to study this. However, this needs to be operationally defined in this context.

The first study in this thesis provided evidence to support the conceptual relevance of the model by showing that the relational constructs of closeness, commitment, complementarity and co-orientation are reported by both trainers and clients in health-related physical activity settings. The purpose of this study, therefore, is to operationally define and validate a questionnaire based on the conceptual definitions of closeness, commitment and complementarity in a sample of exercise professionals and their clients. Specifically, four forms will be developed: a direct and meta-perception version for clients and a direct and meta-perception version for trainers. Items will be generated based on the qualitative analysis from the first study and these will be subjected to confirmatory factor analysis to examine the factorial validity of the questionnaire. Specifically it is hypothesised that items will fit a three, first-order factor model representing the 3Cs and that each subscale will have acceptable scale reliability. The criterion validity of the CTR-Q will be evaluated by using a concurrent measure of relationship satisfaction taken from the Investment Model Scale (Rusbolt, Martz, & Agnew, 1998). This scale is also based on interdependence theory and is designed to measure the tendency to persist in a relationship. A logical prediction from inter-dependence

theory is that better interpersonal relationships should lead to satisfactory outcomes for both dyad members. The sub-scale was previously used in the validation of the long version of the CART-Q (Rhind & Jowett, 2010).

3.2. Method

Phase 1. Initial item generation.

The systematic process outlined by Sarantakos (2005) was used to generate and review items for the questionnaires. To produce the item pool all the original questions from the direct and meta-perspective versions of the 11 item and 29 item CART- Q (Jowett & Ntoumanis, 2004; Rhind & Jowett, 2010) were included but rephrased by replacing 'coach' with 'trainer' and 'athlete' with 'client'. The 1 to 7 (strongly disagree to strongly agree) Likert scale response set was also retained. In the next step, quotations from each of the code categories generated in the first study were used to either modify the wording of existing items to make them contextually appropriate (e.g. *'I feel appreciation for the sacrifices my athlete/coach has experienced in order to improve his/her performance'* was changed to *'I appreciate the efforts my trainer / client is making to improve my health / fitness'*). New items were added when there was no obvious match to the existing items from the CART-Q which produced a total of 40 items (14 closeness, 12 commitment and 14 complementarity). The meta-perspective questions were then written to mirror the direct questions and the final item pool used to construct the trainer and client versions of the questionnaire.

Three expert panels were conducted to review the questionnaires. A panel of clients (n =3) volunteered from a local exercise on referral scheme to review the client items whilst the trainer items were reviewed by a group of personal trainers (n = 4) with a minimum of 3 years fulltime experience. Both panels were provided with copies of the questionnaires and some written prompts asking them to give feedback on the relevance, clarity, tone and level of each question (see Appendix 7). Finally, a group (n = 3) of sport and exercise psychologists employed at UK higher education institutions reviewed either the client's or the trainer's version (instructions for the client's version can be found in Appendix 8). In addition to the feedback provided by other panels, each panel member was provided with a conceptual definition for each of the 3Cs and asked to rate and comment on the construct validity of each question (the extent to which it represented either closeness, commitment or complementarity).

In response to feedback from the personal trainers a modification was made to the instructions about completion. The directions were changed to ask respondents to base their answers on their most recent client. It was suggested that this would counteract issues of social desirability caused by trainers selecting their favourite client. All panels deemed one closeness item to be ambiguous and so this was removed. Finally, the feedback was used to make some minor changes to the wording of several questions to improve clarity. The final list of 39 direct and meta-perspective items is given in Table 3.1.

Phase 2. Statistical validation.

Participants.

Participants (n = 352) were recruited from across the United Kingdom and consisted of 172 personal trainers and 180 clients. The sample was predominantly white (90%). Respondents reported well-established working relationships with 37% lasting more than a year; only 17% had worked with their client / trainer for 10 weeks or less. Of the trainers, 92.4% worked in private personal training, 4.9% in GP referral and 3.5% in other settings such as corporate well-being and class based instruction. Ages ranged from 19 to 66yrs (M = 32.6; SD = 9.5) and 68.6% were male. The majority (70%) had worked as a personal trainer for 3 years or more. In the client sample, 90.6% were from a private personal training setting, 7.2% from GP referral and 2.2% from exercise classes. Ages ranged from 17 to 72yrs (M = 42.8; SD = 12.7) and 44.4% were male.

Procedure.

Approval for the study was granted by a University ethics committee and by Nuffield Health who promoted this study throughout their chain of fitness gyms. In addition to this organisation, invitations to participate in the study were sent by e-mail to personal trainers across Great Britain by contacting them through their business websites. The e-mail (see Appendix 6) contained a brief introduction to the study, a link to the online questionnaire, a reminder that participation was voluntary and an assurance that responses would be anonymous.

Table 3.1: Total item pool for CTR-Q (direct and meta-perspective)

	Closeness items (n = 13) **Direct items**	**Meta-perspective items**
1*	I like my trainer / client	My trainer / client likes me
2*	I appreciate the efforts my trainer / client is making to improve their health &	My trainer / client appreciates the efforts I make to improve their health & fitness
3*	I respect my trainer / client	My trainer /client respects me
4*	I trust my trainer / client	My trainer / client trusts me
5*	I care about my trainer / client	My trainer / client cares about me
6*	I value my trainer / client	My trainer / client values me
7	I have a genuine interest in our achievements	My trainer / client has a genuine interest in our achievements
8	I have a good bond with my trainer / client	My trainer / client has a good bond with me
9	I feel I can be honest with my trainer / client	My trainer / client feels they can be honest with me
10	I enjoy spending time in my trainer's / client's company	My trainer / client enjoys spending time in my company
11	I have a high regard for my trainer / client	My trainer / client has a high regard for me
12	I have a warm relationship with my trainer / client	My trainer / client has a warm relationship with me
13	I have a friendly relationship with my trainer / client	My trainer / client has a friendly relationship with me
	Commitment items (n = 12) **Direct items**	**Meta-perspective items**
14*	I am committed to my trainer / client	My trainer / client is committed to me
15*	I would like to keep working with this trainer / client	My trainer / client would like to keep working with me
16*	I would not let minor setbacks affect the relationship with my trainer / client	My trainer / client would not let minor setbacks affect our relationship
17*	I will have a good connection with my trainer / client for the foreseeable future	My trainer / client expects to have a good connection with me for the foreseeable future
18*	When I work with my trainer / client I know what I'm trying to achieve	My trainer / client knows what they are trying to achieve when I work with him / her
19*	I would like to maintain the relationship with my client for as long as possible	My trainer / client would like to maintain our relationship for as long as possible
20*	The relationship with my trainer / client helps me to achieve my goals / career goals	My trainer / client believes this relationship will help me achieve my goals / career goals
21*	I put in extra effort with this trainer / client compared to others I work with (could have)	My trainer / client puts in extra effort with me compared to other clients / trainers they have (or could have)
22	When I work with my trainer / client I believe in their abilities	My trainer / client believes in my abilities
23	This relationship with my trainer / client is important to me	My trainer / client believes this relationship is important for them
24	When I work with my trainer / client I am confident of positive outcomes	When I work with my trainer / client he / she is confident of positive outcomes
25	I try hard to make the relationship with my trainer / client work	My trainer / client tries hard to make our relationship work

*Note: *denotes items adapted from the 11 or 29 item CART-Q.*

Complementarity items (n = 14)		
Direct items		**Meta-perspective items**
26*	When I work with my trainer / client I feel at ease	When I work with my trainer he / she feels at ease
27*	I respond readily to my clients efforts	My client responds readily to my efforts
28*	I am receptive to my trainer's / client's ideas	My trainer / client is receptive to my ideas
29*	I take a friendly approach towards my client	My client takes a friendly approach towards me
30*	When I work with my trainer I am organised (e.g. well prepared and punctual)	When I work with my trainer / client they are organised (e.g. well prepared and punctual)
31*	I pay attention to what my trainer / client says	My trainer / client pays attention to what I say
32*	I know how to interact with my trainer / client	My trainer / client knows how to interact with me
33*	When I work with my trainer / client I am clear about what I have to	When I work with my trainer / client he / she is clear about what they have to do
34*	I can seek my trainer's / client's views and opinions if needed	My trainer / client can seek my views and opinions if needed
35*	I know how to respond to my trainer's / client's needs and requests	My trainer / client knows how to respond to my needs and requests
36	I cooperate easily with my trainer / client	My trainer /client cooperates easily with me
37	When I work with my trainer / client I know what they expect of me	When I work with my trainer / client he / she knows what I expect of them
38	When I work with my trainer / client I feel relaxed	When I work with my trainer / client they feel relaxed
39	When I work with my trainer / client I feel encouraged	When I work with trainer / client they feel encouraged

*Note: *denotes items adapted from the 11 or 29 item CART-Q.*

Trainers who volunteered to participate were requested to forward the invitation on to their clients. The questionnaire was completed electronically by both trainers and clients using the Bristol On-line Survey tool (BOS). On entering the survey the first page contained a statement of the purpose of the study and a reminder about response anonymity. Completion was not forced and could be aborted at any time. Data from incomplete questionnaires was not used in the study.

Measures.

Relationship quality. The 39 CTR-Q items were used to measure closeness, commitment and complementarity from both a direct and meta-perspective. The questionnaire (see Appendix 9) contained two versions of the questions, one worded for trainers and one for clients. Participants were routed to the correct version once they had entered the survey.

Relationship satisfaction. The 5-item relationship satisfaction subscale from the Investment Model Scale (IMS: Rusbolt et al., 1998) was utilised to evaluate the concurrent validity of the CTR-Q. The factor structure and reliability of this instrument has been demonstrated in several studies (Rusbolt, et al., 1998; Rodrigues & Lopes, 2013). Cronbach's alpha statistics demonstrated good reliability for both trainers ($\alpha = 0.86$) and clients ($\alpha = 0.94$).

3.3 Data Analysis.

Data was analysed in three stages. Stage one involved item analysis to select the set of questions (Raykov & Marcoulides, 2011). Cronbach's alpha was computed for each of the closeness, commitment and complementarity sub scales. This was used in addition to the inter-item correlation matrices and item-total correlation coefficients to eliminate unreliable or redundant question items. A long and short version of the CTR-Q was compiled for validation. In stage 2, Confirmatory Factor Analysis (CFA) was used to assess how well the data conformed to the factor structure specified by the 3 + 1Cs model for both long and short questionnaires. Stage three evaluated the factor loadings and subscale correlations to check the convergent and divergent validity of each factor sub-scale. Bivariate correlations between the total and sub-scale CTR-Q scores and relationship satisfaction were performed to establish concurrent validity.

3.4. Results.

3.4.1. Stage 1. Item analysis for total item pool.

Due to an error, question 18 was omitted from the client version of the questionnaire and was removed from the analysis. Cronbach's alpha was used to examine reliability for each of the scales (see Table 3.2).

Table 3.2: Cronbach's Alpha for direct and meta-perspective CTR-Q (total item pool)

3Cs construct	Closeness (n =13)	Commitment (n = 11)	Complementarity (n = 14)
D - Clients	.96	.91	.79
D - Trainers	.95	.79	.94
M - Clients	.90	.95	.96
M - Trainers	.97	.93	.96
Note: D = Direct perception items. M = Meta-perception items			

A minimum acceptable value of α is .70 whereas a value above .90 can indicate redundancy in test items (Tavakol & Dennick, 2011). The high values for some sub-scales therefore indicated that they may have contained some redundant questions. Questions on each sub-scale were individually inspected to ensure that inter-item correlations exceeded 0.30 and that the correlation of item with the scale total was at least .40 as advocated by Tabachnik & Fiddell (1996). Six items did not meet these criteria and were removed (items 9, 10, 23, 25, 34, 35). Several groups of questions were identified with sub-scale inter-item correlations exceeding .80 across questionnaire versions. Since values of 0.80 and above are likely to produce severe problems with collinearity (Franke, 1980), these items were withdrawn to reduce redundancy. This resulted in the removal of items 7, 8, 11, 12, 13, 19, 24, 37, 38) none of which affected scale reliability. The remaining 23 items were retained for the long CTR-Q. A short version of the CTR-Q was also constructed to enable quicker administration by selecting a subset of 12 questions (4 from each construct). Questions most similar to those used in the CART-Q were retained as the validity for these has previously been established in coach-athlete relationships.

3.4.2. Stage 2. Confirmatory Factor analysis

CFA was performed using EQS version 6.3 (Bentler & Wu, 2006) to determine whether the 3 latent factors of closeness, commitment and complementarity conceptually specified by the 3 +1Cs relationship model could be replicated by the data. To conduct a rigorous test of the factor structure of a hypothesised model it should be compared to

plausible alternatives (Jackson, Gillaspy, & Purc-Stephenson, 2009) and so four conceptually viable models were chosen for comparison. Model 1 (M1) was the 3 factor model with closeness, commitment and complementarity as first-order factors which were set to co-vary. Model 2 (M2) consisted of 2 first order factors. The first combined closeness and commitment into one factor representing cognitive-affective aspects and the second factor contained the behavioural items relating to complementarity. The rationale for this model was based on previous research suggesting that commitment is subsumed within closeness (Jowett & Meek, 2000). Model 3 (M3) was a unidimensional model with all items contributing to one factor representing relationship quality. Finally, Model 4 (M4) was a hierarchical model with three first order factors of closeness, commitment and complementarity forming one higher order factor of relationship quality. This analysis was performed separately for the direct and meta-perspective versions of the 12 and 23 item questionnaires for both client and trainer samples.

Inspection of the variable box plots revealed a strong negative skew with several outliers and it is recommended that these are removed before analysis (Schumacker & Lomax, 2010). However, it was also necessary to preserve the sample size since a minimum ratio of 10 participants per variable (item) has been recommended for CFA (Kline, 1998). Therefore extreme outliers only (those more than 3 times the interquartile range from the median) were deleted which resulted in a final sample of 164 personal trainers and 179 clients.

Mardia's normalised estimate for kurtosis exceeded the minimum value of 3.0 required for normality (Ullman, 2006) for all versions of the questionnaire and so robust estimates were used to evaluate the models. Fit was assessed using the Satorra-Bentler Chi square (SB-χ^2) statistic. A well-fitting model is normally indicated by a nonsignificant test statistic but models with a high degree of complexity can produce inflated Chi square values. Consequently Hu & Bentler (1999) advise using a range of fit indices and so the SBχ^2/df ratio, the Robust Confirmatory Fit index (RCFI), Non-Normed Fit Index (NNFI), Robust Root Mean Square Error of Approximation (RMSEA), Standardised Root Mean Square Residual (SRMR) and Akaike Information Criterion (AIC) were selected. Cut off values were used which specify that model fit is good when the RCFI and NNFI is close to or exceeds .95, RMSEA is .06 or below and SRMR is .08 or lower (Hu & Bentler, 1999). A value of 5 or less

for the SBχ^2/df ratio is considered acceptable and the lowest AIC value is generally taken as an indicator of better model fit (West, Taylor, & Wu, 2012).

A comparison of the model fit statistics for the long (23-item) CTR-Q versions is shown in Table 3.3. None of the fit indices showed evidence of good fit for this questionnaire with M4 being the worst. The clients' data produced acceptable RMSEA and SBχ^2/df ratios but the both the RCFI and NNFI failed to reach .95 indicating that they required further improvement. Both RCFI, NNFI and RMSEA values showed poor fit for trainers' direct and meta-perspective data. A comparison of the model structures was not performed as this is only warranted when good fit is established (Brown & Moore, 2012).

Table 3.3: Comparison of model fit indices for 23-item CTR-Q

Model	df	Scaled χ^2/df	RCFI	NNFI	SRMR	RMSEA (90% CI)	AIC
Direct perspective - Clients							
M1	227	1.57	.93	.93	.05	.06 (.04 - .07)	-97.65
M2	229	1.58	.93	.92	.05	.06 (.05 - .07)	-96.40
M3	230	1.66	.92	.91	.05	.06 (.05 - .07)	-77.22
M4	227	3.02	.76	.73	.48	.11 (.10 - .12)	231.00
Meta-Perspective - Clients							
M1	227	1.45	.93	.92	.05	.05 (.04-.06)	-124.05
M2	229	1.58	.93	.92	.05	.05 (.04-.06)	-131.38
M3	230	1.47	.92	.91	.04	.05 (.04 - .06)	-121.90
M4	227	2.93	.69	.65	.54	.10 (.09 - .11)	210.80
Direct perspective - Trainers							
M1	227	1.49	.88	.86	.06	.06 (.04 - .07)	-116.09
M2	229	1.50	.87	.86	.07	.06 (.04 - .07)	-115.40
M3	230	1.50	.87	.86	.07	.06 (.04 - .07)	-114.93
M4	227	2.32	.67	.63	.13	.09 (.08 - .10)	72.32
Meta perspective - Trainers							
M1	227	1.80	.86	.85	.06	.07 (.06-.08)	-8.08
M2	229	1.78	.86	.85	.06	.07 (.06 - .08)	-50.43
M3	230	1.82	.86	.84	.04	.07 (.06 - .08)	-42.25
M4	227	3.33	.60	.55	.42	.12 (.11 - .13)	302.82

Note: M1 = 3 factor model, M2 = 2 factor model, M3 = 1 factor model, M4 = second order hierarchical model.

Lagrange Multiplier statistics identified several questions which cross-loaded onto other factors but these varied across questionnaire versions. Since these problematic items were not included on the 12-item version it was decided to proceed with evaluating this shorter version, rather than undertaking model modification. A comparison of fit indices for the 12-item CTR-Q is shown in Table 3.4.

Table 3.4: Comparison of model fit indices for 12-item CTR-Q

Model	df	Scaled χ^2/df	RCFI	NNFI	SRMR	RMSEA (90% CI)	AIC
Direct perspective - Clients							
M1	51	1.03	.99	.99	.04	.01 (.00 - .05)	-49.77
M2	53	1.27	.98	.98	.04	.04 (.00 - .06)	-38.78
M3	54	2.88	.98	.98	.04	.04 (.00 - .06)	-39.63
M4	51	5.36	.73	.65	.48	.16 (.14 - .17)	171.24
Meta-perspective - Clients							
M1	51	1.55	.97	.96	.05	.05 (.03-.08)	-23.12
M2	53	1.58	.96	.95	.05	.06 (.03-.08)	-22.15
M3	54	1.76	.95	.94	.05	.06 (.04 - .09)	-13.01
M4	51	6.70	.64	.54	.51	.18 (.16 - .20)	239.75
Direct perspective - Trainers							
M1	51	1.18	.97	.96	.06	.03 (.00 - .06)	-41.89
M2	53	1.25	.96	.95	.06	.04 (.00 - .07)	-39.99
M3	54	1.22	.96	.95	.06	.04 (.00 - .06)	-42.09
M4	51	3.55	.58	.45	.25	.12 (.10 - .14)	78.87
Meta-Perspective - Trainers							
M1	51	1.84	.93	.91	.05	.07 (.05-.09)	-8.08
M2	53	1.81	.93	.91	.05	.07 (.05 - .09)	-10.21
M3	54	1.85	.92	.91	.05	.07 (.05 - .09)	-7.98
M4	51	6.56	.53	.39	.44	.19 (.17 - .20)	232.81

Note: M1 = 3 factor model, M2 = 2 factor model, M3 = 1 factor model, M4 = Second order hierarchical model.

The fit statistics clearly show that (M4) had poor fit for all data sets so this was rejected. The other three models showed excellent fit indices for direct relationship perceptions for both clients and trainers with slightly better values for M1. For relationship meta-perceptions the statistics showed excellent fit only for clients. For trainers the RCFI and RMSEA values just failed to reach the criterion values and the Akaike Information Criterion (AIC) values did not show a clear difference between the competing models. The difference between the models was tested by using the SBχ^2 difference test and the AIC difference criteria (ΔAIC) and the results are shown in Table 3.5. Where Δ AIC < 2 there is substantial evidence for model similarity, a value between 3 and 7 provides considerably less support for model similarity and Δ AIC > 10 provides substantial evidence that the models are different (Mazerolle, 2006). Where nested models are compared the one with less parameters is accepted as the better fit (West et al., 2012).

M1 was supported for the client sample with large AIC difference values and a significant SBχ^2 difference test between all models. The results for the trainers' data showed support for a 3 factor model in the SBχ^2 difference test with the exception of the comparison

between M2 and M1 for meta-perceptions. The AIC difference values also did not clearly differentiate between the models for the trainers data. However, where several competing models are possible the one with the least degrees of freedom is often accepted as the most parsimonious unless there is strong evidence to the contrary (West et al., 2012). Taken as a whole the data provides evidence for M1 as the superior model.

Table 3.5: Model comparisons for 12-item CTR-Q

Relationship perceptions	Model comparison	Diff χ^2	df	SIG	Δ AIC
Clients' direct perceptions	M1 to M3	101.94	3	P < .00001	10.13
	M2 to M1	140.66	2	P < .00001	10.99
Clients' meta-perceptions	M1 to M3	62.64	3	P < .00001	10.112
	M2 to M1	29.88	2	P < .00001	.97
Trainers' direct perceptions	M1 to M3	12.56	3	P < .006	.20
	M2 to M1	11.16	2	P < .01	1.888
Trainers' meta-perceptions	M1 to M3	15.58	3	P < .01	.107
	M2 to M1	4.47	2	P = .11 (ns)	-2.13

Note: M1 = 3 factor model; M2 = 2 factor model; M3 = unidimensional model.

3.4.3. Stage 3. Convergent and discriminant validity.

The factor loadings for closeness, commitment and complementarity are displayed in Tables 3.6 and 3.7. Each item exhibited a significant and moderate to high correlation with its hypothesised factor. Furthermore, the R^2 values showed that question items made a substantial contribution to the variation in that indicator, although an exception was noted for several question items on the trainer's direct perception version. Each item, therefore, corresponded to its theoretically proposed sub-scale demonstrating acceptable convergent validity.

To establish discriminant validity, the error adjusted sub-scale correlations from the CFA need to demonstrate some unique variance, even though it was expected that the associations would be significant. The correlations, although not identical, were all .90 or higher. Therefore, although the fit indices supported the superiority of the 3-factor model, there is a high degree of overlap between closeness, commitment and complementarity in these samples.

Table 3.6: Item statistics for 12-item CTR-Q client version

Item	M	SD	Skewness	Kurtosis	Factor Loadings	R^2
D - Closeness						
I like my trainer	6.49	.64	-.87	-.30	.86	.75
I appreciate the efforts my trainer is making to improve my health & fitness	6.47	.68	-.92	-.36	.77	.59
I respect my trainer	6.56	.63	-1.27	1.12	.85	.74
I trust my trainer	6.52	.63	-1.09	.72	.86	.72
D - Commitment						
I am committed to my trainer	6.35	.75	-.84	-.21	.78	.61
This relationship with my trainer is important to me	6.37	.87	-1.72	4.00	.81	.65
I would not let minor setbacks affect the relationship with my trainer	6.38	.78	-1.31	1.98	.80	.63
I will have a good connection with my trainer for the foreseeable future	6.41	.83	-1.91	5.34	.90	.81
D - Complementarity						
When I work with my trainer I feel at ease	6.42	.77	-1.69	5.06	.71	.50
I respond readily to my trainer's efforts	6.37	.71	-.77	-.30	.86	.74
I am receptive to my trainer's ideas	6.46	.68	-.99	.19	.79	.62
I take a friendly approach towards my trainer	6.50	.65	-1.06	.55	.77	.60
M - Closeness						
My trainer likes me	6.08	.88	-.98	1.20	.81	.66
My trainer appreciates the efforts I make to improve their health & fitness	6.19	.84	-.71	-.08	.81	.65
My trainer respects me	6.26	.84	-1.33	2.97	.84	.71
My trainer trusts me	6.31	.80	-1.15	1.29	.79	.62
M - Commitment						
My trainer is committed to me	6.27	.78	-.88	.64	.84	.70
My trainer believes this relationship is important for them	6.14	.92	-1.10	1.45	.87	.75
My trainer would not let minor setbacks affect our relationship	6.37	.80	-1.24	1.36	.84	.71
My trainer expects to have a good connection with me for the foreseeable future	6.18	.69	-1.28	2.05	.92	.85
M - Complementarity						
When I work with my trainer they feel at ease	6.32	.75	-.75	-.32	.80	.64
My trainer responds readily to my efforts	6.26	.84	-1.33	2.97	.86	.74
My trainer is receptive to my ideas	6.18	.90	-1.98	7.57	.78	.61
My trainer takes a friendly approach towards me	6.30	.90	-2.27	8.21	.78	.62

Note: D = direct perception items; M = meta-perception items

Table 3.7: Item statistics for 12 item CTR-Q trainer version

Item	M	SD	Skewness	Kurtosis	Factor Loadings	R^2
D - Closeness						
I like my client	6.64	.61	-1.63	2.29	.71	.50
I appreciate the efforts my client is making to improve their health & fitness	6.51	.87	-2.13	5.38	.52	.27
I respect my client	6.80	.43	-2.00	3.14	.63	.39
I trust my client	6.31	.98	-1.81	4.68	.48	.23
D - Commitment						
I am committed to my client	6.76	.48	-2.15	5.87	.56	.31
This relationship with my client is important to me	6.73	.48	-1.52	1.33	.62	.39
I would not let minor setbacks affect the relationship with my client	6.49	.74	-1.72	3.62	.56	.32
I will have a good connection with my client for the foreseeable future	6.39	.86	-1.30	.80	.63	.39
D - Complementarity						
When I work with my client I feel at ease	6.46	84	-1.79	3.29	.44	.19
I respond readily to my clients efforts	6.63	.52	-.92	-.96	.60	.57
I am receptive to my client's ideas	6.28	.77	-.77	-.16	.62	.66
I take a friendly approach towards my client	6.61	.65	-2.09	6.13	.54	.68
M - Closeness						
My client likes me	6.31	.78	-.91	.20	.76	.57
My client appreciates the efforts I make to improve their health & fitness	6.43	.77	-1.47	2.46	.72	.51
My client respects me	6.55	.67	-1.45	1.75	.87	.76
My client trusts me	6.64	.59	-1.57	2.34	.76	.60
M - Commitment						
My client is committed to me	6.27	.79	-.75	.29	.78	.60
My client believes this relationship is important for them	6.28	.83	-.95	.12	.64	.41
My client would not let minor setbacks affect our relationship	6.36	.84	-1.26	.95	.77	.60
My client expects to have a good connection with me for the foreseeable future	6.37	.79	-1.19	.96	.78	.61
M - Complementarity						
When I work with my client they feel at ease	6.42	.75	-1.04	.14	.74	.54
My client responds readily to my efforts	6.37	.78	-1.05	.38	.76	.57
My client is receptive to my ideas	6.50	.68	-1.24	1.18	.81	.66
My client takes a friendly approach towards me	6.54	.68	-1.40	1.54	.82	.68

Note: D = direct perception items; M = meta-perception items

Criterion validity.

Spearman's rank order bivariate correlations were calculated to examine the association between each CTR-Q sub-scale and relationship satisfaction. The relationship satisfaction scale items had good internal consistency for both clients (α = .94) and trainers (α = .86). Significant relationships (p <.001) were found between all the 3Cs subscales, total scores and relationship satisfaction (Tables 3.8 and 3.9).

Table 3.8: Correlation matrix for 12-item CTR-Q constructs and relationship satisfaction. Client version.

Variable	1	2	3	4	5	6	7	8	9
1. D - Closeness	1.00								
2. D – Commitment	.85**	1.00							
3. D - Complementarity	.83**	.86**	1.00						
4. D – 3Cs Total	.92**	.96**	.94**	1.00					
5. M - Closeness					1.00				
6. M – Commitment					.88**	1.00			
7. M - Complementarity					.85**	.83**	1.00		
8. M – 3Cs Total					.95**	.95**	.93**	1.00	
9. Relationship satisfaction	.75**	.82**	.78**	.83**	.82**	.81**	.82**	.85**	1.00
Note: ** = p < .001, D = direct perception items; M = meta-perception items									

Table 3.9: Correlation matrix for 12-item CTR-Q constructs and relationship satisfaction. Trainer version.

Variable	1	2	3	4	5	6	7	8	9
1. D - Closeness	1.00								
2. D – Commitment	.52**	1.00							
3. D - Complementarity	.60**	.66**	1.00						
4. D – 3Cs Total	.83**	.83**	.88**	1.00					
5. M - Closeness					1.00				
6. M – Commitment					.80**	1.00			
7. M - Complementarity					.79**	.75**	1.00		
8. M – 3Cs Total					.92*	.94**	.91**	1.00	
9. Relationship satisfaction	.74**	.70**	.69**	.60**	.83**	.81**	.79**	.68**	1.00
Note: ** = p < .001, D = direct perception items; M = meta-perception items									

Client's satisfaction with their working relationship was explained by 69% of the variance in direct relationship perceptions and 72% of the variation in relationship meta-perceptions indicating very close correspondence between the two measures. Concurrent validity was also supported for trainer direct and meta-perceptions although these were

associated with slightly lower variations in relationship satisfaction (46% and 36% for direct and meta-perceptions, respectively).

Scale reliability.

The CTR-Q sub-scales demonstrated excellent reliability for direct and meta-perspective items for clients and for meta-perspective items for trainers (see Table 10) with α ranging from .83 - .92. The trainer's direct scale had lower reliability with Cronbach's alpha ranging from .62 - .66. Descriptive statistics and scale reliabilities for the 12-item CTR-Q are given in Table 3.10. Trainers' responses had a lower standard deviations compared to clients indicating less variation in their perceptions. Meta-perceptions were also more variable compared to direct perceptions.

Table 3.10: Descriptive statistics and Cronbach's Alpha for 12-item CTR-Q

3Cs construct	N items	Mean	SD	Cronbach's α	Mean	SD	Cronbach's α
		Client sub-scales			Trainer sub-scales		
D -Closeness	4	6.51	.57	.90	6.56	.52	.63
D - Commitment	4	6.38	.70	.89	6.59	.47	.66
D - Complementarity	4	6.44	.58	.89	6.50	.48	.62
M - Closeness	4	6.21	.72	.91	6.48	.57	.85
M - Commitment	4	6.24	.77	.92	6.32	.66	.83
M - Complementarity	4	6.27	.72	.88	6.46	.61	.86
Note: D = direct perception items; M = meta-perception items							

3.5. Discussion.

The present study aimed to validate both a long (23-item) and short (12 item) version of an instrument (the Client-Trainer Relationship Questionnaire: CTR-Q) to measure the quality of the interpersonal relationship between a trainer and their client based on the 3 + 1Cs relationship model. A direct and meta-perspective version of each questionnaire was cross-validated for a sample of clients and personal trainers.

The structural validity of the long version was not supported using the fit criteria adopted for this study. This is in contrast to the excellent fit statistics presented by Rhind and Jowett (2010) in the initial validation study of the long CART-Q for both direct and meta-perspectives. These authors, however, used a pooled sample of both coaches and athletes which could have masked any differences between coach and athlete samples. In the present study the client items only just failed to reach acceptable cut-off values but it was the trainer versions that fell short. Yang and Jowett (2013) tested the structural validity of the direct

perspective long version of the CART-Q in a large sample of Chinese coaches and athletes and were also unable to produce acceptable fit. The study did however confirm the structural validity of the 11-item CART-Q showing good support for the hypothesised 3 factor structure compared to a 2-factor and second order 3 factor hierarchical model. Therefore, although longer questionnaires may have more practical validity in capturing a greater proportion of the variance in related outcome variables (Rhind & Jowett, 2010), shorter versions are more likely to retain their theoretical structure across different contexts (Yang & Jowett, 2013).

The present study did find good support for a 3 dimensional factor structure of the 12-item CTR-Q. These findings add to the extant literature in sport which has shown that the coach-athlete relationship is best represented through the 3 separate but correlated factors of closeness, commitment and complementarity (Balduck & Jowett, 2010; Jowett, 2009a; Jowett & Ntoumanis, 2003; Rhind & Jowett, 2010; Yang & Jowett; 2013). However, it should be noted that differences between the 3 factor model and alternative models for the trainers' data were more marginal and fit indices were borderline for trainers' meta-perceptions. However, RCFI values approached the cut-off and although RMSEA values just exceeded .06 smaller sample sizes are known to inflate this value (West et al., 2012). More studies are therefore necessary to cross-validate the CTR-Q in samples of trainers.

Evidence for the convergent validity of the factors was provided by the high factor loadings of items across direct and meta-perceptions for both clients and trainers. Sub-scale reliabilities were also excellent with the exception of the direct perspective items of the trainer's CTR-Q. Tavakol and Dennick (2011) recommend that α should reach a threshold of .70 although values below this are acceptable when the number of items contributing to each scale are small (Cortina, 1993). It should be noted that α reduced markedly in this data set only once the outliers were removed due to the restriction in the subscale standard deviations. The small variability may therefore have made the reliability coefficient more sensitive to small deviations in scale item consistency.

The lower reliability of the subscales for direct items on the trainer's CTR-Q also introduced more error variance into the CFA matrix and explains the lower R^2 values in comparison to the other versions of the questionnaire. For example, the factor loading and R^2 value for the trainer's direct and meta-perception responses to 'I trust my client' was .48 and .23 respectively compared to .86 and .76 for the client's. Yang and Jowett (2013) also validated direct versions of the CART-Q separately for athletes and coaches and observed

lower factor loadings for some items on the complementarity subscale for athletes compared to coaches. The fit statistics used to confirm the structural validity of the model, although acceptable, were also weaker in comparison to those for the sample of clients. The authors postulated that the behaviours subsumed by complementarity were either corresponding (i.e. both dyad members are expected to respond equally to the other) or reciprocal (i.e. one member expects the other to respond in a different but complementary way, e.g. leading and following). They argued that because coaches occupy a dominant role in the partnership they are not required to reciprocate all behaviours which can lead to difficulties designing corresponding items on both coach and athlete versions of the questionnaire. Weaker factor loadings for some items in the present study however were evident across all three constructs which may illustrate that there is less correspondence in thoughts, feelings and behaviours within the interdependent relationship for trainers. For example, personal trainers working in health-related fitness may expect clients to experience motivational difficulties and would not trust them to consistently follow their advice about exercise and nutrition. In contrast it is of prime importance to clients for them to trust that the advice and instruction provided by their trainer will be effective. In summary then, the poorer scale reliabilities and less consistent factor loadings for the direct version of the trainer's CTR-Q could be caused by an artefact of the data or by the lack of reciprocity in factors reflecting relationship quality for trainers in this context. A similar observation for coach and athlete samples by Yang and Jowett (2013) supports the latter explanation and indicates that a measure of relationship quality for both trainers and clients may be more difficult to capture in a generic set of question items in health-related fitness settings. This highlights the importance of validating trainer and client versions of the questionnaire separately in future studies so that corresponding questions are selected that are valid for both samples. Additional research is therefore needed to establish the acceptable structural validity and reliability for both versions of the CTR-Q.

An additional reason for the variation between trainer and client versions in this study could relate to differences in the characteristics of each sample (e.g. age, sex and relationship length). Previous CART-Q validation studies, with the exception of Yang and Jowett (2013), have used samples that have been heavily biased towards males. In this study however, males dominated the trainer sample whilst the clients had a greater proportion of females which is typical of the health and fitness sector (Hansen et al., 2013). It is possible that gender influenced the way in which interpersonal relationships were perceived in this study causing

individual items to perform differently within each construct. Previous research conducted with adult couples has identified that females place more emphasis on emotional intimacy in relationships and are more sensitive to interpersonal conflict (Birditt & Fingerman, 2003) and that relationship quality and satisfaction is influenced by different partner personality traits compared to males (Robin, Caspi & Moffitt, 2000). The small sample size of females in this study prohibited a separate analysis by gender but the construct validity of this measure should be explored in samples of single gender in future research. In addition, it has been suggested that the gender composition of dyads could impact on the dynamics of the relationship (Jowett, 2009; Rhind & Jowett, 2010) and this could be investigated in further work utilising a dyadic research design.

Good evidence for the criterion validity of the 12-item CTR-Q was provided by the strong and highly significant correlations with all 3Cs subscales and relationship satisfaction. Relationship meta-perceptions were more strongly associated with relationship satisfaction than direct items for both clients and trainers, which is comparable with coach-athlete relationships (Jowett, 2009a; Rhind & Jowett, 2010). The relationship quality – satisfaction relationship was also greater for clients compared to trainers. This has been replicated in coach-athlete relationships (Yang & Jowett, 2013) and might be expected given that trainers are paid to maintain relationships with their clients. Trainers' relationship satisfaction was more strongly associated with both direct and meta-perceptions of closeness but for clients' r values were similar across all the 3Cs. Yang and Jowett (2013) found commitment to predict relationship satisfaction for both coaches and athletes in contrast to our findings. However, Balduck & Jowett (2010) found that closeness predicted a greater range of self-reported coach behaviours using the Leadership Scale for Sports (Chelladurai & Saleh, 1980) as a measure of concurrent validity. The present study demonstrates that trainers are more satisfied with their relationship when they are affectively close to their clients and feel this is reciprocated by their clients. Clients on the other hand are more satisfied in relationships which are perceived as having more personal importance and a long term future.

The associations between relationship quality and satisfaction were more highly significant in this study compared to the validation study for the original CART-Q (Jowett & Ntoumanis, 2003). The intense one-to-one nature of personal training might render the working relationship more important to both dyad members' relationship goals compared to coaching environments in which coaches are more likely to work with groups of athletes.

This indicates the value of pursuing relationship research in health and fitness environments with studies that consider both individual and group-based exercise settings.

The fact that closeness, commitment and complementarity produced different associations with relationship satisfaction offers some support for the discriminant validity of the subscales, along with the fit statistics previously discussed. However, factor correlations in the present study were considerably higher than those noted in previous CART-Q validation studies (Balduck & Jowett, 2010; Jowett & Ntoumanis, 2004; Rhind & Jowett, 2010; Yang & Jowett, 2013) and so efforts must be made to assess the discriminant validity of the 3 sub-scales in future work.

There is a need to address the stability of the factor structure as relationships develop over time (Jowett, 2009) and this might be an explanation for the high sub-scale correlations in this study. Almost 40% of the sample of both clients and trainers had worked with their trainer or client for more than a year and it is plausible that the factor structure may become less complex over time as levels of co-orientation develop. Consequently, future research should compare new relationships to more firmly established ones to explore how this changes over time.

The mean values for all subscales on all questionnaire versions were high and skewed to the positive end of the scale: a trend which has been observed in previous CART-Q validation studies (Balduck & Jowett, 2010; Jowett & Ntoumanis, 2004; Rhind & Jowett, 2010; Yang & Jowett, 2013). However, means and skewness were somewhat higher still in the present study. It is probable that this is representative of most working relationships in health-related fitness because unsuccessful personal training relationships are likely to be terminated very quickly. Trainers may also have completed the questionnaire in relation to clients they knew better or preferred, despite being encouraged to select one they had recently started working with. The typical length of the relationships reported by both clients and trainers in the present study supports this argument. This poses a challenge for research in this field since it may prove difficult to capture relationships with sufficient variation to produce reliable results in validation studies. Future studies should therefore be encouraged to try and include a broader range of relationship qualities.

Several points are worth raising in relation to the limitations of this study. It is accepted that large samples are required for scale validation using CFA (Raykov, 2012), but

guidelines for minimum sample sizes vary. Commonly adopted recommendations are the ratio of participants to variables (items) of 10:1 (Kline, 1998) or the 5:1 ratio of free parameters to participants (Bentler & Chou, 1987). These criteria were met for the 12-item, but not the 23-item CTR-Q. Others contend that 20 participants to each variable is required for CFA, with numbers of 250 upwards typical in research (Schumaker & Lomax, 2010). Samples in this study were therefore small and they also departed significantly from normality. In these situations, fit indices may be less reliable and it is more difficult to cross-validate models (Kenny & Milan, 2012; Schumaker & Lomax, 2010). The high correlations between the 3Cs sub-scales cautions against using them separately without additional evidence for their discriminant validity.

Finally, criterion validity was assessed with a concurrent measure of relationship satisfaction and relationship quality and so a causal association cannot be proved. In addition, a more rigorous validation would be provided by incorporating measures of negative outcomes (e.g. relationship conflict) rather than just positive ones (Jowett, 2009a). Future studies are encouraged to employ a broader range of outcome measures using a longitudinal approach to evaluate the predictive validity of the CTR-Q.

In summary, this is the first study to explore the validity of a questionnaire which operationally defines the 3 + 1Cs relationship model in the context of the trainer-client working relationship in health-related fitness. The adoption of this framework with an associated measurement tool enables the investigation of relational aspects of the working relationship in health and fitness settings. Future research can establish the extent to which relationship quality contributes to physical activity behaviour and psychological variables such as motivational regulation and psychological well-being. Relationship quality in athletes has already been shown to be significantly associated with greater need satisfaction, greater perceptions of competence and higher psychological well-being (Felton & Jowett, 2013).

Another area for study relates to the effect of client and trainer personal characteristics on relationship quality. For example, a client's initial stage of change towards exercise (Prochaska & DiClemente, 1983) could affect the nature of the relationship as could the attitudes or behaviours of the trainer. Unlike sport settings, where athletes are generally more motivated to participate, examination of the early stages of relationship formation is warranted in health and fitness because of the problem with attrition. Jowett (2009a) found that relationship quality was negatively related to conflict and so it would be interesting to

explore whether relational variables predict drop-out. This could lead to practical interventions which could reduce attrition through the development of better quality relationships. Finally, the study of dyadic units is required to examine how aspects of co-orientation impact on relationship satisfaction and other positive outcomes. For example, trainers who are empathically accurate with their clients might be hypothesised to have more satisfied customers.

Chapter Four. Study Three.

An investigation into the relationships between client perceptions of their trainer's trait emotional intelligence, relationship quality and psychological outcomes in trainer-led physical activity.

Abstract.

This study used the theoretical framework of Self-Determination Theory (SDT; Deci & Ryan, 2000) to investigate the associations between client perceptions of their exercise trainer's trait emotional intelligence, trainer-client relationship quality, autonomous motivation and subjective vitality. Participants (n = 206) were recruited from a range of exercise contexts including exercise classes, personal training and exercise on referral and completed a questionnaire to measure the study variables. Structural equation modelling supported a model where client perceptions of their trainer's trait Emotional Intelligence (EI) was positively associated with both the client-trainer relationship and perceptions of relatedness. In turn, higher evaluations of the client-trainer relationship were related to psychological need satisfaction. Perceptions of competence and autonomy fully mediated the effect of relationship quality on autonomous motivation and subjective vitality. The results provide evidence that the trainer-client relationship in health-related physical activity settings may impact on clients' motivation and well-being. In addition, clients with a better quality working relationship with their trainer and higher perceptions of relatedness perceived their trainer to be higher in trait emotional intelligence.

4.1. Introduction

Convincing evidence exists which proves that regular physical activity contributes to health and well-being (Myers et al. 2004; Warburton et. al. 2006). A significant amount of the population, however, fail to do enough exercise to experience these benefits (Public Health England, 2016). Self-Determination Theory (Deci & Ryan, 1985; 2000) has been consistently employed as a theoretical framework to understand motivation in exercise and physical activity (Silva, Marques, & Teixeira, 2014; Teixera et al., 2012). SDT proposes that human behaviour is controlled by a range of motivations which vary along a continuum according to the degree to which they are autonomously regulated (or self-determined). It postulates that social factors associated with the exercise context can encourage participants to develop more autonomous motivation which has been consistently linked to physical activity behaviour (Miquelon & Castonguay, 2017; Rodgers, Hall, Duncan, Pearson, & Milne, 2010; Teixera et al., 2012). SDT incorporates Basic Needs Theory (BNT; Ryan & Deci, 2000) which posits that surroundings satisfying participants' basic needs for competence, autonomy and relatedness will promote more self-determined forms of motivation. Need satisfaction is also proposed to be an essential component of psychological well-being (Bartholomew et al., 2011; Vansteenkiste & Ryan, 2013) and recent research in health-related physical activity has confirmed this relationship (Gunnell et al., 2013; Gunnell et al., 2014; Mack et al., 2012).

The social environment consists of a number of significant others who play a significant role in influencing an exerciser's exercise motivations, behaviour and well-being (Rouse et al., 2011). The interpersonal relationship that clients form with exercise professionals is one aspect of that environment which should be instrumental in helping clients to fulfil their need for competency, autonomy and relatedness. However, the effect of interpersonal relationships on needs satisfaction, and positive psychological outcomes in sport and exercise settings has been neglected (Felton & Jowett; 2013; Pavey, 2013; Riley & Smith, 2011). This study aims to address this gap by investigating how the client-trainer relationship in health-related fitness settings affects need satisfaction and psychological outcomes associated with exercise behaviour.

The 3 + 1Cs model (Jowett, 2007) was founded to study the dyadic relationships between coaches and athletes. It was developed from interdependence theory (Kelly & Thibaut, 1978) and proposes that the interpersonal relationship consists of each member's

emotional attachment to the other (closeness), each members' cognitions about the value and future of the relationship (commitment) and the enactment of reciprocal and mutually beneficial behaviours (complementarity). The evaluation of relationship effectiveness therefore requires athletes to see their relationship with their coach as close, committed and complementary but also for them to perceive that their coach views his / her relationship with them in a similar way. This perceptual congruence (the additional C) is called co-orientation.

Two studies have evaluated the influence of relationship quality (as indicated by closeness, commitment and complementarity) on need satisfaction and psychological outcomes (Felton & Jowett, 2013; Riley & Smith, 2011). Riley and Smith (2011) also reported that all three basic needs partially mediated the effect of the coach-athlete relationship on autonomous motivational regulation. Felton and Jowett (2013) found that athletes' perceptions of their relationship with their coach affected competence and relatedness needs but not autonomy. In contrast to Riley and Smith (2011), only perceptions of competence acted as a significant mediator between relationship quality and indices of well-being. However, the authors note that the aspects of relationship quality likely to lead to autonomy satisfaction could have been subsumed into the significant relationship with autonomy supportive coach behaviour which was included as an additional predictor of need satisfaction. Despite these differences, both studies upheld the view that professional working relationships have a significant influence on motivational outcomes and well-being. Further research in health-related activity settings is needed to confirm these findings and explore both the environmental and personal factors that can create effective relationships.

Trait Emotional Intelligence (EI) is one personal characteristic that has been linked to job performance and leadership in a range of professional contexts (Joseph et al., 2015; O'Boyle et al., 2011; Zeidner et al., 2004). Defined as *"a constellation of emotional self-perceptions and dispositions located at the lower levels of personality hierarchies"* (Petrides, Perez Gonzalez, & Furnham, 2007, p. 26), it relates to an individual's skill in recognising, processing and applying affective information. The job of leading and instructing health related exercise requires a high degree of interpersonal interaction and the ability to inspire and motivate others. This role has been termed emotional labour (Hochschild, 1983) and past research has shown that EI makes a notable contribution to jobs that require it (Jadhav & Muller, 2010; Newman et al., 2010). Thus trainers high in EI should be able to portray positivity and optimism to others, and show higher levels of empathy and understanding; all

of which should be essential in forming effective and supportive working relationships in exercise contexts. No research to date has investigated EI in exercise professionals (Laborde et al., 2016).

In summary the aims of this study are:-

a) To examine the effect of clients' perceptions of their trainer's emotional intelligence on both direct and meta-perceptions of relationship quality. It is hypothesised that clients who perceive their trainers as having higher emotional intelligence will experience more positive relationships.

b) To determine the impact of clients' perceptions of their relationship with their trainer on the positive psychological outcomes of motivational regulation, and psychological well-being. Specifically it is hypothesised that clients' direct and meta-perceptions of their relationship with their trainer will be positively related to intrinsic and identified motivation, as well as higher levels of subjective vitality.

c) To investigate the effect of both direct and meta-perceptions of relationship quality on clients' perceptions of basic psychological need satisfaction. Perceptions of relationship quality are proposed to influence motivation, and well-being indirectly through the client's perceptions of need satisfaction in competence, autonomy and relatedness.

4.2. Method.

Participants.

Participants were 212 exercisers who were currently working with a personal trainer or exercise instructor. They had to have been working with their trainer for a minimum of 3 weeks in order for a relationship to have been established and 61% of the sample reported they had worked with their trainer for 7 months or more. Clients interacted with their trainer in a range of contexts including one to one personal training (45%), exercise classes (51%) or a mixture a both (4%). The sample also included participants on specialist population schemes such as exercise on referral (33%).

The sample was mainly Caucasian with 86% white British, 8% Asian / Asian British, 4% Black/ Black British and 2% from a mixed ethnic group. The age of the sample ranged from 23 to 87 years, (M = 51, SD =14.4) and 57% were female.

Procedures.

Participants for this study were recruited through their trainers by contacting trainers and gym managers at fitness clubs across the North West of England, and via their business websites. Trainers were sent an invitation containing details about the study to forward onto interested clients. Clients were informed that participation was voluntary and offered the choice of completing either a hard copy which could be returned in a stamped addressed envelope or an electronic copy via Bristol Online Surveys. Both on-line and paper surveys contained a statement of the purpose of the study, confirmation that responses would be anonymous and a statement that were no right or wrong answers. Completion of the on-line survey was not forced and could be aborted at any time and data from incomplete questionnaires were not used in the study. A copy of the questionnaire can be found in Appendix 10.

Measures used.

Relationship quality: The 12-item Client-Trainer Relationship Questionnaire (CTR-Q) which was validated in the previous study was used to measure relationship quality. Both direct and meta-perspective versions were used to assess the clients' direct and meta-perceptions of closeness, commitment and complementarity. The questionnaire includes a 7-point Likert scale with responses ranging from 1 (strongly disagree) to 7 (strongly agree). A mean value for each version of the questionnaire was used to form a single direct perception and a single meta-perception score. In this study Cronbach's alpha was 0.94 and for the direct and 0.96 for the meta-perspective questionnaire items respectively confirming good item reliability.

Emotional intelligence: The short version of the Test of Emotional Intelligence Questionnaire (TEIQue-SF; Petrides, 2009) was adapted for this study to measure clients' meta-perceptions of their trainer's emotional intelligence. The TEIQue-SF has 30 items which yield scores for four Emotional Intelligence constructs plus a global trait score. The four constructs measured are well-being (6 items), sociability (6 items), self-control (6 items) and emotionality (8 items). Additional questions relating to self-motivation and adaptability contribute to global trait EI. Clients were asked to respond to statements about their trainer (e.g. Expressing his / her emotions with words is not a problem for my trainer) on a 7 point scale from 1, completely disagree to 7, completely agree. Good construct validity and

acceptable scale reliability has been reported (Siegling, Vesely, Petrides, & Saklofske, 2015). The form is normally used as a self-report instrument, but each item was re-worded to assess the client's meta-perceptions of their trainer's emotional intelligence. Convergence of scores between self and other ratings of emotional intelligence has been demonstrated by Petrides (2009) and the short-form has been adapted to measure meta-perceptions in previous studies (e.g. Smith et al., 2008). In this study, only the sub-scale of self-control reached acceptable reliability (α = .69), but emotionality, well-being and sociability did not (α = .60, .59 and .65, respectively). One item identified by the reliability analysis was removed from the emotionality subscale, two from well-being and one from sociability which increased the reliability levels to .65 or above. Petrides (2009) reported consistently lower internal reliability for the short form (α = .69) and the number of items on these scales was low and so these were viewed as acceptable. The mean scores for all questions were used to compute the global trait EI scores for the trainers and this demonstrated good reliability (α= .86).

Psychological need satisfaction: The satisfaction of psychological needs in competence, autonomy and relatedness was measured with the Psychological Need Satisfaction in Exercise Questionnaire (PNSE). A 12-item instrument was originally developed by Wilson, Rogers, Rodger and Wild (2006) but the revised 11 item version by Vlachopoulos, Ntoumanis and Smith (2010) was used in this study because it has been shown to have good psychometric properties and cross cultural validity. Respondents were asked to rate the extent to which they agreed to statements about their need satisfaction (e.g. I feel that exercise is an activity I do very well) on a 5 point scale ranging from 1, (I don't agree at all) to 5, (I completely agree). Mean scores were computed for the subscales of competence (4 items), autonomy (4 items) and relatedness (3 items). Subscale item reliability was acceptable (α < .70) for competence (α = .81), autonomy (α = .74) and relatedness (α = .80)

Exercise motivational regulation: Behavioural regulation in relation to exercise was measured using two subscales from the Behavioural Regulation in Exercise Questionnaire (BREQ; Mullan, Markland, & Ingledew, 1997). The intrinsic (4 items) and identified (4 items) subscales were chosen as the two most self-determined motivation regulations. Structural validity and scale reliability have been reproduced in further studies (Markland & Tobin, 2004; Wilson & Rogers, 2006). Participants were asked to agree with a set of statements about why they exercise (e.g. I value the benefits of exercise) on a 5 point scale ranging from 1, (I don't agree at all) to 5, (I completely agree). Mean scores were computed

for each subscale. Cronbach's alpha for the intrinsic motivation sub-scale was .86 and .60 for identified regulation. The latter was deemed to be acceptable given the low numbers of items used for this scale (Tavakol & Dennick, 2011).

Psychological well-being: The subjective vitality scale (Ryan & Frederick, 1997) was used to measure eudemonic well-being. The six item version recommended by Bostic, Rubio and Hood (2000) was used for this study. Participants were asked to respond to a set of statements about how they feel when they engage in exercise (e.g. I feel alert and awake) on a 6 point scale ranging from 1 (strongly disagree) to 6 (strongly agree). Items showed very high reliability ($\alpha = .90$)

4.3. Data analysis.

Model testing

A path analysis was undertaken to examine the relationships between the variables in line with the aims of the study. Specifically it was hypothesised that clients' perceptions of their trainer's trait EI would predict their perceptions of relationship quality (Aim 1). In turn, relationship quality would be positively related to self-determined motivation and subjective vitality (Aim 2) and this would be fully mediated through the need satisfaction of competence, autonomy and relatedness (Aim 3). The model to be tested (M1) is shown in Figure 4.1. To evaluate these hypotheses, an alternative model (M2) was tested which proposed that the effect of relationship quality would be partially mediated by need satisfaction and so additional direct paths were specified from perceptions of relationship quality to motivational regulations and vitality in addition to those shown in Figure 4.1. If the parameter estimates for these additional paths were insignificant then support for Model 1 in which the effect of relationship quality on motivation and well-being is fully mediated through need satisfaction would be demonstrated.

In both models the error variances for needs satisfaction for competency, autonomy and relatedness were allowed to correlate. In addition, intrinsic motivation error variance was allowed to correlate with identified motivation. These specifications are congruent with the theoretical predictions of SDT and previous research demonstrating significant correlations between these constructs (Wilson & Rogers, 2008). The predicted covariance matrix for each model was compared to the observed covariance matrix twice: once for direct perception data

(a) and once for meta-perception data (b). Data were analysed using EQS Version 6.3 (Bentler & Wu, 2006).

Data screening.

Data were screened so that it met the assumptions for regression techniques (Schumaker & Lomax, 2010). The Malahanobis distance criterion (Tabachnick & Fidell, 1996) was calculated for the variable set and used to identify multivariate outliers. Six outliers were removed leaving a final sample size of 206. Scatterplots for bivariate correlations were inspected visually for linearity with no notable departures evident.

The Shapiro-Wilks test revealed that none of the study variables was normally distributed. In addition, direct and meta-perceptions of relationship quality had kurtosis values of greater than ±2 indicating significant departure from univariate normality. Therefore, non-parametric univariate statistics and robust fit indices were used to analyse the data. The sample size comfortably exceeded the minimum ratio of 10 participants per variable recommended by Bentler and Chou (1987) for non-normally distributed data. Collinearity tests confirmed that all variance inflation factors (VIFs) were below the threshold of 5.0 recommended by Kline (1998) and so variables were free from multicollinearity.

Demographic data indicated an almost equal split between clients exercising with their trainer in classes compared to one-to-one personal training. In addition, a third of the participants came from specialist population schemes. To explore the possibility that these groups of participants had produced different data distributions, the medians and distributions were compared for each variable using the Mann Whitney U test. There were no significant differences between class-based and one-to-one personal training for any variable. Clients on specialist population schemes were also identical to other participants on every variable except for the distribution (but not the median) of identified behavioural regulation ($p<0.05$).

Data distributions were also compared for males and females. There were no significant differences found in median scores for any variable. No differences were found in the distributions except for meta-perceptions of relationship quality which were more platykurtotic for males in comparison to females ($p = 0.03$). Due to the high degree of similarity between context and gender, the data was accepted as a homogenous sample for the purposes of model testing.

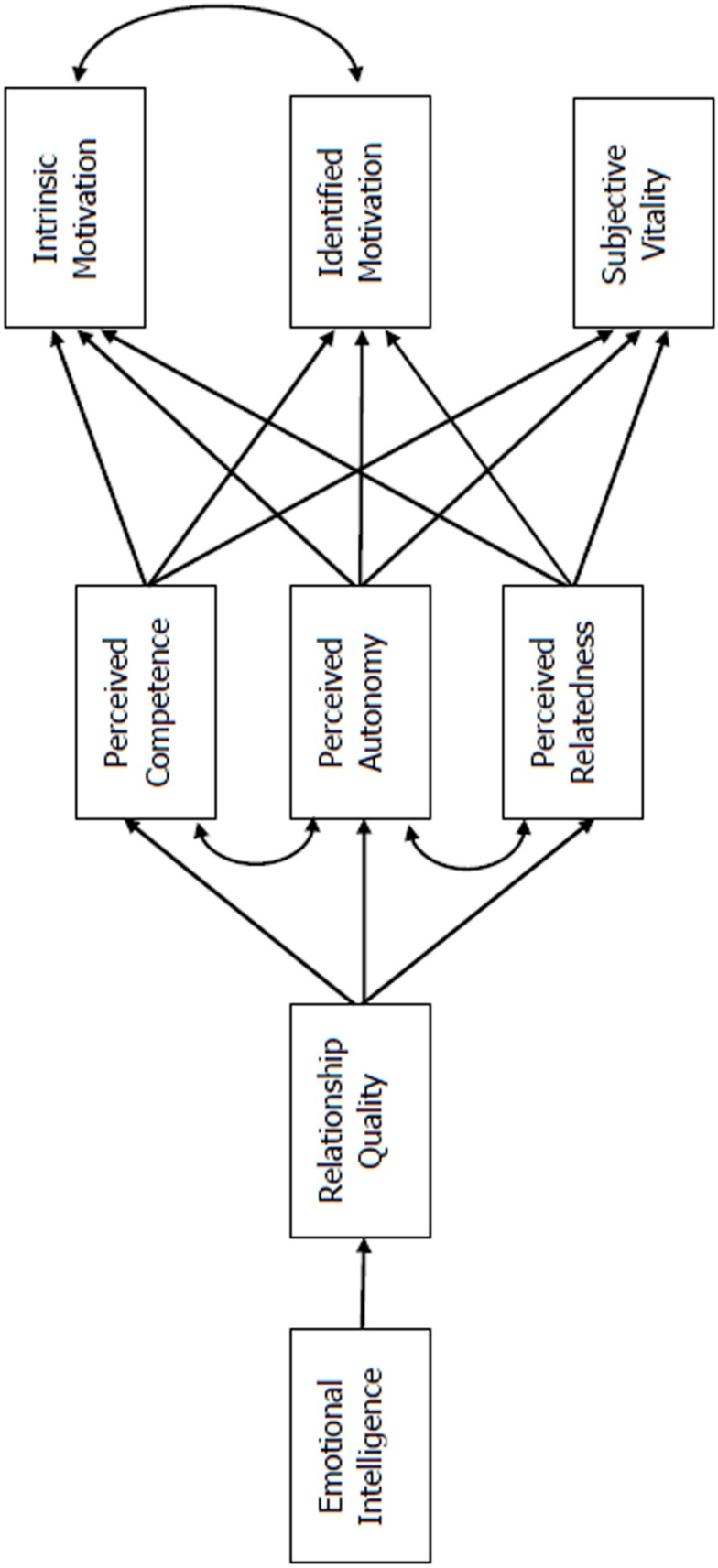

Figure 4.1: Model 1 with basic needs mediating the relationship between perceptions of relationship quality and psychological outcomes.

Mardia's normalised estimate for multivariate kurtosis was 21.65 for direct relationship perceptions and 24.94 for the meta-perception data which exceeds the minimum value of 3.0 required for normality (Ullman, 2006). Therefore, robust estimates were used to examine the models. Goodness of fit was evaluated using the Satorra-Bentler Chi square (SB-χ^2) statistic with acceptable fit indicated by a non-significant value. A range of other statistics were also used, including the Robust Confirmatory Fit index (RCFI), the Robust Root Mean Square Error of Approximation (RMSEA) and the Standardised Root Mean Square Residual (SRMR). Following criteria recommended by Hu and Bentler (1999), model fit is good when the CFI is close to or exceeds .95, RMSEA is .06 or below and SRMR is .08 or lower.

4.4. Results.

Descriptive statistics.

Descriptive statistics for the study variables are shown in Table 4.1. Means for all variables lay above the midpoint of the scales and standard deviations were small. All variable distributions were positively skewed.

Table 4.1: Descriptive statistics and for study variables.

Variable	M	SD	Skewness
Emotional intelligence (meta-perception)	6.20	.55	-0.59
Relationship quality (direct perception)	6.54	.58	-1.46
Relationship quality (meta-perception)	6.36	.75	-1.55
Competence need satisfaction	4.29	.47	-0.54
Autonomy need satisfaction	4.32	.58	-0.70
Relatedness need satisfaction	4.47	.60	-1.16
Intrinsic regulation	4.32	.63	-0.79
Identified regulation	4.51	.48	-0.64
Subjective vitality	4.75	.84	-0.83

Relationship meta-perceptions were more variable than direct perceptions as indicated by the larger standard deviation. In addition, mean values for intrinsic regulation were lower but more variable in comparison to identified regulation.

Variable correlations.

Bivariate correlations yielded strong to moderate positive associations between variables. All relationships were significant ($p<0.01$).

Table 4.2: Correlation Coefficients for study variables.

Variable	1	2	3	4	5	6	7	8
1. Emotional Intelligence (meta perception)								
2. Relationship quality (direct perception)	.73**	-						
3. Relationship quality (meta perception)	.78**	.82**	-					
4. Competency need satisfaction	.48**	.49**	.52**	-				
5. Autonomy need satisfaction	.45**	.54**	.52**	.71**	-			
6. Relatedness need satisfaction	.61**	.62**	.67**	.64**	.57**	-		
7. Intrinsic regulation	.38**	.45**	.38**	.56**	.67**	.46**	-	
8. Identified regulation	.36**	.41**	.37**	.53**	.65**	.47**	.71**	-
9. Subjective vitality	.41**	.35**	.41**	.51**	.53**	.44**	.52**	.55**
Note. ** = p<0.01								

Model testing.

The initial fit indices obtained for both models showed less than optimum fit. Although the RCFIs were excellent, the S-Bχ^2 values were significant showing that the observed data differed significantly from the specified models for both direct and meta-perception data. In addition all RMSEA values exceeded .06 (Table 4.3). It has been argued that the Chi Square statistic is the most accurate indicator of incorrect model specification (Hu & Bentler, 1995). Together, these deviations indicated that both M1a and b and M2a and b had less than optimal fit.

Model modification procedures were then employed following guidelines by Schumaker and Lomax (2010). Initially Wald test statistics were examined to determine whether any fixed parameters should be freed and then Lagrange Multiplier (LM) tests were used to add parameters, with fit indices being recalculated after each change. As a result of the Wald test, non-significant paths from perceptions of relatedness to intrinsic and identified motivation and subjective vitality were dropped. This decision was supported by previous research showing that the need for relatedness is less likely to mediate in relationships between social variables and autonomous motivations and perceptions of well-being in comparison to perceptions of autonomy and competence in structured sport and exercise contexts (Edmunds et al., 2006; Felton & Jowett, 2013; Reinboth et al., 2004; Wilson et al., 2006).

Table 4.3: Model fit indices for specified models

Model	S-B χ^2	df	sig	RCFI	RMSEA	SRMR	CI
M1a Direct perceptions	29.94	11	p= .002	.97	.092	.048	.053 - .131
M2a Direct perceptions	25.47	8	p= .001	.97	.103	.043	.006 - .149
M1b Meta-perceptions	25.25	11	p= .031	.98	.067	.047	.020 - .110
M2b Meta-perceptions	18.28	8	p = .019	.98	.079	.037	.030 - .107
Note: M1 = Fully mediated model. M2 = Partially mediated model.							

The LM test suggested adding a significant path from meta-perceptions of EI to perceptions of relatedness. This study measured relatedness need satisfaction from the exercise environment generally rather than from the trainer and since most of the sample exercised in a group, with a spouse or were members of a wider gym community, the trainer's trait EI could impact on perceptions of relatedness indirectly through its effect on general group climate and cohesion. This effect has been previously identified in group psychotherapy where positive outcomes have been shown to be related not only to individual client-therapist relationships but to a higher order therapeutic climate consisting of the client-therapist interpersonal relationship, group climate and cohesion (Gillaspy, Wright, Campbell, Stokes, & Adinoff, 2002; Johnson et al., 2005). The addition of this extra path is therefore logical and justified empirically. The fit indices for the revised models are presented in Table 4.4.

Table 4.4: Model fit indices for revised models

Model	S-B χ^2	df	sig	RCFI	RMSEA	SRMR	CI
M1a Direct perceptions	20.65	13	.08	.986	.054	.048	.000 – .102
M2a Direct perceptions	20.17	10	.03	.984	.071	.041	.023 - .115
M1b Meta-perceptions	18.20	13	.15	.992	.044	.054	.000 - .088
M2b Meta-perceptions	12.14	10	.27	.997	.032	.034	.000 - .086
Note: M1 = Fully mediated model. M2 = Partially mediated model.							

The revised model for M1a had excellent fit indices but M2a had an unacceptably high RMSEA and a significant Chi Square value. In addition the paths from direct relationship perceptions to both motivational regulations and subjective vitality were not significant and highlighted by the Wald test for removal, offering clear support for the fully mediated model for direct perceptions of relationship quality.

The meta-perception models (M1b and M2b) both produced excellent fit values rendering both models equally plausible. When comparing two nested models the most

parsimonious (that with the lowest number of estimated parameters) can be accepted as the better fit (West et al., 2012). Additionally, the direct paths from meta-perceptions of relationship quality to both motivational regulations (but not vitality) also failed to reach statistical significance and were recommended for freeing by the Wald test. For these reasons M1a was also accepted as the final model for relationship meta-perceptions.

The path diagrams for the final models with standardised path estimates are shown in Figures 4.2 and 4.3. The robust test statistic for the path between competence satisfaction and intrinsic motivation just failed to reach statistical significance at $p<0.05$ ($\beta= .19$, $t = 1.90$) but the pathway was retained for theoretical reasons. R^2 values indicated that perceptions of competence and autonomy explained 31% of the variation in subjective vitality and 47% and 42% of the variation in intrinsic and identified motivation respectively. The correlation between intrinsic and identified motivation was significant ($r = .41$; $p < 0.05$)

In the model which examined clients' direct relationship perceptions, these explained 22% of the variation in competence satisfaction and 28% of the variation in autonomy satisfaction. Direct relationships combined with meta-perceptions of emotional intelligence explained 45% of the variation in perceptions of relatedness. There were significant correlations ($p<0.05$) between all three basic needs ($r_{autonomy - competence} = .57$; $r_{autonomy - relatedness} = .26$; $r_{competence - relatedness} = .37$). Finally, clients' meta-perceptions of their trainer's EI accounted for 50% of the variation in direct perceptions of relationship quality.

In the meta-perceptions model, relationship quality accounted for 19% of the variation in competence satisfaction and 23% of the variation in autonomy satisfaction. Relationship meta-perceptions combined with meta-perceptions of EI explained 47% of the variation in perceptions of relatedness. There were significant correlations ($p<0.05$) between all three basic needs ($r_{autonomy - competence} = .59$; $r_{autonomy - relatedness} = .28$; $r_{competence - relatedness} = .39$) and meta-perceptions of emotional intelligence accounted for 58% of the variation in relationship meta-perceptions.

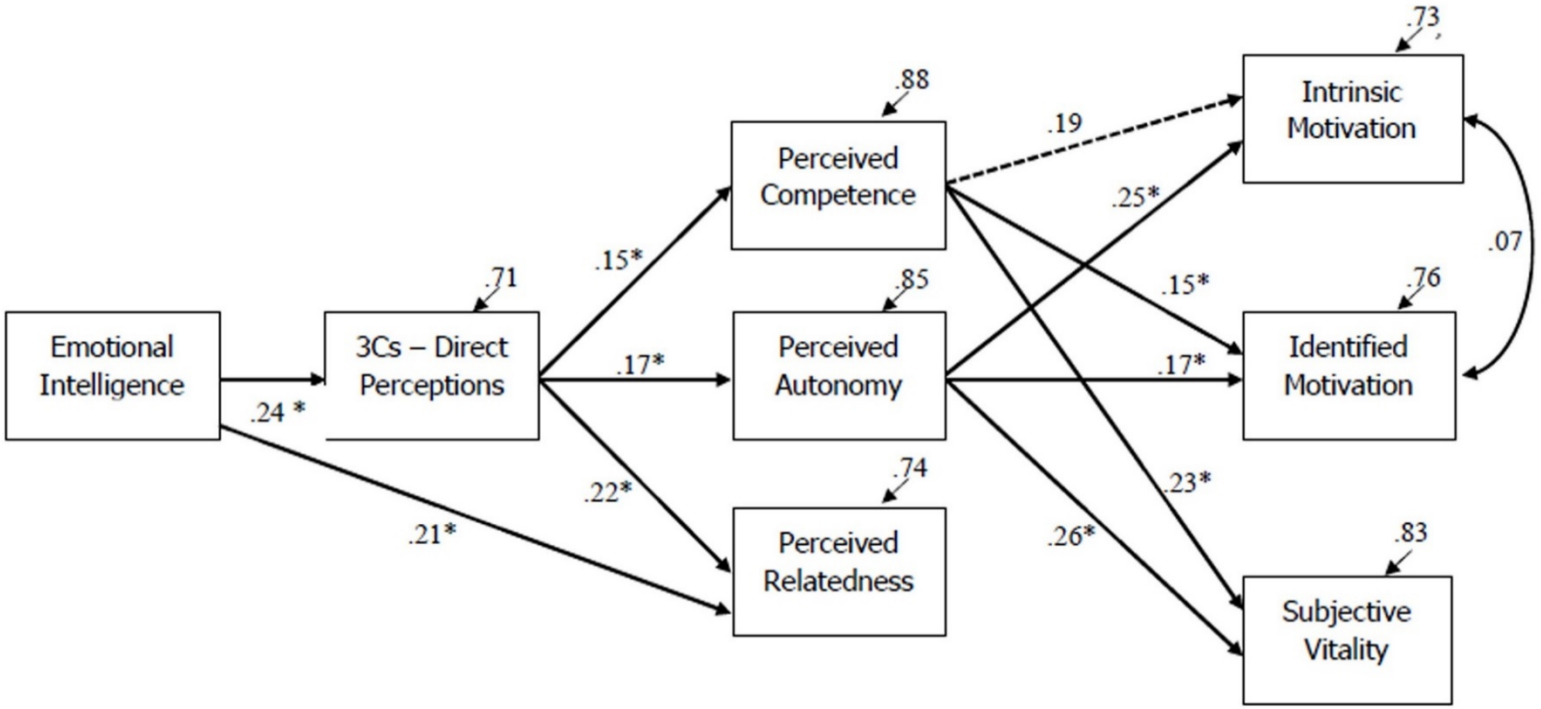

Figure 4.2. Final path model for direct relationship perceptions showing standardised path coefficients. Non-significant paths have dashed lines. (* = $p < 0.05$). For clarity error covariances among perceived competence, autonomy and relatedness have been omitted. Covariances are $r_{\text{competence-autonomy}} = .14$, $r_{\text{competence relatedness}} = .08$, $r_{\text{autonomy – relatedness}} = .06$

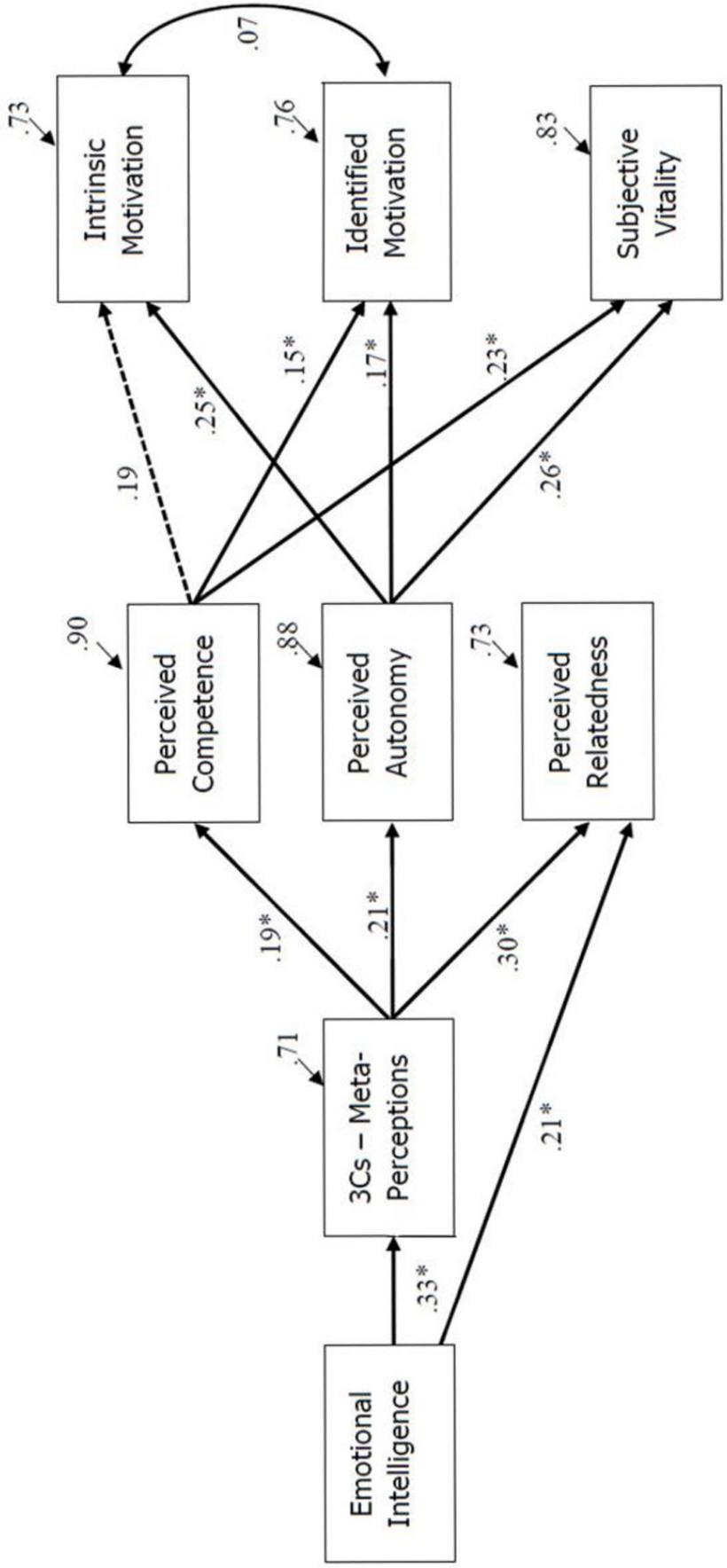

Figure 4.3. Final path model for relationship meta-perceptions showing standardised path coefficients. Non-significant paths have dashed lines. (* = $p < 0.05$) For clarity error covariances among perceived competence, autonomy and relatedness have been omitted. Covariances are r competence-autonomy = .15, r competence relatedness =.09, r autonomy – relatedness = .06.

Both autonomy satisfaction (β = .26; t = 2.57; p <0.05) and competence satisfaction (β = .23; t =3.48 p <0.05) gave rise to feelings of subjective vitality. Increased perceptions of autonomy and competence also resulted in higher levels of identified regulation (β = .17; t = 2.76; p <0.05 and β = .15; t = 6.31; p <0.05) respectively. Only autonomy satisfaction however was a significant predictor of intrinsic motivation (β = .25; p<0.05).

More favourable direct perceptions of relationship quality were associated with higher perceptions of relatedness (β = .22; t = 6.29; p < .05), perceptions of autonomy (β = .17; t = 7.73; p <. 05) and perceptions of competency (β = .15; t = 7.36; p < .05). There was also a direct path from perceptions of EI to relatedness satisfaction (β = .24; t = 3.82; p < .05) showing that the effect of this variable on relatedness may be partially mediated through relationship perceptions.

The path coefficients between meta-perceptions and need satisfaction were stronger for those shown for direct perceptions, particularly for relatedness. Clients perceiving their trainer had a more favourable view of their relationship were more likely to have higher perceptions of relatedness (β = .30; t = .6.48; p< .05), perceptions of autonomy (β = .21; t = 5.36; p< .05) and perceptions of competency (β =. 19; t = 5.28; p< .05). The direct path from EI meta-perceptions to relatedness satisfaction was equivalent to that for direct perceptions (β = .21; t = 2.32; p< .05) and the path to relationship meta-perceptions was stronger than that shown for direct perceptions (β = .33; t = 11.90; p<0.05).

4.5. Discussion.

This study aimed to investigate the association between clients' perceptions of their trainer's trait EI and its effect on their evaluations of relationship quality. Additionally it sought to explore the effect of relationship quality on psychological need satisfaction and psychological outcomes associated with exercise (namely autonomous behavioural regulations and psychological well-being). The effect of relationship perceptions on psychological outcomes was proposed to be fully mediated by need satisfaction. To test this proposition this model was compared to a partially mediated model.

Trait EI meta-perceptions made a substantial contribution to the variation in relationship quality indicating a very strong association between these two variables. It could therefore be hypothesised that an exercise professional's trait EI may be an important antecedent of relationship quality for their clients although it must be cautioned that this is based on the assumption that EI meta-perceptions are an accurate reflection of the trainer's

self-rated emotional intelligence. Support for this suggestion comes from studies using measures of self-rated EI in both romantic and professional relationships (Clark and Mahadi, 2017; Malouff et al., 2014; Weng et al., 2011). However, they also contradict a number of studies using dyadic analysis which have shown that an individual's EI has no effect on a partner's relationship satisfaction (Reick, Hausblas & Callahan, 2015; Zeidner et al., 2004), or perceptions of relationship quality (Reick, Callahan & Watkins, 2015). These differences can be explained by the way in which EI was operationally defined in the latter studies. An ability definition and measure of EI (Mayer, Salovey and Caruso, 2002) was used which is conceptually different from trait EI and is not as strongly related to job performance (O'Boyle et al., 2011).

Trait EI is known to overlap conceptually with aspects of the Big Five personality traits, particularly extroversion, neuroticism and conscientiousness (Andrei et al., 2015). Yang et al. (2015) found that Chinese athletes' scores on these three traits were significantly related to their coach's direct and meta-perceptions of their relationship although coach personality did not affect athletes' relationship quality in their context. In addition, conscientiousness has been shown to affect a partner's commitment and relationship perceptions in coach-athlete dyads (Jackson et al., 2011). Further research is required therefore to establish the additional contribution made by trait EI to relationship quality over other related measures.

The discovery of stronger and more plentiful actor compared to partner effects in the extant literature (Rieck, Hausdorf & Callahan, 2015; Smith et al., 2008; Yang, Jowett & Chan, 2015) implies that a client's perceptions of the quality of the relationship with their trainer may be more strongly influenced by their own personal characteristics than those of the trainer. It is possible therefore that a client's own trait EI could have biased their meta-perceptions of their trainer's emotional intelligence in the present study. There is a need therefore for future research to use self-report measures of trait EI and to include measures from both clients and trainers to discover the relative contribution of each on perceptions of relationship quality.

The SEM model also revealed that EI meta-perceptions made a significant direct contribution to clients' need for relatedness with the client-trainer relationship acting as a partial mediator. This finding suggests that trait EI could influence the need for relatedness through a number of other social constructs associated with the group exercise environment

and offers indirect support for the existence of a higher level therapeutic climate (Johnson et al., 2005). Thus trainers that are perceived as emotionally intelligent can increase feelings of affiliation and peer acceptance in their clients both through, and independently from, their interpersonal relationship. The examination of the effect of trait EI on the group psychological climate and the various interpersonal relationships within it is therefore a fruitful area for future research.

Both direct and meta-perceptions of relationship quality made significant contributions to the satisfaction of all three basic needs. Trainers who are able to facilitate good working relationships can therefore satisfy their clients' needs for competence, autonomy and relatedness. In common with Felton and Jowett (2013), relationship perceptions contributed most strongly to need satisfaction for relatedness. Conversely, the previous study found that relationship quality was unrelated to perceptions of autonomy. However, the authors noted a considerable overlap between relationship perceptions and another measure of autonomy-supportive coach behaviour that was used as a concurrent predictor which could have accounted for the variance otherwise provided by the relationship.

Needs satisfaction was found to fully mediate the associations between the client-trainer relationship and psychological outcomes which is congruent with the theoretical propositions of self-determination theory. This shows that the interpersonal relationship can benefit autonomous motivational regulations and subjective well-being through its effect on need satisfaction. This adds to the evidence obtained from studies in competitive sport that professional interpersonal relationships can affect psychological outcomes (Felton & Jowett, 2013; Riley & Smith, 2011). Therefore, the trainer-client relationship is a significant aspect of the social environment which should be considered in future research into health-related physical activity motivations.

The SEM results showed that only perceptions of competence and autonomy mediated the effect of the client-trainer relationship on psychological outcomes. Autonomy need satisfaction was the only mediator for all three outcomes of intrinsic and identified motivation and subjective vitality. Congruent with the tenets of BNT (Deci & Ryan, 2000), clients who had their need for autonomy met experienced better eudemonic well-being expressed through their reported vitality. Autonomy was the only basic need found to mediate the association between exercise instructor autonomy supportive behaviour and subjective

vitality by Kinnafick et al. (2014). The findings also concur with the extant research that has consistently shown perceptions of autonomy to relate to more autonomous behavioural regulation in exercise settings regardless of research design or sample used (Gourlan et al., 2013; Rahman et al., 2015; Schneider & Kwan, 2013).

Competence need satisfaction was found to be a mediator for identified motivation and subjective vitality. Contrary to expectation it did not contribute significant additional variation to intrinsic motivation over and above autonomy satisfaction. Other studies have found competence to be instrumental in forming intrinsic motivation (Rahman et al., 2015; Wilson & Rogers, 2008) and to mediate between autonomy supportive instructor behaviour and intrinsic motivation (Edmunds et al., 2008) and between the coach-athlete relationship and well-being (Felton & Jowett, 2013). An exception was found in a cross-sectional study with obese adolescents (Gourlan et al., 2013) where perceived competence ceased to predict autonomous motivational regulations once the effects of the other two needs were controlled for. An explanation for the findings in the present study could be that the exercise motives adopted by the sample were unconcerned with the quality of exercise completion and intrinsic goals as the sample included a large number of clients who were on GP referral schemes and of an older age. These contradictions warrant further investigation using mediational analysis techniques (Silva et al., 2014).

Although relationship perceptions were most strongly associated with the need for relatedness, these effects were not carried over to motivational regulations or subjective vitality. These findings concur with previous studies which have found that relatedness does not predict actual exercise behaviour (Teixera et al., 2012) or intervene between coach or instructor behaviour (Edmonds et al., 2005; Kinnafick et al., 2014) and psychological outcomes. Felton and Jowett (2013) also found that the impact of the coach-athlete relationship on relatedness did not transfer to measures of well-being. In contrast Riley and Smith (2011) found modest evidence that relatedness mediated between relationship quality and autonomous motivation and Schneider and Kwan (2013) found relatedness to mediate between exercise affect and intrinsic motivation albeit less significantly than autonomy and competence. Others have found that relatedness plays an important role in the development of autonomous motivation, well-being and exercise behaviour in the early stages of exercise adoption or in self-directed physical activity (Gourlan et al., 2013; Springer et al., 2013; Sylvester et al., 2012; Wilson & Rogers, 2008). Most participants in our sample reported working with their trainer for 4 months or longer (70%) and so relatedness may have ceased

to become relevant. This highlights the need for studies which focus on the initial phases of exercise adoption.

A final explanation for these disparate results may have been that only a limited range of motivational regulations were measured. Some studies have shown that perceptions of relatedness have been positively associated with both autonomous *and* controlled motivational regulations (Wilson & Rogers, 2008; Gourlan et al., 2013). Exercisers were shown to view close personal relationships as a means of extracting meaning and personal enjoyment from activity but also as a way of forcing themselves to attend and cope with the 'misery of exercise' (Springer et al., 2013). Therefore, clients that have a close relationship with their trainer may feel more obligated to attend more often and work harder even though any relatedness needs conferred do not enhance autonomous motivational regulations. Future research should seek to explore the separate contributions of closeness, commitment and complementarity to need satisfaction and the full range of motivational regulations to better understand the function of the working relationship.

In conclusion, this is the first study in an exercise context to demonstrate that a client's perceptions of their relationship with their trainer exerts a positive effect on autonomous motivational regulations and subjective vitality by satisfying the clients' needs for autonomy and competence. In addition, a client's perception of their instructor's trait EI positively related to the quality of their working relationship and to their perceptions of relatedness.

A number of limitations were associated with this study. Both the original models specified for comparison (fully mediated vs partially mediated) did not exhibit a good fit and so modifications were made. Although the changes made were logical, theoretically justifiable and supported by previous research it should be cautioned that the final models are exploratory in nature and further research is required to cross-validate the results in different samples.

The cross-sectional nature of the study means that causal relationships have been specified theoretically and cannot be proved. Future studies which employ longitudinal designs are needed to confirm causal relationships. In addition, it is possible that participant characteristics such as their subjective vitality or perceptions of relationship quality made it more likely participants evaluated their perceptions of their trainer's emotional intelligence, and their relationship with them, more favourably although no paths were modelled as

reciprocal. It is therefore recommended that future studies should use trainers' self-assessed EI or include clients self-assessed EI as a co-variate. This study also included a high proportion of older participants who were referred to exercise on clinical grounds but no exclusion criteria based on mental health were set.

Finally, the heterogeneity of the sample in terms of age, gender, exercise experience and motives, client-trainer relationship lengths and group vs individual exercise could obscure context-specific effects. These factors could alter the structure of the model and the relative contribution of each basic psychological need to the outcomes measured in this study. The lack of significant difference in study variables between PARS and self-referred clients and between males and females offers support for the stability of the findings across these groups. However, previous studies have found that self-reported EI can be influenced by age and gender and so attempts should be made to replicate these findings in different age groups and by gender

Chapter Five. General Discussion.

This chapter acts as a general discussion and conclusion for the thesis. The findings from the three studies will be integrated to highlight the theoretical and empirical contributions made by the present research and directions for future research will be suggested. It will also provide a comment on the practical implications of the findings and finally, the limitations of the thesis will be discussed.

5.0. Thesis Aims.

The broad aims of this thesis were to investigate the significance and function of the interpersonal relationship between trainers and their clients in trainer-led exercise settings. Previous research addressing the psychological determinants of exercise behaviour has failed to examine the effect of this important relational variable despite its potential to directly influence client satisfaction, motivation and behaviour, including adherence to exercise. The thesis adopted the 3 + 1Cs representation of coach-athlete relationships (Jowett, 2007) in the absence of any pre-existing conceptual frameworks developed specifically for this context. The first study adopted a qualitative approach to explore how personal trainers and clients describe their relationship with each other and to analyse how the central constructs of the 3 + 1Cs model are expressed by both dyad members through their interactions. In the second study the findings were used to develop and validate a questionnaire to measure relationship quality. The third study employed this operational definition to test some hypothesised antecedents and consequences of the trainer-client interpersonal relationship. The trainer's perceived trait EI was proposed to be a significant personal characteristic which might affect relationship quality as perceived by the client whilst the autonomous motivational regulations of identified and intrinsic motivation and subjective vitality were proposed to be significant cognitive-affective outcomes because of their proven association with continued participation in exercise and self-directed physical activity.

The first study provides evidence that the 3 + 1Cs model offers a good explanation for the working relationship experienced by trainers and their clients in structured exercise contexts. The four central constructs of the model, closeness, commitment, complementarity and co-orientation, all emerged from dyad members' descriptions of their working relationship. Interdependence was evidenced through the examples of associations between

closeness, commitment and complementarity. High quality relationships were characterised by dyad members as having a relaxed and supportive co-operation on exercise activities, mutual dedication, genuine respect, trust and liking. Further support for the validity of the model in this setting was offered by the results of the second quantitative study, which confirmed the three factor structure for both trainers and clients. Together they make a significant contribution to the study of the relational aspects of exercise participation by confirming that the 3 + 1Cs is a valid conceptual model which can be operationally defined through the Client-Trainer Relationship Questionnaire in future research.

The final study showed that clients who perceive their trainers as more emotionally intelligent experience better quality working relationships and that this in turn will positively influence their autonomous motivation and perceptions of psychological well-being. This is the first study in a health-related fitness setting to provide explicit evidence that the quality of the trainer-client relationship is an influential social variable with the capacity to affect clients' psychological outcomes, and as such, is deserving of further study. The findings support previous research in other professional contexts like psychotherapy, and suggest that relational qualities have the capacity to influence client outcomes in addition to the specific tools or techniques used by the practitioner (in this case the style or form of exercises used).

5.1. Outcomes of Study One.

The qualitative approach taken in study one was able to give some insight into this process via the narratives offered by clients and trainers. Trainers were very aware of their responsibility to take the lead in developing interdependence in the relationship. The importance of shared openness and understanding was highlighted by both dyad members, and clients judged the trainer's expertise on the basis of their ability to provide personally meaningful and flexible support. Female clients were more likely than males to express a need for the working relationship to develop their confidence and to value their trainer's attempts at encouragement. The selective coding showed that, in relation to the separate constructs within the relationship, it was affective closeness (e.g. genuine care, respect and liking) which acted as an essential precursor for trust and commitment. This supports findings from research in other workplace settings which has investigated antecedents of trust (Gillespie, 2003). Affective interpersonal perceptions have been shown in dyadic studies to be more important than other antecedents of trust because they promote risk taking and self-disclosure when individuals feel vulnerable (Heyns & Rothman, 2015; Walsh, Gillespie,

Greer, & Eanes, 2002). Clients that made up the sample in study one employed their trainer to address chronic health problems linked to lifestyle, recover from a disabling injury or illness or to lose weight because of dissatisfaction with body image. This would render them vulnerable due to fear of exercise and sensitivity to negative evaluation. The findings of study one therefore illustrate that, even in professional working relationships, affective closeness is the key to unlocking interdependence during the early stage of relationship formation. The variables involved in this dynamic process and the causal mechanisms require further research.

A novel finding from the study was the identification of important relationship antecedents, some of which appear to be important in developing interpersonal closeness. The perception of progress (getting results), relationship length, finding things in common and liking the other dyad member's personality or interaction style were consistently identified by trainers and clients. These variables should be the focus of further investigation because they offer a means through which exercise professionals, and the organisations for which they work, could enhance relationship quality during (or even before) the initial consultation. Some of these have already been posited as relationship antecedents by Jowett and Poczwardowski (2007) and some evidence already exists that the duration of the relationship affects the association between dyadic interdependence and relationship satisfaction for coach-athlete dyads (Jowett & Nezlek, 2011). Some empirical work has also been conducted in the context of romantic and peer friendships to examine the effect of dyad members' similarity in personal characteristics and attitudes on relationship quality. Despite the frequent claim by participants in study one that 'having things in common' or similar personalities led to the development of a good relationship, this assertion has proposed to be an illusion produced by individuals' desire for cooperation (Cho & Knowles, 2013). Dyad members project their own personal characteristics onto their partner leading them to assume they are similar. Extensive evidence for this social projection (or assumed similarity) has been provided in the literature and been shown to predominate in close relationships or relationships where dyad members like each other (Good & Good, 1973; Leikas, Lönnqvist, Verkasalo, & Nissinenet, 2013).

As a higher order personality factor which relates to social functioning, trait EI is a logical antecedent of high quality relationships. Therefore, study three determined the effect of this variable on clients' direct and meta-perceptions of relationship quality. The findings supported this proposition with client's perceptions of their trainer's trait EI exhibiting a

strong association with both direct and meta-perceptions of relationship quality. This is the first study to examine the effect of the exercise trainer's emotional intelligence on client perceptions in health-related fitness and it indicates that trait EI is an important individual characteristic that may affect the working relationship. Relationship quality was found to be associated with client well-being and motivation and so the findings provide indirect evidence that trait EI can affect job efficacy in line with a multitude of studies from other occupations (O'Boyle et al., 2011).

5.2. Outcomes of Study Two.

The second study provided preliminary evidence for the validity of both a direct and meta-perspective version of a 12-item Client-Trainer Relationship Questionnaire (CTR-Q) in separate samples of clients and trainers. Relationship quality was found to be positively and significantly associated with each dyad member's satisfaction with their relationship. Further studies are encouraged to cross-validate the findings and refine the questions in samples of different gender and cultures. The convergent validity of some questionnaire items and scale reliabilities were less satisfactory for the direct version of the trainer's CTR-Q in comparison to the client's version. Yang and Jowett (2013) noted similar findings for the direct version of the coaches CART-Q compared to athletes. This could indicate that trainers' relationship perceptions in health-related fitness are more reciprocal than corresponding due to their dominant role in the partnership. Further validation of the CTRQ is required to establish acceptable structural validity and reliability for the trainer's direct version.

Relationship meta-perceptions were found to be more strongly associated with relationship satisfaction than direct perceptions for both trainers and clients in common with coach-athlete relationships (Jowett, 2009, Rhind & Jowett, 2010). The strength of the working relationship and the association with relationship satisfaction reported in this study were larger than those found between coaches and athletes (Balduck & Jowett, 2010; Jowett & Ntoumanis, 2003; Rhind & Jowett, 2010). This might indicate that personal training relationships are more highly developed than those in sport contexts due to the one to one nature of the work. However, half the clients in the third study were drawn from group based exercise and the mean values for direct and meta-perceptions of relationship quality were equally as high. It was not possible to explore the separate contributions of closeness, commitment and complementarity as predictors of relationship satisfaction due to multicollinearity between the sub-scales. Future research is required which uses a broader

range of relationship qualities and other relationship outcomes to establish the predictive validity of the CTR-Q and to evaluate the effect of the separate sub-scales on these outcomes.

5.3. Outcomes of Study Three.

The final study employed self-determination theory (Deci & Ryan, 2000) to observe the effect of client-trainer relationships on clients' perceptions of basic need satisfaction, autonomous motivational regulation and psychological well-being. A secondary aim of the study was to examine whether needs satisfaction fully or partially mediated the effect of relationship quality on motivation and well-being. The fully mediated model provided a better fit to the data in support of the postulates of self-determination theory and supports previous research which has shown that perceived need satisfaction is a powerful predictor of adaptive psychological outcomes in health related physical activity (Klain, Matos, Leitão, Cid, & Moutã, 2015; Milyavskaya & Koestner, 2010; Vansteenkiste & Ryan, 2010). Consequently, for this group of clients, relationship quality was a significant social variable that positively related to client's needs satisfaction and in turn this was positively associated with self-determined motivation and eudemonic well-being. This is the first study in trainer-led exercise to show that the trainer-client relationship can positively affect motivational outcomes. It contributes to the growing evidence from studies with athletes that professional working relationships enable personal development through the fulfilment of basic psychological needs (Felton & Jowett, 2013; Riley & Smith, 2011).

The third study also highlighted that perceptions of autonomy and competence, but not relatedness, mediated the effect of relationship quality on clients' subjective vitality and autonomous motivation. These outcomes are consistent with other studies in health-related physical activity which have also found that perceptions of autonomy and competence have a significant impact on autonomous motivation, exercise behaviour and psychological well-being (Edmunds et al., 2008; Gourlan et al., 2013; Kinnafick et al., 2014; Rahman et al., 2015; Schneider & Kwan, 2013; Wilson & Rogers, 2008). Therefore clients that enjoy good relationships with their trainers will develop more autonomous motivational regulations because their trainers help them to develop feelings of mastery, confidence and personal choice when they work together.

Although the discovery that perceptions of relatedness did not contribute to motivational outcomes and well-being may seem surprising, similar findings have been noted elsewhere. A high proportion of older clients on PARS were included in this study and these

were more likely to be experiencing poor physical and mental health. It is possible that the error introduced by these extraneous influences on vitality could have prevented the relatedness – vitality link from emerging. However, the findings concur with other studies which have found that, in comparison to autonomy and competence, relatedness has no effect on motivational regulation, well-being or exercise behaviour (Edmunds et al., 2008; Teixera et al., 2012, Wilson et al., 2006). Similar results have also been reported for psychological well-being in sport contexts (Amorose et al., 2009; Felton & Jowett, 2013; Reinboth et al., 2004). Others though have produced opposing results showing that relatedness does contribute to these outcomes in exercise (Gourlan et al., 2013; Springer et al., 2013; Sylvester et al., 2012; Wilson & Rogers, 2008). The discrepancies are difficult to resolve because of the diversity in methodological approaches, contexts and samples used. However, with the exception of Wilson and Rogers (2008), all the previous studies examined self-regulated physical activity rather than instructor-led exercise which could be more likely to take place in the context of family and friendship groups and be driven by motives of affiliation.

It has been suggested that relatedness plays a significant role at the start of exercise participation (Edmunds et al., 2008; Rahman et al., 2015) and so the more distal benefits of the trainer - client relationship may only be conferred through relatedness in new exercisers who have yet to internalise the value of physical activity. Subsequent research which measures a client's stage of change and initial exercise motives is needed to explore how these variables might moderate the contribution of relationship quality to need satisfaction and their associated psychological consequences.

Unlike competence and autonomy, relatedness has been found to contribute simultaneously to intrinsic and extrinsic motivational regulations (Gourlan, et al., 2013; Springer et al., 2013; Wilson & Rogers, 2008). This could suggest that clients in well-established and close relationships might at times feel obligated to exercise to avoid letting down their trainer. Therefore relatedness might not transfer to autonomous regulation of exercise and more sustainable physical activity. Support for this argument comes from the finding that exercise participants that depend on proxy-led exercise (i.e. by an instructor) engage in less self-managed exercise and have lower perceived self-regulatory skills than those that claim to be less dependent (Shields & Brawley, 2007).

In conclusion, in common with previous research, study three has shown that relationship quality has a strong impact on clients' need for relatedness yet the function of

relatedness need satisfaction in governing outcomes in exercise and physical activity remains a conundrum. Longitudinal studies are required which examine the function of relational variables in new exercisers during the initial period of exercise adoption. In addition, studies are required which address how initial exercise motivations moderate the effect of the interpersonal relationship. Finally, studies are required which examine the effect of the trainer-client relationship on the full range of motivational regulations to resolve the disparate findings in the literature.

There is very limited research which considers the impact of emotional intelligence on interdependent relationship quality, and the third study demonstrated that clients' meta-perceptions of their trainer's trait EI were significantly related to their perceptions of relationship quality and to their perceived satisfaction of need for relatedness. Notwithstanding the debate surrounding the correspondence of indirect measures with trainer's actual trait EI, the findings do agree with previous studies. For example, Clark and Mahadi (2017) found that both managers and subordinates' self-assessed trait EI independently predicted job satisfaction and commitment through the mediator of the relational property of mutual respect recognition. In contrast, other dyadic studies conducted in personal or occupational settings have found that a dyad member's EI has no effect on their partner's evaluation of their relationship (Reick, Callahan, & Watkins, 2015; Reick, Hausblas, & Callahan, 2015; Zeidner et al., 2004). However, these latter studies defined and operationalised EI as an ability rather than a trait and previous research has found lower effect sizes for the impact of ability EI on job performance variables in comparison to trait EI (O'Boyle et al., 2011).

This observation has important practical significance because trait EI has the potential to be trained. Nelis et al. (2013) demonstrated through a series of well-designed studies that an 18 hour intervention targeting all aspects of trait EI led to significant and sustained improvements in participants' trait EI scores, agreeableness, extraversion, and neuroticism compared to a control group. Long term, those undergoing training, experienced better mental and physical health, global social functioning and were more successful at work as indicated by objective measures of employability. The authors concluded that the resultant changes in personality allowed participants to develop interpersonal styles that created more positive relationships with others. Another intervention by Zijlmans, Embregts, Gerits, Bosman and Derkson (2105) produced increased emotional intelligence and better coping in support staff working in residential care compared to a control group. Since neither study

included a measure of relationship quality, further evidence is required to confirm the effect of global trait EI and its sub-components on clients' perceptions of relationship quality as a potential mediator of job performance.

An interesting finding from the third study was that trait EI meta-perception influences the need for relatedness both directly and indirectly via the improvement of the trainer-client relationship. Therefore, it is possible that the trainer's trait EI forms a separate and unique contribution to a client's relatedness need satisfaction, or that this influence operates through an intervening variable. It was suggested that emotionally intelligent trainers could engender more cohesion and peer friendships in group or create a more positive motivational climate. This could emanate from the ability of the trainer to create strong interpersonal relationships with other group members or through their ability to provide clear communication and effective decision making in their leadership role thus enabling every group member to achieve their goals (Jadhav & Mulla, 2010). The majority of the participants in study three exercised as part of a group and so these alternative mechanisms would have been viable. Both coach-athlete and peer relationships were found to have separate effects on self-determined motivation (Riley & Smith, 2011) and the coach-athlete relationship has been found to affect group level variables such as cohesion and collective self-efficacy (Hampson & Jowett, 2014; Jowett & Chaundy, 2004; Jowett et al., 2012). Future studies are therefore advised to consider studying one-to-one personal training and group based exercise separately or to measure the separate contributions of interpersonal relationships and group climate variables.

5.4. Thesis strengths.

Collectively, the studies in this thesis have provided evidence which confirms that the quality of professional interpersonal relationships are important in structured exercise environments and can influence the psychological outcomes of motivational regulation and wellbeing. It has demonstrated that the 3 + 1Cs model, originally developed for coach-athlete relationships, can be applied more broadly to trainer-client relationships in health-related fitness and is relevant to working relationships in private personal training and physical activity on referral. It has taken a conceptually driven approach to develop and validate a tool to measure both direct and meta-perceptions of relationship quality for both trainers and clients (the CTR-Q). An exacting validation process was used in the second study by cross-validating the 3 + 1Cs structure for both trainers and clients separately and by applying

rigorous cut-off criteria for fit indices. Consequently very clear support was found for the direct and meta-perception versions of the CTR-Q for clients. Support for the trainer versions was found albeit less emphatic. The thesis also addresses a singular lack of empirical research in health-related fitness which has investigated the relationship of trait emotional intelligence to client experiences in health-related fitness. Clients' perceptions of their instructor's trait emotional intelligence were found to be related to the satisfaction of their relatedness needs both directly and indirectly through the quality of the interpersonal relationship. A direct measure of the trainers' emotional intelligence was not used in this thesis but, despite this limitation, the results suggest that an instructor's trait EI may have some influence on relationship outcomes for individual participants. The results from study three gave rise to a number of potential hypotheses through which this variable can impact on client motivation and these mechanisms can be explored in future research. The novel contribution of this thesis has therefore been to establish the 3 + 1Cs model as a viable theoretical framework for the study of the trainer-client working relationship, to validate an operational definition for both trainer and client meta-perceptions and to establish that relationship quality is a social variable which can influence client's self-regulated motivation. Further, it provides preliminary evidence that the trainer's trait emotional intelligence is deserving of future study due to potential effects on clients' perceptions of relationship quality and their satisfaction of relatedness needs.

5.5. Practical implications.

The first, and most important, practical implication emerging from this thesis is that anyone who engages in structured health-related exercise should be supported by a well-trained exercise professional. The trainer-client relationship acts as a vehicle for behaviour change through the satisfaction of basic psychological needs and the promotion of self-determined motivation for exercise. This can help individuals to successfully maintain exercise, health and well-being. Fitness centres, gyms and PARS should provide all clients with on-going and accessible instructor support at both group and individual levels. The importance of the trainer-client relationship identified in this thesis suggests that interpersonal relationships are an important aspect of the exercise experience. Programmes that prioritise good interpersonal relationships and social support amongst staff and participants are likely to be more beneficial in promoting regular physical activity and deriving its associated benefits compared to those which do not. In direct support for this claim, McMahon et al. (2017) demonstrated the superiority of a physical activity intervention

based on interpersonal interaction compared to one which focused on developing intrapersonal behaviour change strategies in older adults.

Study one revealed that a clients' prior expectations, fear of evaluation and early impressions of the trainer influence the development of the relationship in the very early stages. Some of these factors can be manipulated to encourage clients to initiate an exercise relationship in the first place. For example, older clients referred to PARS are more likely to be reluctant to attend and be fearful about exercise or the prospect of negative evaluation. These clients need clear and accessible education at the point of referral which begins the process of building a positive relationship with instructors on the scheme, even before they meet them for the first time. This should provide personal introductions to staff on the scheme alongside information about their level of qualifications, experience and skills. It should also tell clients what to expect on their first visit and include testimonials from past attendees attesting to the trustworthiness, commitment, friendliness of the staff and their ability to get results.

Other antecedents were found which strengthened the relationship as it developed. Firstly, clients expect their trainers to model behaviours and project an appearance congruent with a healthy and active lifestyle. Trainers should avoid behaviours that are seen as antithetical to good health (e.g. binge drinking, smoking or eating unhealthy food) and should maintain a healthy weight and good levels of fitness. Secondly, sufficient time must be allocated to the first few appointments for trainers and clients to share personal information and get to know each other. Since research suggests that the perception of similarity (more than actual similarity) is likely to promote interdependence, trainers are recommended to familiarise themselves with the life-worlds of their clients and establish areas of common interest outside of the working environment that can be used to generate conversation. Finally, as soon as the working relationship starts, the trainer must find ways to constantly reinforce to their clients that progress is being made because the perception of progress strengthens the client's commitment to the relationship.

This thesis started with the observation that training courses for exercise professionals include little substantive content which focuses on the client-trainer relationship in comparison to that devoted to exercise physiology and exercise techniques. This thesis argues that the client-trainer relationship should be at the forefront of course content for entry level training courses. Instructors should be introduced to the basic concepts of the 3 + 1Cs

relationship model and taught some practical ways to apply it in their training. Due to the importance of closeness and the expression of genuine care and concern identified in the first study, courses should also include basic communication skills and principles from counselling including genuine positive regard and empathic responding. Finally, trainers with higher levels of trait EI may be more successful in their role and create better interpersonal relationships because they are better able to understand and manage their own emotions and those of their clients. Professional development courses which enable trainers to reflect on their personal trait emotional intelligence and develop it further in their work should be designed. These recommendations should produce exercise professionals who are more confident in creating the long-term and satisfying interpersonal relationships that are needed to recruit and retain clients and this has benefits for both trainer and client.

5.6. Limitations.

This thesis has taken a conceptually driven approach to investigating the nature of the trainer-client interpersonal relationship in structured exercise and its role in promoting autonomous motivation and eudemonic well-being in clients. Although the studies in this thesis have established the validity of the 3 + 1Cs relationship model for the study of working relationships in exercise, it should be noted that the first study did not compare alternative approaches developed in other professions. This choice was justified for several reasons. Firstly, the model has a rigorous theoretical grounding in interdependence theory in comparison to working alliance (Horvath & Greenberg, 1989). Secondly it has a well-established research basis compared to other interdependent models like the interpersonal circumplex (Kiesler & Auerbach, 2003). Thirdly, the nature of the work undertaken in structured exercise leadership has a high degree of similarity with coaching. The findings of the present work however does not invalidate the use of other approaches.

A limitation affecting all three studies was that relationships were generally rated very highly by both clients and trainers. This could have led to an incomplete examination of the domain of relationship experiences in study one by omitting those that might have involved conflict. In the quantitative studies this led to a ceiling effect and low standard deviations in relationship quality. Sufficient variation between variables is needed to obtain accurate correlations and path coefficients (Schumaker & Lomax, 2010). Although no special problems were encountered in the structural equation models, increased variability would have yielded more reliable results. This is a difficult problem to avoid in this field of research

since ineffective relationships usually terminate quickly. Future studies should endeavour to produce a wider variation in relationship perceptions by including less well-developed relationships and preventing trainers from choosing to evaluate relationships with clients they prefer the most.

Good structural validity was shown for direct and meta-perceptions of relationship quality for the client versions of the CTR-Q but the fit statistics and reliability of the sub-scales for closeness, commitment and complementarity were not as high for the trainer versions. This could be attributed to the more restricted range of scores which was more pronounced in the trainers' data as mentioned previously. Alternatively, this could have been caused by other differences between the client and trainer sample demographics (e.g. gender or relationship length) and the effect of these variables on the construct validity the CTR-Q needs explicating in future work. In addition, further support for the discriminant validity of the three subscales is required. The CTR-Q therefore requires further cross-validation in other samples to establish its validity.

A further limitation relates to the reliance on self-report questionnaires in studies two and three. Since the perceptions of relationship quality, relationship satisfaction and meta-perceptions of the trainer's emotional intelligence were concerned with assessing someone else, it was deemed unlikely that these would be affected by socially desirable responding. It was stressed to respondents that their responses would be anonymous and not able to be shared with their client / trainer. However, it is still possible that respondents may have given 'looked-for' ratings, particularly where paper copies of questionnaires were used. The self-rated measures of need satisfaction, intrinsic and identified motivation and subjective vitality in the third study may have been affected by participants trying to present more acceptable answers. Future studies should employ a social desirability scale to eliminate this possibility.

The factor structure for the BREQ and BPNES were not confirmed in study three. Both scales were developed for use in health-related physical activity and have been used extensively in past research where the factor structure has been reproduced and shown to be consistent for different cultures (Liu, Chung, Zhang, & Si, 2015; Moreno-Murcia, Martínez-Galindo, Moreno-Pérez, Marcos, & Borges, 2012; Mullan, Markland, & Ingledew, 1997; Vlachopoulous, Ntoumanis, & Smith, 2010). This fact, in conjunction with the good scale reliabilities shown in study three, suggests that the measures provided were valid. In contrast, the TEIQUE-SF is a self-report measure which was specially adapted to a meta-perspective

version for study three, which might have affected its properties. Since the global EI scores were used rather than individual sub-scales, a demonstration of the factorial validity was not considered to be of concern. Nonetheless, it was assumed that clients' meta-perceptions would correspond with their trainers' self-reported EI based the previous research that has shown convergence between self and other evaluations of trait EI (Petrides, 2009; Smith et al., 2008). However, it should be noted that the two measures do not perfectly correspond and the degree of agreement has been shown to be affected by context and relationship length (Petrides, 2009). It is recommended that future studies should explore the association of trainer's self-assessed trait EI with their clients' relationship perceptions to confirm the results of the third study.

Due to the absence of significant differences in the model variables based on gender and context (PARS vs self-referred clients) the data was analysed as one sample. It cannot be assumed however that contextual variables would not exhibit different relationships if analysed separately. Limited attention has been given to the moderating effect of gender on the relationship between trait EI and relationship variables even though gender differences in trait EI are evidence (Zeidner, 2004). Brackett, Rivers, Shiffman, Lerner and Salovey (2006) noted that males and females have different definitions of socially effective behaviour which raises the possibility that gender differences in the relationships between meta-perception of trait EI and relationship quality might have been masked in the third study.

The cross-sectional research design used in the third study also limits the extent to which causal relationships between the variables can be proved. The assumptions for these are derived from self-determination theory (Deci & Ryan, 2000) and good evidence for cause-effect relationships between social variables, needs satisfaction and motivational and well-being outcomes has been provided in previous research using longitudinal and experimental designs (Hsu et al. 2013; Kinnafick et al, 2014; Teixera et al., 2012; Rahman et al. 2015; Vansteenkiste & Ryan, 2013). However, it is recommended that future studies adopt research designs which can evaluate cause-effect. The use of dyadic research designs in particular is required to examine the reciprocal effects of both clients' and trainers' trait EI on relational variables. Previous evidence from dyadic studies investigating the effect of dyad member's personal characteristics, such as ability EI and personality traits has indicated that partner effects have a more significant impact on relationship perceptions in comparison to actor effects. This makes it possible that in this study, the causal direction assumed in the model was incorrect with clients' relationship perceptions influencing their perceptions of

their trainer's EI. This study did not measure clients' trait EI or test alternative causal directions and so it cannot be assumed that the significant relationships found between meta-perceptions of the trainer's trait EI, relationship quality and need for relatedness were not produced as an artefact of the client's trait EI.

5.7. Conclusion.

This thesis has offered both qualitative and quantitative evidence that the 3 + 1Cs model of coach-athlete relationships (Jowett, 2007) provides a good conceptual description for the nature of the interpersonal relationship between exercise professionals and their clients in both personal training and group based exercise. Based on this model, a Client-Trainer Relationship Questionnaire (CTR-Q) was validated to assess relationship quality in both trainers and clients from a direct and meta-perspectives. The validation of this scale showed support for the 3 factor structure of closeness, commitment and complementarity. The final study found that exercisers who report a strong working relationship with their trainer are more likely to be autonomously motivated and experience greater psychological well-being. In addition, a client's perception of their trainer's trait emotional intelligence was strongly related to relationship quality indicating that this personal characteristic may be a significant determinant of interpersonal relationship quality in this context.

References.

Ackley, D. (2016). Emotional intelligence: A practical review of models, measures, and applications. *Consulting Psychology Journal: Practice and Research, 68 (4)* 269 – 286 doi: 10.1037/cpb0000070

Adie, J. W., & Jowett, S. (2010). Meta-perceptions of the coach-athlete relationship, achievement goals, and intrinsic motivation among sport participants. *Journal of Applied Social Psychology, 40*(11), 2750-2773. doi:10.1111/j.1559-1816.2010.00679.x

Ajzen, I. (1988). *Attitudes, personality and behaviour*. Milton Keynes: Open University Press.

Amorose, A. J., Anderson-Butcher, D., & Cooper, J. (2009). Predicting changes in athletes' well-being from changes in need satisfaction over the course of a competitive season. *Research Quarterly for Exercise and Sport, 80*(2), 386-392. doi: 10.3766/jaaa.15.10.6

Andrei, F., Siegling, A. B., Aloe, A. M., Baldaro, B., & Petrides, K. V. (2015). The incremental validity of the trait emotional intelligence questionnaire (TEIQue): A systematic review and meta-analysis. *Journal of Personality Assessment, 98(3)*, 261-276. doi: 10.1080/00223891.2015.1084630

Antonini. R. and Seiler, R. (2006). Closeness, co-orientation and complementarity in coach-athlete relationships: What male swimmers say about their male coaches. *Psychology of Sport and Exercise, 7*, 159-171. doi: 10.1016/j.psychsport.2005.08.004

Ashkanasy, N. M., & Daus, C. S. (2005). Rumors of the death of emotional intelligence in organizational behavior are vastly exaggerated. *Journal of Organizational Behavior, 26*(4), 441-452. doi: 10.1002/job.320

Atlas Ti (6.2 for windows). [Computer software] (2011). Scientific Software Development GmbH. Berlin: Scientific.

Balduck, A., & Jowett, S. (2010). Psychometric properties of the Belgian coach version of the coach–athlete relationship questionnaire (CART-Q. *Scandinavian Journal of Medicine & Science in Sports, 20*(5), 779-786. doi: 10.1111/j.1600-0838.2009.01020.x

Bandura, A. (1977). Self-efficacy: Towards a unifying theory of behavioural change. *Psychological Review, 84*, 191-215. doi: 10.1037/0033-295X.84.2.191

Bänziger, T. (2016). Accuracy of judging emotions. In J. A. Hall, M. Schmid Mast & T. West (Eds.), *The social psychology of perceiving others accurately*, 23-51. Cambridge: Cambridge University Press.

Bar On, R. (1997). The emotional intelligence inventory (EQ-i): Technical manual. Toronto, Canada: Multi-Health Systems.

Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., Bosch, J. A., & Thøgersen-Ntoumani, C. (2011). Self-determination theory and diminished functioning: The role of interpersonal control and psychological need thwarting. (Author abstract). *Personality & Social Psychology Bulletin, 37*(11), 1459. doi: 10.1177/0146167211413125

Benson, R., Fearon, C., Mclaughlin, H., & Garratt, S. (2014). Investigating trait emotional intelligence among school leaders: Demonstrating a useful self-assessment approach. *School Leadership & Management, 34*(2), 201-222. doi: 10.1080/13632434.2013.813450

Bentler, P. M., & Chou, C. (1987). Practical issues in structural modelling. *Sociological Methods and Research, 16*(1), 78-117. doi: 10.1177/0049124187016001004

Bentler, P. M., & Wu, E. J. C. (2006). EQS 6.3 for windows. Encino: CA: Multivariate Software.

Bertheussen, F., G., Romundstad, R., På, Landmark, L., T., Kaasa, L., S., Dale, L., O., & Helbostad, L., J. (2011). Associations between physical activity and physical and mental health- A HUNT 3 study. *Medicine & Science in Sports & Exercise, 43*(7), 1220-1228. doi: 10.1249/MSS.0b013e318206c66e

Biddle, S., Mutrie, N., & Gorely, T. (2015). *Psychology of physical activity: Determinants, well-being and interventions* (3rd ed.,) London: Routledge.

Birditt, K. S. & Fingerman, K. L. (2003). Age and Gender Differences in Adults' Descriptions of Emotional Reactions to Interpersonal Problems. *The Journals of Gerontology: Series B, 58*(4), 237 – 245. doi: org/10.1093/geronb/58.4.P237

Bordin, E. S. (1983). A working alliance based model of supervision. *The Counseling Psychologist, 11(1)*, 252-260. doi: 10.1177/0011000083111007

Bostic, T., McGartland Rubio, D., & Hood, M. (2000). A validation of the subjective vitality scale using structural equation modeling. *Social Indicators Research, 52*(3), 313-324. doi: 10.1023/A:1007136110218

Bowlby, J. (2005). The making and breaking of affectional bonds. London: Routledge.

Brackett, M. A., Rivers, S. E., Shiffman, S., Lerner, N., & Salovey, P. (2006). Relating emotional abilities to social functioning: a comparison of self-report and performance measures of Emotional Intelligence. *Journal of Personality and Social Psychology, 91(4)*, 780-795. doi: 10.1037/0022-3514.91.4.780

Brown, T. A., & Moore, M. T. (2012). Confirmatory factor analysis. In R. H. Hoyle (Ed.), *Handbook of structural equation modelling* (pp. 361-379). New York: The Guilford Press.

Bryan, V. D., Lindo, J., Anderson-Johnson, P., & Weaver, S. (2015). Using Carl Rogers' person-centered model to explain interpersonal relationships at a school of nursing. *Journal of Professional Nursing, 31*(2), 141-148. doi: 10.1016/j.profnurs.2014.07.003

Bucci, S., Seymour-Hyde, A., Harris, A., & Berry, K. (2016). Client and therapist attachment styles and working alliance. *Clinical Psychology & Psychotherapy, 23*(2), 155-165. doi: 10.1002/cpp.1944

Buman, M. P., Daphna Yasova, L., & Giacobbi, P. R. (2010). Descriptive and narrative reports of barriers and motivators to physical activity in sedentary older adults. *Psychology of Sport & Exercise, 11*(3), 223-230. doi: 10.1016/j.psychsport.2010.02.002

Castonguay, L. G., Constantino, M. J., & Holtforth, M. G. (2006). The working alliance: Where are we and where should we go? *Psychotherapy: Theory, Research, Practice, Training, 43*, 271-279. doi: 10.1037/0033-3204.43.3.271

Chambliss, H. O., Finley, C. E., & Blair, S. N. (2004). Attitudes toward obese individuals among exercise science students. *Medicine & Science in Sports & Exercise, 36*(3), 468-474. doi: 10.1249/01MSS.000117115.94062.E4

Chelladurai, P., & Saleh, S. D. (1980). Dimensions of leader behaviour: Development of leadership scale. *Journal of Sport Psychology, 2*(1), 34-45. doi: 10.1123/jsp.2.1.34

Cho, J. C., & Knowles, E. D. (2013). I'm like you and you're like me: Social projection and self- stereotyping both help explain Self–Other correspondence. *Journal of Personality and Social Psychology, 104*(3), 444-456. doi: 10.1037/a0031017

Cicchetti, D. V. (1994). Guidelines, criteria and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment, 6*(4), 284-290. doi: 10-1037/1040-3590.6.4.284

Clarke, N., & Mahadi, N. (2017). The significance of mutual recognition respect in mediating the relationships between trait emotional intelligence, affective commitment and job satisfaction. *Personality and Individual Differences, 105*, 129-134. doi: 10.1016/j.paid.2016.09.028

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Psychological Assessment, 20*(1), 37-46. doi: 10.1177/001316446002000104

Cohen, J. (1969). *Statistical power analysis for the behavioural sciences* (2nd ed.). New York: Academic Press.

Cortina, J. (1993). What is coefficient alpha? An examination of theory and application. *Journal of Applied Psychology, 78*(1), 98. doi: 10.1037/0021-9010.78.1.98

Coutts, A. J., Murphy, A. J., & Dascombe, B. J. (2004). Effect of direct supervision of a strength coach on measures of muscular strength and power in young rugby league players. *Journal of Strength & Conditioning Research, 18*(2), 316-323. Retrieved from https://opus.lib.uts.edu.au/handle/10453/9724

Cox, A., Duncheon, N., & Mcdavid, L. (2009). Peers and teachers as sources of relatedness perceptions, motivation, and affective responses in physical education. *Research Quarterly for Exercise and Sport, 80*(4), 765-773. doi: 10.1080/02701367.2009.10599618

Daly, J., Sindone, A. P., Thompson, D. R., Hancock, K., Chang, E., & Davidson, P. (2002). Barriers to participation in and adherence to cardiac rehabilitation programs: A critical literature review. *Progress in Cardiovascular Nursing, 17*(1), 8-17. doi: 10.1111/j.0889-7204.2002.00614.x

De Haan, E., Duckworth, A., Birch, D., & Jones, C. (2013). Executive coaching outcome research: The contribution of common factors such as relationship, personality match, and self-efficacy. *Consulting Psychology Journal: Practice and Research, 65*(1), 40-57. doi: 10.1037/a0031635

Deci, E.L. and Ryan, R. M. (1985). Intrinsic motivation and self-determination in human behaviour. New York: Plenum Press.

Dodge, R., Daly, A., Huyton, J., & Sanders, L. (2012). The challenge of defining well-being. *International Journal of Well-being, 2*(3), 222-235. doi: 10.5502/ijw.v2i3.4

Dolan, P., & Metcalf, R. (2012). Measuring subjective well-being: Recommendations on measures for use by national governments. *Journal of Social Policy, 41*(2), 409-427. doi: 10.1017/S0047279411000833

Duda, J. L., Williams, G. C., Ntoumanis, N., Daley, A., Eves, F. F., Mutrie, N., & Jolly, K. (2014). Effects of a standard provision versus an autonomy supportive exercise referral programme on physical activity, quality of life and well-being indicators: A cluster randomised controlled trial. *International Journal of Behavioral Nutrition and Physical Activity, 11*(1), 848. doi: 10.1186/1479-5868-11-10

Duquette, M. D. (1993). "What place does the real-relationship have in the process of therapeutic character change?". *Jefferson Journal of Psychiatry, 11*(2) Retrieved from http://jdc.jefferson.edu/jeffjpsychiatry/vol11/iss2/11/

Edmunds, J., Ntoumanis, N., & Duda, J. L. (2006). A test of Self-Determination theory in the exercise domain. *Journal of Applied Social Psychology, 36*(9), 2240-2265. doi: 10.1111/j.0021-9029.2006.00102.x

Farh, C. I. C. C., Seo, M., & Tesluk, P. E. (2012). Emotional intelligence, teamwork effectiveness, and job performance: The moderating role of job context. *Journal of Applied Psychology, 97*(4), 890-900. doi: 10.1037/a0027377

Feller, C.P., & Rocco Cottone, R. (2003). The Importance of Empathy in the Therapeutic Alliance. *The Journal of Humanistic Counseling, 42(1)*, 43 – 61. doi: 10.1002/j.2164-490X.2003.tb00168.x

Felton, L., & Jowett, S. (2013). 'What do coaches do' and 'how do they relate': Their effects on athletes' psychological needs and functioning. *Scandinavian Journal of Medicine & Science in Sports, 23*(2), 130-139. doi: 10.1111/sms.12029

Fortier, M. S., Duda, J., Guerin, E., & Teixeira, P. (2012). Promoting physical activity: Development and testing of self-determination theory-based interventions, *International Journal of Behavioural Nutrition and Physical Activity, 9(20)*, 1 - 14 doi: 10.1186/1479-5868-9-20

Franke, R. H. (1980). Worker productivity at Hawthorne. *American Sociological Review, 45*(6), 1006-1027. doi:10.2307/2094916

Fricker, H. (2017). Industry trends: Mintel UK health and fitness club report 2017. *Health Club Management, 8*. Retrieved from http://www.healthclubmanagement.co.uk/health-club-management-features/Industry-trends-Mintel-UK-Health-and-Fitness-Club-Report-2017/32014

Fuertes, J. N., Mislowack, A., Bennett, J., Paul, L., Gilbert, T. C., Fontan, G., & Boylan, L. S. (2007). The physician–patient working alliance. *Patient Education and Counseling, 66*(1), 29-36. doi: 10.1016/j.pec.2006.09.013

Fuertes, J. N., Toporovsky, A., Reyes, M., & Osborne, J. B. (2017). The physician-patient working alliance: Theory, research, and future possibilities. *Patient Education and Counseling, 100*(4), 610-615. doi: 10.1016/j.pec.2016.10.018

Gavin, J., & Gavin, N. (1995). *Psychology for health fitness professionals* Champaign, Ill.; Leeds: Human Kinetics, c1995.

Gelso, C. J. (2009). The real relationship in a postmodern world: Theoretical and empirical explorations. *Psychotherapy Research, 19*(3), 253-264. doi: 10.1080/10503300802389242

Gelso, C. J., Kivlighan, D. M. J., Busa-Knepp, J., Spiegel, E. B., Ain, S., Hummel, A. M., Ma, Y., & Markin, R. D. (2012). The unfolding of the real relationship and the outcome of brief psychotherapy. *Journal of Counseling Psychology, 59*(4), 495-506. doi: 10.1037/a0029838

Gidlow, C., Johnston, L. H., Crone, D., & James, D. (2005). Attendance of exercise referral schemes in the UK: A systematic review. *Health Education Journal, 64*(2), 168. doi: 10.1177/001789690506400208

Gillaspy, J. A., Wright, A. R., Campbell, C., Stokes, S., & Adinoff, B. (2002). Group alliance and cohesion as predictors of drug and alcohol abuse treatment outcomes. *Psychotherapy Research, 12*, 213-229. doi: 10.1093/ptr/12.2.213

Gillespie, N. (2003). Measuring interpersonal trust in work relationships. *Australian Journal of Psychology, 55*, 124-124.

Goleman, D. (1995). Emotional intelligence: Why it can matter more than I.Q. New Delhi: Bloomsbury.

Good, K. C., & Good, L. R. (1973). Assumed attitude similarity and instructor evaluation. *Journal of Social Psychology, 91*(2), 285-290. doi: 10.1080/00224545.1973.9923051

Gourlan, M., Trouilloud, D., & Sarrazin, P. (2013). Motivational characteristics of obese adolescents toward physical activity: Contribution of self-determination theory. *Revue Europeenne De Psychologie Appliquee, 63*(4), 209-218. doi: 10.1016/j.erap.2013.02.001

Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *The Leadership Quarterly, 6*(2), 219-247. doi: 10.1016/1048-9843(95)90036-5

Gregory, J. B., & Levy, P. E. (2011). It's not me, it's you: A multilevel examination of variables that impact employee coaching relationships. *Consulting Psychology Journal: Practice and Research, 63*(2), 67-88. doi: 10.1037/a0024152

Gunnell, K. E., & Gaudreau, P. (2015). Testing a bi-factor model to disentangle general and specific factors of motivation in self-determination theory. *Personality and Individual Differences, 81*, 35-40. doi: 10.1016/j.paid.2014.12.059

Gunnell, K. E., Crocker, P. R. E., Mack, D. E., Wilson, P. M., & Zumbo, B. D. (2014). Goal contents, motivation, psychological need satisfaction, well-being and physical activity: A test of self-determination theory over 6 months. *Psychology of Sport & Exercise, 15*(1), 19-29. doi: 10.1016/j.psychsport.2013.08.005

Gunnell, K. E., Crocker, P. R. E., Wilson, P. M., Mack, D. E., & Zumbo, B. D. (2013). Psychological need satisfaction and thwarting: A test of basic psychological needs theory in physical activity contexts. *Psychology of Sport & Exercise, 14*(5), 599-607. doi: 10.1016/j.psychsport.2013.03.007

Hagger, M. S., Chatzisarantis, N. L. D., & Biddle, S. J. H. (2002). A meta-analytic review of the theories of reasoned action and planned behavior in physical activity: Predictive validity and the contribution of additional variables. *Journal of Sport & Exercise Psychology, 24*(1), 3-32. doi: 10.1123/jsep.24.1.3

Hampson, R., & Jowett, S. (2014). Effects of coach leadership and coach-athlete relationship on collective efficacy. *Scandinavian Journal of Medicine & Science in Sports, 24*(2), 454-460. doi: 10.1111/j.1600-0838.2012.01527.x

Hanson, C. L., Allin, L. J., Ellis, J. G., & Dodd-Reynolds, C. J. (2013). An evaluation of the efficacy of the exercise on referral scheme in Northumberland, UK: Association with physical activity and predictors of engagement. A naturalistic observation study. *BMJ Open, 3*(8) doi: 10.1136/bmjopen-2013-002849

Harwood, C. G., Keegan, R. J., Smith, J. M. J., & Raine, A. S. (2015). A systematic review of the intrapersonal correlates of motivational climate perceptions in sport and physical activity. *Psychology of Sport & Exercise, 18*, 9-25. doi: 10.1016/j.psychsport.2014.11.005

Heyns, M., & Rothmann, S. (2015). Dimensionality of trust: An analysis of the relations between propensity, trustworthiness and trust. *South African Journal of Industrial Psychology, 41(1,)* 1 – 12. doi: 10.4102/sajip.v41i1.1263

Hochschild, A. R. (2003). *The managed heart. Commercialization of human feeling; with a new afterword* (2nd ed.). Berkeley, CA: University of CA Press.

Horvath, A. (2005). The therapeutic relationship: Research and theory. *Psychotherapy Research, 15*(1), 3-7. doi: 10.1080/10503300512331339143

Horvath, A. O., & Greenberg, L. S. (1989). The development and validation of the working alliance inventory. *Journal of Counseling Psychology, 36*, 223-233. doi: 1037-0022-0167.36.2.223

Horvath, A. O., & Symonds, D. B. (1991). Relation between working alliance and outcome in psychotherapy: A meta-analysis. *Journal of Counseling Psychology, 38*(2), 139-149. doi: 10.1037/0022-0167.38.2.139

Horvath, A. O., Del Re, A. C., Flückiger, C., & Symonds, D. (2011). Alliance in individual psychotherapy. *Psychotherapy, 48*(1), 9-16. doi: 10.1037/a0022186

Hsu, Y., Buckworth, J., Focht, B. C., & O'Connell, A. A. (2013). Feasibility of a self-determination theory-based exercise intervention promoting healthy at every size with sedentary overweight women: Project CHANGE. *Psychology of Sport & Exercise, 14*(2), 283-292. doi: 10.1016/j.psychsport.2012.11.007

Hu, L., & Bentler, P. M. (1995). Evaluating model fit. In R. H. Hoyle (Ed.), *Structural equation modelling: Concepts, issues and applications* (pp. 76-79). Thousand Oaks, CA: Sage.

Hu, L., & Bentler, P. M. (1999). Cut-off criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modelling, 6*, 1-55. doi: 10.1080/10705519909540118

Hubble, M. A., Duncan, B. L., & Miller, S. D. (1999). *The heart & soul of change: What works in therapy* Washington, D.C. : American Psychological Association.

Hudson, J., Day, M. C., & Oliver, E. J. (2014). A 'new life' story or 'delaying the inevitable'? Exploring older people's narratives during exercise uptake. *Psychology of Sport & Exercise, 16(3),* 112-120. doi: 10.1016/j.psychsport.2014.09.004

Hwang, S., Feltz, D. L., & Lee, J. D. (2013). Emotional intelligence in coaching: Mediation effect of coaching efficacy on the relationship between emotional intelligence and leadership style. *International Journal of Sport and Exercise Psychology, 11*, 1-15. doi: 10.1080/1612197X.2013.763489

Jackson, B., Knapp, P., & Beauchamp, M. R. (2009). The coach-athlete relationship: A tripartite efficacy perspective. *Sport Psychologist, 23*(2), 203-232. doi: 10.1123/tsp.23.2.203

Jackson, D. L., Gillaspy, J. A., & Purc-Stephenson, R. (2009). Reporting practices in confirmatory factor analysis: An overview and some recommendations. *Psychological Methods, 14*(1), 6-23. doi: 10.1037/a0014694

Jadhav, S., & Mulla, Z. R. (2010). Do emotionally intelligent people do well in all jobs? Exploring the moderating role of inter-personal interaction. *Vision: The Journal of Business Perspective, 14*(4), 247-254. doi: 10.1177/097226291001400401

Janssen, I., & LeBlanc, A. G. (2010). Systematic review of the health benefits of physical activity and fitness in school age children and youth. *International Journal of Physical Activity and Nutrition, 7*(40) Retrieved from https://ijbnpa.biomedcentral.com/track/pdf/10.1186/1479-5868-7-40?site=http://ijbnpa.biomedcentral.com

Johnson, J. E., Burlingame, G. M., Olsen, J. A., Davies, D. R., & Gleave, R. L. (2005). Group climate, cohesion, alliance, and empathy in group psychotherapy: Multilevel structural equation models. *Journal of Counseling Psychology, 52*(3), 310-321. doi: 10.1637/0022-0167.52.3.310

Joseph, D. L., Jin, J., Newman, D. A., & O'Boyle, E. H. (2015). Why does self-reported emotional intelligence predict job performance? A meta-analytic investigation of mixed EI. *Journal of Applied Psychology, 100*(2), 298-342. doi: 10.1037/a0037681

Jowett, S. (2005). The coach-athlete partnership. *The Psychologist, 18*(7), 412-415. Retrieved from https://www.researchgate.net/profile/Sophia_Jowett/publication/290265291_The_coach-athlete_partnership/links/56a9ee4208aeaeb4cefa4b8c.pdf

Jowett, S. (2007). Interdependence Analysis and the 3+1Cs in the Coach-Athlete Relationship. In S. Jowett & D. Lavallee (Eds.), *Social Psychology in Sport* (pp. 15-27). Champaign, IL, US: Human Kinetics.

Jowett, S. (2008). The measurement of socially desirable responding in two-person relationships: The coach-athlete relationship. *Journal of Clinical Sport Psychology, 2*, 108-126. doi: 10.1123/jcsp.2.2.108

Jowett, S. (2009a). Factor structure and criterion-related validity of the meta-perspective version of the Coach–Athlete relationship questionnaire (CART-Q). *Group Dynamics: Theory, Research, and Practice, 13*(3), 163-177. doi: 10.1037/a0014998

Jowett, S. (2009a). Validating coach-athlete relationship measures with the nomological network. *Measurement in Physical Education and Exercise Science, 13*, 34-51. doi: 10.1080/10913670802609136

Jowett, S. (2017). At the heart of effective sport leadership lies the dyadic coach-athlete relationship. *Sport and Exercise Psychology Review, 13*(1), 62-64.

Jowett, S., Adie, J. W., Bartholomew, K. J., Yang, S. X., Gustafsson, H., & Lopez-Jiménez, A. (2017). Motivational processes in the coach-athlete relationship: A multi-cultural self-determination approach. *Psychology of Sport & Exercise, 32*, 143-152. doi: 10.1016/j.psychsport.2017.06.004

Jowett, S., & Cockerill, I. M. (2003). Olympic medallists' perspective of the athlete–coach relationship. *Psychology of Sport & Exercise, 4*, 313-331. doi: 10.1016/S1469-0292(02)00011-0

Jowett, S., & Chaundy, V. (2004). An investigation into the impact of coach leadership and coach-athlete relationship on group cohesion. *Group Dynamics: Theory, Research and Practice, 8*, 302-311. doi: 10.1037/1089-2699.8.4.302

Jowett, S., & Clark-Carter, D. (2006). Perceptions of empathic accuracy and assumed similarity in the coach-athlete relationship. *British Journal of Social Psychology, 45*, 617-637. doi: 10.1348/014466605X58609

Jowett, S., & Frost, T. C. (2007). Race/ethnicity in the all-male coach-athlete relationship: Black footballer's narratives. *Journal of International Sport & Exercise Psychology, 3*, 255-269. doi: 10.1080/1612197X.2007.9671835

Jowett, S., & Meek, G. A. (2000). The coach-athlete relationship in married couples: An exploratory content analysis. *The Sport Psychologist, 14*, 157-175. doi: 10.1123/tsp.14.2.157

Jowett, S., & Nezlek, J. (2012). Relationship interdependence and satisfaction with important outcomes in coach–athlete dyads. *Journal of Social and Personal Relationships, 29*(3), 287-301. doi: 10.1177/0265407511420980

Jowett, S., & Ntoumanis, N. (2004). The coach-athlete relationship questionnaire (CART-Q): Development and initial validation. *Scandinavian Journal of Medicine and Science in Sport, 14*, 245-257. doi: 10.1111/j.1600-0838.2003.00338.x

Jowett, S., & Ntoumanis, N. (2003). The Greek coach - athlete relationship questionnaire (GrCART-Q): Scale construction and validation. *International Journal of Sport Psychology, 34*(2), 101-125.

Jowett, S., O'Broin, A., & Palmer, S. (2009). On understanding the role and significance of a key two-person relationship in sport and executive coaching. *Sport and Exercise Psychology Review, 5*(1)

Jowett, S., & Passmore, J. (2012). The application of the 3 + 1 Cs relationship model to executive coaching. *Consulting Psychology Journal: Practice and Research, 64*(3), 183-197. doi: 10.1037/a0030316

Jowett, S., & Poczswardowski, A. (2007). Understanding the coach-athlete relationship. In Jowett, S. and Lavallee, D. (Ed.), *Social Psychology in Sport* (pp. 3-13)

Jowett, S., & Shanmugam, V. (2016). Relational coaching in sport: Its psychological underpinnings and practical effectiveness. In Routledge (Ed.), *International handbook of sports psychology, (pp.* 471-485). Taylor & Francis Ltd. doi: 10.4324/9781315777054

Jowett, S., Shanmugam, V., & Caccoulis, S. (2012). Collective efficacy as a mediator of the association between interpersonal relationships and athlete satisfaction in team sports. *International Journal of Sport & Exercise Psychology, 10*(1), 66-78. doi: 10.1080/1612197X.2012.645127

Juravich, M., & Babiak, K. (2015). Examining positive affect and job performance in sport organizations: A conceptual model using an emotional intelligence lens. *Journal of Applied Sport Psychology, 27*(4), 1-15. doi: 10.1080/10413200.2015.1048382

Kelly, H. H., & Thibaut, J. W. (1978). *Interpersonal relations: A theory of interdependence.* Wiley: New York.

Kenny, D. A., & Acitelli, L. K. (2001). Accuracy and bias in the perception of the partner in a close relationship. *Journal of Personality and Social Psychology, 80*(3), 439. doi: 10.1037/0022-3514.80.3.439

Kenny, D. A., & Milan, S. (2012). Identification: A non-technical discussion of a technical issue. In R. H. Hoyle (Ed.), *Handbook of structural equation modelling* (pp. 145-165). New York: The Guilford Press.

Kiesler, D. J., & Auerbach, S. M. (2003). Integrating measurement of control and affiliation in studies of physician-patient interaction: The interpersonal circumplex. *Social Science and Medicine, 57*, 1707-1722. doi: 10.1016/S0277-9536(02)00558-0

Kinnafick, F., Thøgersen-Ntoumani, C., Duda, J. L., & Taylor, I. (2014). Sources of autonomy support, subjective vitality and physical activity behaviour associated with participation in a lunchtime walking intervention for physically inactive adults. *Psychology of Sport & Exercise, 15*(2), 190-197. doi: 10.1016/j.psychsport.2013.10.009

Kivlighan, D. M., Jr. (2007). Where is the relationship in research on the alliance? Two methods for analyzing dyadic data. *Journal of Counseling Psychology, 54*(4), 423-433. doi: 10.1037/0022-0167.54.4.423

Klain, I., de Matos, D., Leitao, J., Cid, L., & Moutao, J. (2015). Self-determination and physical exercise adherence in the contexts of fitness academies and personal training. *Journal of Human Kinetics, 46*(1), 241-249. doi: 10.1515/hukin-2015-0052

Kline, P. (1998). The New Psychometrics : Science, psychology and measurement. London: Routledge.

Korthagen, F. A. J., Attema-Noordewier, S., & Zwart, R. C. (2014). Teacher–student contact: Exploring a basic but complicated concept. *Teaching and Teacher Education, 40*, 22-32. doi: 10.1016/j.tate.2014.01.006

Kosteli, M., Williams, S. E., & Cumming, J. (2016). Investigating the psychosocial determinants of physical activity in older adults: A qualitative approach. *Psychology & Health,* 1-20. doi: 10.1080/08870446.2016.1143943

Krippendorf, K. (2004). *Content analysis: An introduction to its methodology* (2nd ed.). London: Sage Publications.

Laborde, S., Dosseville, F., & Allen, M. S. (2016). *Emotional intelligence in sport and exercise: A systematic review* doi: 10.1111/sms.12510

Leibert, T. W., & Dunne-Bryant, A. (2015). Do common factors account for counseling outcome? *Journal of Counseling & Development, 93*(2), 225-235. doi: 10.1002/j.1556-6676.2015.00198.x

Leikas, S., Lönnqvist, J., Verkasalo, M., & Nissinen, V. (2013). Power and personality perception in real-life hierarchical relationships. *European Journal of Personality, 27*(2), 155-168. doi: 10.1002/per.1849

Liu, J. D., Chung, P., Zhang, C., & Si, G. (2015). Chinese-translated behavioral regulation in exercise questionnaire-2: Evidence from university students in the mainland and Hong Kong of China. *Journal of Sport and Health Science, 4*(3), 228-234. doi: 10.1016/j.jshs.2014.03.017

Lo Coco, G., Gullo, S., Prestano, C., & Gelso, C. J. (2011). Relation of the real relationship and the working alliance to the outcome of brief psychotherapy. *Psychotherapy, 48*(4), 359-367. doi: 10.1037/a0022426

Lombard, M., Snyder-Duch, J. & Bracken, C. (2010). Intercoder reliability. Retrieved October 18, 2015, from matthewlombard.com/reliability/

Lorimer, R. (2013). The development of empathic accuracy in sports coaches. *Journal of Sport Psychology in Action, 4*(1), 26-33. doi: 10.1080/21520704.2012.706696

Lowther, M., Mutrie, N., & Scott, E. M. (2007). Identifying key processes of exercise behaviour change associated with movement through the stages of exercise behaviour change. *Journal of Health Psychology, 12*(2), 261-272. doi: 10.1177/1359105307074253

Mack, D. E., Wilson, P. M., Gunnell, K. E., Gilchrist, J. D., Kowalski, K. C., & Crocker, P. R. E. (2012). Health-Enhancing physical activity: Associations with markers of Well-Being. *Applied Psychology: Health and Well-Being, 4*(2), 127-150. doi: 10.1111/j.1758-0854.2012.01065.x

Malouff, J. M., Schutte, N. S., & Thorsteinsson, E. B. (2014). Trait emotional intelligence and romantic relationship satisfaction: A meta-analysis. *The American Journal of Family Therapy, 42*(1), 53-66. doi: 10.1080/01926187.2012.748549

Manley, A. J., Greenlees, I. A., Smith, M. J., Batten, J., & Birch, P. D. J. (2014). The influence of coach reputation on the behavioral responses of male soccer players. *Scandinavian Journal of Medicine & Science in Sports, 24*(2), e111-e120. doi: 10.1111/sms.12108

Markland, D., & Tobin, V. (2004). A modification to the behavioural regulation in exercise questionnaire to include an assessment of amotivation. *Journal of Sport & Exercise Psychology, 26*(2), 191-196. doi: 10.1123/jsep.26.2.191

Martos, M. P., Lopez-Zafra, E., & Pulido-Martos, M. (2013). Are emotional intelligent workers also more empathic? *Scandinavian Journal of Psychology, 54*(5), 407-414. doi: 10.1111/sjop.12058

Mayer, J. D., & Salovey, P. (1990). Emotional intelligence. *Imagination, Cognition and Personality, 9*(3), 185-211. doi: 10.2190/DUGG-P24E-52WK-6CDG

Mayer, J. D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey, & D. Schluter (Eds.), *Emotional development and emotional intelligence; implications for educators* (pp. 3-31). New York: Basic Books.

Mayer, J. D., Salovey, P., & Caruso, D. R. (2002). *Mayer-Salovey-Caruso emotional intelligence test MSCEIT users manual*. Toronto; Canada: MHS Publishers.

Mayer, J. D., Salovey, P., & Caruso, D. (2004). Emotional intelligence: Theory, findings, and implications. *Psychological Inquiry*, *15(3),* 197-295. doi: org/10.1207/s15327965pli1503_02

Mazerolle, M. (2006). Improving data analysis in herpetology: Using Akaike's information criterion (AIC) to assess the strength of biological hypotheses. *Amphibia-Reptilia, 27*(2), 169-180. doi: 10.1163/156853806777239922

Mazetti, S. A., Kraemer, W. J., Volek J. S., Duncan, N. D., Ratamess, N. A., Häkkinen, K., Gomez, A. L., Newton, R. U., & Fleck, S. J. (2000). The influence of direct supervision of resistance training on strength performance. *Medicine and Science in Sports and Exercise, 32*(6), 1175-1184. Retrieved from ovidsp.tx.ovid.com

McMahon, S. K., Lewis. B., Oakes, J. M., Wyman, J. F., Weihua, G., & Rothman, A. J. (2017). Assessing the effects of interpersonal and intrapersonal behavior change strategies on physical activity in older adults: A factorial experiment. *Annals of Behavioural Medicine, 51*(3), 376-390. doi: 10.1007/s12160-016-9863-z

Mearns, D. (1997). Person-centered counselling training. London: Sage.

Miao, C., Humphrey, R. H., & Qian, S. (2016). Leader emotional intelligence and subordinate job satisfaction: A meta-analysis of main, mediator, and moderator effects. *Personality and Individual Differences, 102*, 13-24. doi: 10.1016/j.paid.2016.06.056

Mikolajczak, M. (2009). Going beyond the ability-trait debate: The three-level model of emotional intelligence. *Electronic Journal of Applied Psychology. 5*(2), 25-31. doi: 10.7790/ejap.v5i2.175

Miller, J. B. (1986). *Toward a new psychology of women* Beacon Press.

Milyavskaya, M., & Koestner, R. (2011). Psychological needs, motivation, and well-being: A test of self-determination theory across multiple domains. *Personality and Individual Differences, 50*(3), 387-391. doi: 10.1016/j.paid.2010.10.029

Miquelon, P., & Castonguay, A. (2016). Motivational regulations and observance of physical activity recommendations among adults with type 2 diabetes. *International Journal of Behavioral Medicine, 23*, S150-S150.

Miquelon, P., & Castonguay, A. (2017). Integrated regulation, behavior consistency, and physical activity maintenance. *Motivation Science, 3*(1), 76-90. doi: 10.1037/mot0000049

Morales, J. (2014). The relationship between physician emotional intelligence and quality of care. *International Journal of Caring Sciences, 7*(3), 704-710. Retrieved from https://search.proquest.com/docview/1612539102?accountid=14089&rfr_id=info%3Axri%2Fsid%3Aprimo

Moreno-Murcia, J., Martínez-Galindo, C., Moreno-Pérez, V., Marcos, P. J., & Borges, F. (2012). Confirmation of the basic psychological needs in exercise scale (BPNES) with a sample of people who do healthy exercise. *Journal of Sports Science & Medicine, 11*(1), 141. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3737849/

Mouter, N., & Vonk Noordegraaf, D. (2012). Intercoder reliability for qualitative research: You win some, but do you lose some as well? *Proceedings of the 12th TRAIL Congress, 30-31 Oktober 2012, Rotterdam, Nederland,*

Mullan, E., Markland, D., & Ingledew, D. K. (1997). A graded conceptualisation of self-determination in the regulation of exercise behaviour: Development of a measure using confirmatory factor analytic procedures. *Personality and Individual Differences, 23*(5), 745-752. doi: 10.1016/S0191-8869(97)00107-4

Musek, J. (2007). A general factor of personality: Evidence for the big one in the five-factor model. *Journal of Research in Personality, 41*(6), 1213-1233. doi: 10.1016/j.jrp.2007.02.003

Myers, J., Kaykha, A., George, S., Abella, J., Zaheer, N., Lear, S., & Froelicher, V. (2004). *Fitness versus physical activity patterns in predicting mortality in men*. *The American Journal of Medicine, 112 (12)*, 912-918. doi: 10.1016/j.amjmed.2004.06.047

Nelis, D., Kotsou, I., Quoidbach, J., Hansenne, M., Weytens, F., Dupuis, P., & Mikolajczak, M. (2011). Increasing emotional competence improves psychological and physical well-being, social relationships, and employability. *Emotion, 11*(2), 354-366. doi: 10.1037/a0021554

Newman, D. A., Joseph, D. L., & MacCann, C. (2010). Emotional intelligence and job performance: The importance of emotion regulation and emotional labor context. *Industrial and Organizational Psychology, 3*(2), 159-164. doi: 10.1111/j.1754-9434.2010.01218.x

NICE Clinical Guidelines. (2014). *Exercise referral schemes to promote physical activity.* (No. PH54).National Institute for Health and Care Excellence. Retrieved from https://www.nice.org.uk/guidance/ph54/resources/guidance-exercise-referral-schemes-to-promote-physical-activity-pdf

O'Boyle, E., Humphrey, R., Pollack, J., Hawver, T., & Story, P. (2011). The relation between emotional intelligence and job performance a meta-analysis. *Journal of Organizational Behavior, 32*(5), 788-818. doi: 10.1002/job.714

O'Neil, D. A. (2011). The Value of Emotional Intelligence for High Performance Coaching: A Commentary. *International Journal of Sports Science & Coaching, 6*(3), 329-331. doi: 10.1260/1747-9541.6.3.329

O'Sullivan, S. B., Schmitz, T. J., & Fulk, G. (2013). *Physical rehabilitation* (6th ed.). USA: Pennsylvania: Davis, F.A.

Palmer, S. (2016). Associations between less self-determined forms of motivation and physical activity. *Research Quarterly for Exercise and Sport, 87*, A25-A26.

Parsons, T. (1951). *The social system*. Glencoe: The Free Press.

Pavey, T. G., Taylor, A. H., Fox, K. R., Hillsdon, M., Anokye, N., Campbell, J. L., & Taylor, R. S. (2013). Republished research: Effect of exercise referral schemes in primary care on physical activity and improving health outcomes: Systematic review and meta-analysis. *British Journal of Sports Medicine, 47*(8), 526-526. doi: 10.1136/bjsports-2012-e6462rep

Penedo, F. J., & Dahn, J. R. (2005). Exercise and well-being: A review of mental and physical health benefits associated with physical activity. *Current Opinion in Psychiatry, 18*(2), 189-193.

Petrides, K. V. (2009). Psychometric properties of the trait emotional intelligence questionnaire (TEIQue). In J. Parker, D. Saklofske & C. Stough (Eds.), *Assessing emotional intelligence. The springer series on human exceptionality.* Boston, MA: Springer.

Petrides, K. V., & Furnham, A. (2000). On the dimensional structure of emotional intelligence. *Personality and Individual Differences, 29*(2), 313-320. doi: 10.1016/S0191-8869(99)00195-6

Petrides, K. V., Pérez-González, J. C., & Furnham, A. (2007). On the criterion and incremental validity of trait emotional intelligence. *Cognition & Emotion, 21*(1), 26-55. doi: 10.1080/02699930601038912

Petrides, K., Pita, R., & Kokkinaki, F. (2007). The location of trait emotional intelligence in personality factor space. *British Journal of Psychology, 98*, 273-289. doi: 10.1348/00712606X120618

Prochaska, J. O., & DiClemente, C. C. (1983). The stages and processes of self-change in smoking: Towards an integrative model. *Journal of Consulting and Clinical Psychology, 5,* 390-395. doi: 10.1037//0022-006X.51.3.390

Public Health England. (2016). *Health matters: Getting every adult active every day.* Retrieved from www.gov.uk/government/publications/health-matters-getting-every-adult-active-every-day/health-matters-getting-every-adult-active-every-day

Rahman, R. J., Hudson, J., Thøgersen-Ntoumani, C., & Doust, J. H. (2015). Motivational processes and well- being in cardiac rehabilitation: A self-determination theory perspective. *Psychology, Health & Medicine, 20*(5), 518-529. doi: 10.1080/13548506.2015.1017509

Raykov, T. (2012). Scale construction and development using structural equation modelling. In R. H. Hoyle (Ed.), *Handbook of structural equation modelling* (pp. 472-494). New York: The Guilford Press.

Raykov, T., & Marcoulides, G. A. (2011). *Introduction to psychometric theory*. New York: Routledge.

Reandeau, S. G., & Wampold, B. E. (1991). Relationship of power and involvement to working alliance: A multiple-case sequential analysis of brief therapy. *Journal of Counselling Psychology, 38*(2), 107-114. doi: 10.1037/0022-0167.38.2.107

Register of Exercise Professionals (2015). *Working in Fitness Survey: An analysis of the fitness industry in the UK 2015*. Retrieved from https://www.exerciseregister.org/images/PDF/Working-in-Fitness-2015-Final.pdf

Reinboth, M., & Duda, J. L. (2006). Perceived motivational climate, need satisfaction and indices of well-being in team sports: A longitudinal perspective. *Psychology of Sport & Exercise, 7*(3), 269-286. doi: 10.1016/j.psychsport.2005.06.002

Reinboth, M., Duda, J., & Ntoumanis, N. (2004). Dimensions of coaching behavior, need satisfaction, and the psychological and physical welfare of young athletes. *Motivation and Emotion, 28*(3), 297-313. doi: 10.1023/B:MOEM.0000040156.81924.b8

Rhind, D.J.A., & Jowett, S. (2010). Initial evidence for the criterion-related and structural validity of the long version of the coach-athlete relationship questionnaire. *European Journal of Sports Science, 10*(6), 359-370. doi: 10.1080/17461391003699047

Rhind, D. J. A., Jowett, S., & Yang, S. X. (2012). A comparison of athletes' perceptions of the coach-athlete relationship in team and individual sports. *Journal of Sport Behavior, 35*(4), 433-452.

Rieck, T., & Callahan, J. L. (2013). Emotional intelligence and psychotherapy outcomes in the training clinic. *Training and Education in Professional Psychology, 7*(1), 42-52. doi: 10.1037/a0031659

Rieck, T., Callahan, J. L., & Watkins, C. E. (2015). Clinical supervision: An exploration of possible mechanisms of action. *Training and Education in Professional Psychology, 9*(2), 187-194. doi: 10.1037/tep0000080

Rieck, T., Hausdorf, P., & Callahan, J. L. (2015). The role of emotional intelligence in peer instructional dyads. *Scholarship of Teaching and Learning in Psychology, 1*(1), 24-37. doi: 10.1037/stl0000018

Riley, A., & Smith, A. I. (2011). Perceived coach-athlete and peer relationships of young athletes and self-determined motivations for sport. *International Journal of Sport Psychology, 42*, 115-133.

Robins, R. W., Caspi, A., & Moffitt, T. E. (2000). Two personalities, one relationship: Both partners' personality traits shape the quality of their relationship. *Journal of Personality and Social Psychology, 79*(2), 251-259. doi: 10.1037//0022-3514.79.2.251

Rodgers, W. M., Hall, C. R., Duncan, L. R., Pearson, E., & Milne, M. I. (2010). Becoming a regular exerciser: Examining change in behavioural regulations among exercise initiates. *Psychology of Sport & Exercise, 11*(5), 378-386. doi: 10.1016/j.psychsport.2010.04.007

Rodrigues, D., & Lopes, D. (2013). The investment model scale (IMS): Further studies on construct validation and development of a shorter version (IMS-S). *The Journal of General Psychology, 140*(1), 16-28. doi: 10.1080/00221309.2012.710276

Rogers, C. R. (2004). On becoming a person: A therapist's view of psychotherapy London: Constable & Robinson.

Rosa, J.P.P., de Souza, A.L.L.,de Lima, G.H.O., Rodrigues, D.F., de Aquino, V., de Lemos, da Silva Almes, E., Tufik, S., & de Mello, M.T. (2015). Motivational and evolutionary aspects of a physical exercise training program: A longitudinal study. *Frontiers in Psychology, 6.* 648. doi: 10.3389/fpsyg.2015.00648

Rouse, P. C., Ntoumanis, N., Duda, J. L., Jolly, K., & Williams, G. C. (2011). In the beginning: Role of autonomy support on the motivation, mental health and intentions of participants entering an exercise referral scheme. *Psychology & Health, 26*(6), 729-749. doi: 10.1080/08870446.2010.492454

Rusbult, C. E., Martz, J. M., & Agnew, C. R. (1998). The investment model scale: Measuring commitment level, satisfaction level, quality of alternatives, and investment size. *Personal Relationships, 5*(4), 357-387. doi: 10.1111/j.1475-6811.1998.tb00177.x

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68-78. doi: 10.1037/0003-066X.55.1.68

Ryan, R. M., & Frederick, C. (1997). On energy, personality, and health: Subjective vitality as a dynamic reflection of Well-Being. *Journal of Personality, 65*(3), 529-565. doi: 10.1111/j.1467-6494.1997.tb00326.x

Ryan, R. M., Huta, V., & Deci, E. (2008). Living well: A self- determination theory perspective on eudaimonia. *Journal of Happiness Studies, 9*(1), 139-170. doi: 10.1007/s10902-006-9023-4

Safran, J. D., & Muran, J. C. (2006). (2006). Has the concept of therapeutic alliance outlived its usefulness? *Pyschotherapy: Theory, Research, Practice, Training, 43*, 286-291. doi: 10.1037/0033-3204.43.3.286

Sandell Sachs, J. (1983). Negative factors in brief psychotherapy: An empirical assessment. *Journal of Consulting and Clinical Psychology, 51*(4), 557-564. doi: 10.1037/0022-006X.51.4.557

Sarantakos, S. (2005). *Social research* (3rd. ed.). Basingstoke, Hampshire: Palgrave Macmillan.

Schmid Mast, M., & Latu, I. (2016). Interpersonal Accuracy in relations to the workplace, leadership, and hierarchy. In J. A. Hall, M. Schmid Mast & T. West (Eds.), *The social psychology of perceiving others accurately* (pp. 23-51). Cambridge: Cambridge University Press.

Schneider, J. (2015). What makes a personal trainer: Understanding the role of the personal trainer-client relationship in retention with regards to the personality of trainers. (Unpublished Undergraduate degree). Loughborough University, Loughborough.

Schneider, M. L., & Kwan, B. M. (2013). Psychological need satisfaction, intrinsic motivation and affective response to exercise in adolescents. *Psychology of Sport & Exercise, 14(5)*, 776-785. doi: 10.1016/j.psychsport.2013.04.005

Schumacker, R. E., & Lomax, R. G. (2010). *A beginner's guide to structural equation modeling (3rd ed.).* New York: Routledge.

Sebire, S., Standage, M., & Vansteenkiste, M. (2009). Examining intrinsic versus extrinsic exercise goals: Cognitive, affective, and behavioral outcomes. *Journal of Sport & Exercise Psychology, 31*(2), 189. doi: 10.1123/jsep.31.2.189

Sharf, J., Primavera, L. H., & Diener, M. J. (2010). Dropout and therapeutic alliance: A meta-analysis of adult individual psychotherapy. *Psychotherapy: Theory, Research, Practice, Training, 47*(4), 637-645. doi: 10.1037/a0021175; 10.1037/a0021175.supp

Shields, C. A. and Brawley, L.R. (2007). Limiting exercise options: Depending on a proxy may inhibit exercise self-management. *Journal of Health Psychology, 12*, 663-671. doi: 10.1177/1359105307078173

Siegling, A. B., Vesely, A. K., Petrides, K. V., & Saklofske, D. H. (2015). Incremental validity of the trait emotional intelligence Questionnaire–Short form (TEIQue–SF). *Journal of Personality Assessment, 97(5)*, 1-11. doi: 10.1080/00223891.2015.1013219

Silva, M. M., Marques, M. N., & Teixeira, P. J. (2014). Testing theory in practice: The example of self-determination theory-based interventions. *The European Health Psychologist, 15*(5), 171-179. doi: 10.1177/1359105307078173

Simonÿ, C., Dreyer, P., Pedersen, B., & Birkelund, R. (2015). Empowered to gain a new foothold in life - A study of the meaning of participating in cardiac rehabilitation to patients afflicted by a minor heart attack. *International Journal of Qualitative Studies on Health and Well-being, 10.* doi: 10.3402/qhw.v10.28717

Skillsactive.com (*n.d*). Sport and Active Leisure. Retrieved from http://www.skillsactive.com/PDF/standards-quals/NOS/4925_NOS_Guide.pdf

Smith, L., Heaven, P. C. L., & Ciarrochi, J. (2008). Trait emotional intelligence, conflict communication patterns, and relationship satisfaction. *Personality and Individual Differences, 44*(6), 1314-1325. doi: 10.1016/j.paid.2007.11.024

Springer, J. B., Lamborn, S. D., & Pollard, D. M. (2013). Maintaining physical activity over time: The importance of basic psychological need satisfaction in developing the

physically active self. *American Journal of Health Promotion, 27*(5), 284-293. doi: 10.4278/ajhp.110211-QUAL-62

Stelter, R. (2015). "I tried so many diets, now I want to do it differently"—A single case study on coaching for weight loss. *International Journal of Qualitative Studies on Health and Well-being, 10*(1) doi: 10.3402/qhw.v10.26925

Sylvester, B. D., Mack, D. E., Busseri, M. A., Wilson, P. M., & Beauchamp, M. R. (2012) Health-enhancing physical activity, psychological needs satisfaction, and well-being: Is it how often, how long, or how much effort that matters? *Mental Health and Physical Activity, 5*(2), 141 – 147 doi.org: 10.1016/j.mhpa.2012.10.004

Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics (3rd ed.)*. New York: HarperCollins.

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education, 2,* 53-55. doi: 10.5116/ijme.4dfb.8dfd

Teixeira, P., Carraca, E., Markland, D., Silva, M., & Ryan, R. M. (2012). Exercise, physical activity, and self- determination theory: A systematic review. *International Journal of Behavioral Nutrition and Physical Activity, 9*(78). doi: 10.1186/1479-5868-9-78

Thelwell, R. C., Lane, A. M., Weston, N. J. V., & Greenlees, I. A. (2008). Examining relationships between emotional intelligence and coaching efficacy. International *Journal of Sport and Exercise Psychology, 6*(2), 224-235. doi: 10.1080/1612197X.2008.9671863

Thornton, J. S., Frémont, P., Khan, K., Poirier, P., Fowles, J., Wells, G. D., & Frankovich, R. J. (2016). Physical activity prescription: A critical opportunity to address a modifiable risk factor for the prevention and management of chronic disease: A position statement by the Canadian academy of sport and exercise medicine. *British Journal of Sports Medicine.* doi: 10.1136/bjsports-2016-096291

Tobi, P., Estacio, E., Yu, G., Renton, A., & Foster, N. (2012). Who stays, who drops out? Biosocial predictors of longer-term adherence in participants attending an exercise referral scheme in the UK. *BMC Public Health, 12,* 347. doi: 10.1186/1471-2458-12-347

Toft, B. S., & Uhrenfeldt, L. (2015). The lived experiences of being physically active when morbidly obese: A qualitative systematic review. *International Journal of Qualitative Studies on Health and Well-being, 10(1)* doi: 10.3402/qhw.v10.28577

Ullman, J. B. (2006). Structural equation modeling: Reviewing the basics and moving forward. *Journal of Personality Assessment, 87*(1), 35-50. doi: 10.1207/s15327752jpa8701_03

Vallerand, R. J. (2000). Deci and Ryan's self-determination theory: A view from the hierarchical model of intrinsic and extrinsic motivation. *Psychological Inquiry, 11*(4), 312-318.

Vallerand, R. J., Pelletier, L. G., & Koestner, R. (2008). Reflections on self-determination theory. *Canadian Psychology/Psychologie Canadienne, 49*(3), 257-262. doi:10.1037/a0012804

Van Der Linden, D. L., Pekaar, K. A., Bakker, A. B., Schermer, J. A., Vernon, P. A., Dunkel, C. S., & Petrides, K. V. (2016). Overlap between the general factor of personality and emotional intelligence: A meta-analysis. *Psychological Bulletin*, doi: 10.1037/bul0000078

Vansteenkiste, M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. Journal of *Psychotherapy Integration, 23*(3), 263-280. doi: 10.1037/a0032359

Vinson, D., & Parker, A. (2012). Exercise, service and support: Client experiences of physical activity referral schemes (PARS). *Qualitative Research in Sport, Exercise and Health, 4*(1), 15-31. doi: 10.1080/2159676X.2011.653501

Vlachopoulos, S. P., Ntoumanis, N., & Smith, A. L. (2010). The basic psychological needs in exercise scale: Translation and evidence for cross-cultural validity. *International Journal of Sport and Exercise Psychology, 8*(4), 394-412. doi: 10.1080/1612197X.2010.9671960

Walsh, B., Gillespie, C. K., Greer, J., & Eanes, B. (2003). Influence of dyadic mutuality on counselor trainee willingness to self-disclose clinical mistakes to supervisors. *The Clinical Supervisor, 21*(2), 83-98. doi: 10.1300/J001v21n02_06

Wampold, B. E. (2001). *The great psychotherapy debate: Models, methods and findings.* Mahwah, NJ: Lawrence Erlbaum Publishers. doi: 10.1002/pits.10115

Warburton, D. E., Nicol, C. W., & Bredin, S. S. (2006). Health benefits of physical activity: The evidence, *CMAJ, 174*(6), 801-809. doi: 10.1503/cmaj.051351

Waryasz, G. R., Daniels, A. H., Gil, J. A., Suric, V., & Eberson, C. P. (2016). Personal trainer demographics, current practice trends and common trainee injuries. *Orthopedic Reviews, 8*(3) doi: 10.4081/or.2016.6600

Weng, H., Steed, J. F., Yu, S., Liu, Y., Hsu, C., Yu, T., & Chen, W. (2011). The effect of surgeon empathy and emotional intelligence on patient satisfaction. *Advances in Health Sciences Education, 16*(5), 591-600. doi: 10.1007/s10459-011-9278-3

Wen-Yu, C., Yuan-Duen, L., & Tsai-Yuan, L. (2010). Performance evaluation criteria for personal trainers: An analytical hierarchy process approach. *Social Behavior & Personality: An International Journal, 38*(7), 895-905. doi: 10.2224/sbp.2010.38.7.895

West, S. G., Taylor, A. B., & Wu, W. (2012). Model fit and model selection in structural equation modelling. In R. H. Hoyle (Ed.), *Handbook of structural equation modelling* (pp. 209-231). New York: The Guilford Press.

Wilson, P. M., Longley, K., Muon, S., Rodgers, W., & Murray, T. C. (2006). Examining the contributions of perceived need satisfaction to psychological well-being in exercise. *Journal of Applied Biobehavioural Research, 11*(3-4), 243-264. doi: 10.1111/j.1751-9861.2007.00008.x

Wilson, P. M., & Rogers, T. W. (2008). Examining relationships between perceived psychological need satisfaction and behavioral regulations in exercise. Journal of *Applied Biobehavioral Research, 13*(3), 119-142. doi: 10.1111/j.1751-9861.2008.00031.x

Wilson, P. M., Rogers, W. T., Rodgers, W. M., & Wild, T. C. (2006). The psychological need satisfaction in exercise scale. *Journal of Sport & Exercise Psychology, 28*(3), 231-251. doi: 10.1123/jsep.28.3.231

Wong, C., & Law, K. S. (2002). The effects of leader and follower emotional intelligence on performance and attitude: An exploratory study. *The Leadership Quarterly, 13*(3), 243-274. doi: 10.1016/S1048-9843(02)00099-1

Wormald, H., Waters, H., Sleap, M., & Ingle, L. (2006). Participants' perceptions of a lifestyle approach to promoting physical activity: Targeting deprived communities in Kingston-upon-Hull. *BMC Public Health, 6*, 202-12. doi: 10.1186/1471-2458-6-202

Xu, H. I., & Tracey, T. J. G. (2015). Reciprocal influence model of working alliance and therapeutic outcome over individual therapy course. *Journal of Counseling Psychology, 62*(3), 351-359. doi: 10.1037/cou0000089

Yan, Z., Berger, B. G., Tobar, D. A., & Cardinal, B. J. (2015). Comparison of American and Chinese college students' reasons for exercise, exercise enjoyment and self-efficacy. *International Journal of Applied Sports Sciences, 27*(1), 34-50

Yang, S. X., & Jowett, S. (2012). Psychometric properties of the Coach–Athlete relationship questionnaire (CART-Q) in seven countries. *Psychology of Sport & Exercise, 13*, 36-43. doi: 10.1016/j.psychsport.2011.07.010

Yang, S. X., & Jowett, S. (2013). Conceptual and measurement issues of the complementarity dimension of the coach–athlete relationship across cultures. *Psychology of Sport & Exercise, 14*, 830-841. doi: 10.1016/j.psychsport.2013.06.003

Yang, S.X, Jowett, S., & Chang, Effects of big-five personality traits on the quality of relationship and satisfaction in Chinese coach–athlete dyads. *Scandinavian Journal of Medicine and Science in Sports, 25*, 568-580. doi: 10.1111/sms.12329

Yu, J., & Kirk, M. (2008). Measurement of empathy in nursing research: Systematic review. JAN, *64*(5), 440-454, doi: 10.1111/j.1365-2648.2008.04831.x

Zeidner, M., & Kloda, I. (2013). Emotional intelligence (EI), conflict resolution patterns, and relationship satisfaction: Actor and partner effects revisited. *Personality and Individual Differences, 54*(2), 278-283. doi: 10.1016/j.paid.2012.09.013

Zeidner, M., Matthews, G., & Roberts, R. D. (2004). Emotional intelligence in the workplace: A critical review. *Applied Psychology, 53*(3), 371-399. doi: 10.1111/j.1464-0597.2004.00176.x

Zijlmans, L. J. M., Embregts, P. J. C. M., Gerits, L., Bosman, A. M. T., & Derksen, J. J. L. (2015). The effectiveness of staff training focused on increasing emotional intelligence and improving interaction between support staff and clients. *Journal of Intellectual Disability Research, 59*(7), 599-612. doi: 10.1111/jir.12164

Appendix One. Informed consent information for participants. Study One.

'An investigation into the characteristics of inter-personal relationships in exercise settings'

Louise Rowe from the University of Cumbria would like to invite you to take part in a research project. The aim of my research is to investigate the relationship which exists between clients and their personal trainer / exercise professional. Although we think that this relationship is very important in supporting clients to reach their goals it hasn't previously been a focus of investigation. The study is designed to try and identify how important the relationship is and what the important features of this bond might be. This research may be used to provide better training and practice by professionals working in this field.

You will be asked to take part in an interview. This will ask you to reflect on your perceptions of the relationship that you have developed with your trainer / client. You may be asked to describe how you work together, and your thoughts and feelings about this relationship. This will last approximately 35 - 60 minutes. Your trainer / client will also be asked to reflect on your relationship with you in a separate interview. Therefore, if there is any personal information that you do not want them to disclose to me during the interview you are asked to inform them before you take part in the study.

The conversations will be recorded on a digital voice recorder. These recordings will only identify you by first name and will be stored on a password protected computer. All information will be kept in a confidential manner, and pseudonyms will be used in the writing up of the data. Voice recordings and written data will be destroyed after 5 years.

Participation in this study is entirely voluntary and you may withdraw from it at any point and request that your data is not used.

If you require any further information about this project my contact details are given below.

Louise Rowe: Tel: 01524 526522. Mobile: 07572242298. e-mail: louise.rowe@cumbria.ac.uk

Appendix Two. Institutional ethical approval for Study One.

From: Jacqueline Green [mailto:J.A.Green@lboro.ac.uk]
Sent: 09 May 2011 15:59
To: Sophia Jowett
Cc: Rowe, Louise
Subject: Ethics Checklist

I can confirm that your ethics checklist:

An exploration into the conceptual basis of the client-practitioner interpersonal relationship in physical activity settings

has been signed.

Thanks

Jackie

Appendix Three. Study One. Client and Trainer Interview schedules (including tables for recording demographic information pre-interview)

Demographics and coding: Pre-interview.

Client / Trainer Code	
Age	
Instructor / Client	
Gender	M / F
Relationship length (weeks)	
Highest level of education	
Client referral (Self vs GP referred)	
Key outcomes expected	

Questions:-

1. Pre-meeting history (context)

Client version: *'I'd like you to reflect on how you came to the decision to hire a personal trainer join this scheme and how you chose the person you did'.*

Trainer version: *'How did your client contact you and did you have any preconceptions of them at this point?'*

2. The initial consultation (first encounter)

Client version: *'I'd like you to think back to the initial consultation you had and describe your experiences in as much detail as possible. In particular I'd like you to concentrate on your initial thoughts and feelings towards the trainer and what you felt about your relationship.'*

'I'd like you to think back to the initial consultation you had and describe your experiences with this client in as much detail as possible. In particular I'd like you to concentrate on your

initial thoughts and feelings towards the client and your perceptions of how the relationship might develop?'

3. <u>Subsequent sessions (relationship development)</u>

Client version: *'Now I would like you to reflect on the way in which you relationship with your trainer has evolved over your time together, how things have changed and developed between the two of you?'*

Trainer version: *'Now I would like you to reflect on the way in which you relationship with the client has evolved over the last 6 – 8 weeks and try and describe how things have changed and developed in the relationship?'*

4. <u>Views for the future</u>

Client version*: 'Now I'd like you to tell me about the future course of this relationship. Where do you see things going in the future?'*

Trainer version: *'Now I'd like you to tell me about the future course of this relationship. Where do you see things going in the future?'*

Both versions: '*Finally, is there anything else that you want to mention about this relationship that we may not have already covered in this interview?'*

Appendix Four. Code category definitions for study one.

Code Title	Definition
Closeness	
Caring	Quotes which indicate that care and concern has (or has not) been shown for more personal /emotional aspects or the person as a whole.
Liking	Quotes indicating that they like their partner or referring to aspects of their character that they find likeable
Bond	Quotes where the interviewee refers to the close tie, established attachment or bond within the relationship.
Respect	Quotes in which the interviewee directly mentions their respect for their partner or the comment reflects feelings of admiration for the other. Also comments relating to satisfaction about how the other has esteemed or (not) embarrassed them.
Trust	Comments which talk directly about trust in the relationship in relation to their partner's abilities, behaviours or personal integrity.
Genuineness	Quotes indicating the interviewee perceives the other dyad member as honest and has their best interests at heart.
Friendship	Quotes which talk about the relationship having developed into a friendship extending beyond purely professional interactions or the other dyad member being perceived as a friend rather than a client.
Commitment	
Dedication	Comments reflecting a desire to commit to the relationship or a direct statement of the intention to maintain the relationship in the future.
Belief in expertise	Quotes which reflect the interviewee's cognitions or beliefs about their partner's skills or knowledge which are instrumental to achieving positive outcomes.
Goals	Comments which reflect the interviewee's focus on negotiating or setting targets and goals for the relationship.
Confidence	Comments relating directly to the perception that their partner has helped them to become more confident
Personal development	Interviewee talks about how the relationship has provided them with additional benefits beyond expected gains in health and fitness.
Complementarity	
Tasks and Roles	The interviewee talks about how they or the other dyad member has provided or adapted the exercises prescribed or ways of working to reach mutually agreed goals.
Make comfortable	Interviewee talks about being made to feel comfortable, easy or relaxed or concerned with making the other person feel at ease, relaxed or comfortable.
Giving and following advice	Quotes talking about giving or being given information, education and advice or comments about willingness to follow instructions and advice.
Investing Effort	Quotes which comment on the amount of effort that they or the other dyad member is (or isn't) putting in to tasks or activities.

Friendly behaviour	Quotes referring to the friendly, affable or welcoming disposition / behaviour of their partner or about the interviewee's attempt to employ such behaviours.
Encouragement	Comments which mention giving or being in receipt of encouraging words, non-verbal cues or behaviour.
Listening	Quotes where the interviewee talks about the importance of listening to their partner or being listened to.
Responsiveness	Comments which refer to how readily or enthusiastically the ideas or approaches of one dyad member are received by the other.
Co-orientation	
Understanding	Interviewee's comment on their perception that their partner understands their needs or that they understand the other's needs.
Openness	Comments mentioning the willingness of themselves or the other dyad member to disclose more personal information about themselves.
Relationship antecedents	
Getting results	Quotes where the interviewee talks about achieving goals, seeing improvements or hitting targets
Things in common	Comments which talk about the importance of sharing common ground or shared interest in activities with the other.
Personality / Style	Quotes where one dyad member talks about the personality or interaction style of the other.
Relationship length	Comments which mention the historical influence of time spent together as facilitating relationship quality.
Role model	Quotes where one dyad member comments on the physical appearance or personal achievements of the other as providing a positive (or negative) example.
Personal challenge	Comments which indicate that the interviewee sees the other as able to wider personal benefit or career development for themselves.

Appendix Five. Institutional ethical approval for Study Two.

Charlotte Barradell

From: ssehs res ent
Sent: 03 July 2015 10:51
To: Sophia Jowett
Cc: Louise Rowe
Subject: Ethical Clearance

Reference Number: SSEHS-1861

Dear Dr Munir,

I can confirm that your ethics checklist:

Validation of a questionnaire to measure the quality of the client-practitioner relationship in physical activity settings

Has been approved. The reference number is SSEHS-1861

Kind regards
Charlotte Barradell
Administration and Finance Office, JB211
School of Sport, Exercise and Health Sciences
Loughborough University
Loughborough
Leicestershire LE11 3TU
Tel: +44 (0) 1509 226416

Appendix Six. E-mail invitations and follow-up invitations for Study Two.

First e-mail invitation:-

Dear 'INSERT NAME',

We (University of Cumbria) are conducting research into the client-practitioner working relationship. We are seeking to validate a questionnaire to measure the quality of this relationship and need your help. Would you be able to spare 15 minutes to complete an on-line questionnaire for us? Ethical clearance has been granted by Loughborough University and responses are anonymous.

We need as many trainers and clients to do this so if you are able to complete the questionnaire and / or forward the request to any of your clients that would be much appreciated. Please contact me at this e-mail address if you have any questions about this study.

Access the questionnaire here:- https://cumbria.onlinesurveys.ac.uk/ctrq

with thanks

Louise Rowe (Principal lecturer: Sport and Exercise Psychology)

Follow-up reminder.

Dear 'INSERT NAME',

Some weeks ago I sent an invitation to complete a questionnaire for a research study. We are still seeking more participants so I would welcome your help. If you've already done it, then please ignore this e-mail.

We are conducting research into the quality of the working relationship between personal trainers and their clients to discover what the important features of this relationship are and how it relates to relationship satisfaction. This is conducted by staff from the University of Cumbria and supervised by Loughborough University.

We are asking trainers to spare 15 minutes to complete a questionnaire on-line and forward the questionnaire link to their clients (or post on social media). Your data will be completely anonymous. We have a target of 300 trainers and 300 clients so need to reach as many people as possible.

Access the questionnaire here:- https://cumbria.onlinesurveys.ac.uk/ctrq

with thanks,

Louise Rowe (Principal lecturer: Sport and Exercise Psychology)

Appendix Seven: Study Two. Instructions for client and trainer panels.

Appendix Seven:

Thank-you for agreeing to review my questionnaire. I've provided some background details about the purpose of the questionnaire and some guidance to help you review it below.

1. Are the instructions for completing the questionnaire clear, unambiguous and easy to follow?

2. Is the layout and sequencing of the questionnaire adequate and acceptable?

3. Is the questionnaire easy to read and pleasant to follow overall?

4. Do you think there are any questions that should be included / has the questionnaire neglected any important aspects of the relationship?

5. Please look at each statement on the questionnaire and judge if it is good according to the features described below. If you find a question which could be improved, write your comments in the table below next to the item number.

Relevance: How relevant is the question to the quality of the relationship?

Clarity: Is the question easy to understand, clear and unambiguous?

Tone: Is the tone of the question suitable and not patronising, unethical, threatening or insulting?

Level: Is the wording of the questionnaire suitable for the linguistic ability, education, interest and intellectual capacity of the target population.

Item number	Comments

Appendix Eight: Study Two. Instructions for expert (psychologists) Panel detailing client questions)

Thank-you for agreeing to review my questionnaires. I've provided some background details about the purpose of the questionnaire and some guidance to help you review it below.

What is the purpose of the questionnaire?

I am aiming to design an instrument which can measure the quality and strength of the inter-personal relationship established between a personal trainer and client (PT – CRQ). There are 2 questionnaires, which are based on the 3 + 1Cs relationship model (Jowett, 2007). This can be used in future research to find out how important this relationship is, what the most important aspects of the relationship are and what variables affect it. These research outcomes can then be used by the personal training industry to improve both trainer and client experiences as well as customer retention.

How can you help me?

I would like your expert opinion on the questionnaire items for the client version only of the questionnaire before the main statistical analysis is completed to establish validity (80 items). In particular I'd like comments on the face and construct validity of the questions as well as the clarity of the items.

I've provided some questions below for guidance and provided space to make any notes.

THE 3 CS CONCEPTUAL MODEL (defined by Jowett, 2005)

The trainer–client relationship is defined by mutual and causal interdependence between trainers' and clients' feelings, thoughts and behaviours. Trainers' and clients' interconnected feelings, thoughts and behaviours have been operationalised and systematically studied through the constructs of Closeness, Commitment and Complementarity.

Closeness describes the emotional tone of the relationship and reflects the degree to which the trainer and client are connected or the depth of their ***emotional attachment***. Trainers and clients' expressions of liking, trust, respect and appreciation indicate a positive interpersonal and affective relationship.

Commitment reflects trainers and clients' ***intention or desire to maintain their working partnership*** over time; it is viewed as a cognitive representation of connection between the trainer and the client.

Complementarity defines the ***interaction between the trainer and the client that is perceived as cooperative and effective***. Complementarity reflects the affiliation motivation of interpersonal behaviours and includes behavioural properties, such as being responsive, friendly, at ease and willing.

Your Review.

1. Please look at each item on the CTRQ and evaluate it according to the features listed below. Rate the item from 1 – 3 (1 being low / poor, 3 being medium and 3 being high / good on the item list.

Construct Validity: Does the item obviously address only Closeness, Commitment or Complementarity? (see previous definitions).

Relevance: How relevant is the question to the quality of the relationship?

Clarity: Is the question easy to understand, clear and unambiguous?

Tone: Is the tone of the question suitable and not patronising, unethical, threatening or insulting?

Level: Is the wording of the questionnaire suitable for the linguistic ability, education, interest and intellectual capacity of the target population.

If you would like to add comments to specific questions please do so using the review function.

PT-CRQ – Client Version																	
.		Construct validity			Relevance			Clarity			Tone			Level			
1	I like my trainer	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
2	I am committed to my trainer	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
3	I appreciate the efforts my trainer is making to improve my health and fitness	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
4	I have clear goals for the future when I work with my trainer	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
5	When I work with my trainer I feel at ease	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
6	I respect my trainer	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
7	I would like to maintain the relationship with my trainer for as long as possible	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
8	When I work with my trainer I am organised	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
9	I trust my trainer	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
10	When I work with my trainer I believe in their skill and expertise	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
11	When I work with my trainer I feel reassured in my actions	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
12	I care about my trainer	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
13	This relationship with my trainer is important to me	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
14	I know how to approach my trainer	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
15	I have a warm relationship with my trainer	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
16	The relationship with my trainer helps me to improve my health and fitness	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
17	I respond readily to my trainer's efforts	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
18	I have a genuine interest in our achievements	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
19	When I work with my trainer I am confident of positive outcomes	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
20	When I work with my trainer I am clear about what I have to do	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
21	I admire my trainer	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
22	I am willing to invest extra effort with this trainer compared to others	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
23	When I work with my trainer I feel relaxed	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
24	I am always honest with my trainer	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	

25	The relationship with my trainer is strong enough to overcome minor setbacks	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
26	I readily seek my trainer's views and opinions	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
27	I find my trainer's personal qualities attractive	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
28	I would not like to lose this trainer	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
29	I feel able to adapt to my trainer's needs	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
30	I enjoy spending time in my trainer's company	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
31	I will have a close relationship with my trainer for the foreseeable future	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
32	I cooperate easily with my trainer	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
33	I have a friendly relationship with my trainer	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
34	I want to try hard to develop the relationship with my trainer.	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
35	I pay attention to what my trainer says	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
36	I have a close bond with my trainer	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
37	I am receptive to my trainer's ideas	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
38	I value my trainer	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
39	When I work with my trainer I adopt a friendly stance	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
40	When I work with my trainer I know what they need	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
	Meta-Perceptions															
41	My trainer likes me	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
42	My trainer is committed to me	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
43	My trainer appreciates the efforts I make to improve my health and fitness	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
44	My trainer believes I have clear goals for the future	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
45	When I work with my trainer he / she feels at ease	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
46	My trainer respects me	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
47	My trainer would like to maintain this relationship for as long as possible	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
48	When I work with my trainer he / she knows I am organised	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
49	My trainer trusts me	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
50	My trainer believes in my skill and expertise	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
51	My trainer feels reassured when I work with them	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3

52	My trainer cares about me	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
53	My trainer believes this relationship is important to him / her	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
54	My trainer knows how to approach me	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
55	My trainer has a warm relationship with me	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
56	My trainer thinks that this relationship will help me to develop my health and fitness	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
57	My trainer responds readily to my efforts	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
58	My trainer has a genuine interest in our achievements	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
59	When I work with my trainer he / she is confident of positive outcomes	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
60	When I work with my trainer he / she is clear about what he / she has to do	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
61	My trainer admires me	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
62	My trainer is willing to put extra effort into this relationship compared to other trainers with their clients	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
63	When I work with my trainer he / she feels relaxed	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
64	My trainer is always honest with me	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
65	My trainer would not let minor setbacks affect our relationship	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
66	My trainer readily seeks my views and opinions	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
67	My trainer finds my personal qualities attractive	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
68	My trainer would not like this relationship to end	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
69	My trainer is able to adapt to my needs	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
70	My trainer enjoys spending time in my company	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
71	My trainer wants a close relationship with me for the foreseeable future	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
72	My trainer cooperates easily with me	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
73	My trainer has a friendly relationship with me	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
74	My trainer wants to try hard to develop our relationship	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
75	My trainer pays attention to what I say	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
76	My trainer has a close bond with me	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
77	My trainer is receptive to my ideas	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
78	My trainer values me	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3

79	My trainer adopts a friendly stance towards me	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
80	When I work with my trainer he / she knows what I need	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3

The End. Thank-you.

Appendix Nine. Bristol online survey questionnaire for Study Two.

Client-Trainer Relationship Questionnaire

Page 1

Thank you for choosing to complete this survey. It is designed to assess the quality of the personal trainer-client relationship in health and fitness settings and find out how important relationship quality is to relationship satisfaction. The survey is completed anonymously and should take about 15 minutes to complete. Please answer every question.

Thank you

About you

What is your gender?

O Male O Female

What is your age?

What is your ethnicity?

Please indicate your highest educational qualification

Where do you live?

If you selected Other, please specify

Who are you?

O Trainer O Client

About you – Trainers

In which sector do you work predominantly?

O Personal training with private clients

O GP referral or other specialist scheme

O Other

If you selected Other, please specify:

How long have you worked as a trainer in health and fitness? **Required*

Do you work full or part-time?

How many clients do you currently work with?

CTRQ Personal Trainer Version – Direct

Please think of ONE client that you currently work with, have seen recently and have been working with for at least 6 weeks. In the questions below you will see a series of statements. Please read each one carefully, then indicate the respo0nse which best describes your relationship.

Please answer as honestly as possible. There are no right or wrong answers.

I like my client

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I am committed to my client

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I appreciate the efforts my client is making to improve their health and fitness

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my client I know what I'm trying to achieve

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my client I feel at ease

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I respect my client

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I would like to maintain the relationship with my client for as long as possible

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my client I am organised (e.g. well prepared and punctual)

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I trust my client

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my client I believe in their abilities

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my client I feel encouraged

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I care about my client

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

The relationship with my client is important to me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I know how to interact with my client

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I have a warm relationship with my client

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

The relationship with my client helps me to achieve my career goals

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I respond readily to my client's efforts

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I have a genuine interest in our achievements

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my client I am confident of positive outcomes

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my client I am clear about what I have to do

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I have a high regard for my client

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my client I feel relaxed

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I put in extra effort with this client compared to others I work with

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I feel I can be honest with my client

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I can seek my client's views and opinions if needed

1	2	3	4	5	6	7

Strongly disagree	☐	☐	☐	☐	☐	☐	☐ Strongly agree

I would not let minor setback affect the relationship with my client

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I would like to keep working with my client

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I know how to respond to my client's needs and requests

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I enjoy spending time in my client's company

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I will have a good connection with my client for the foreseeable future

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I cooperate easily with my client

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I have a friendly relationship with my client

1	2	3	4	5	6	7

Strongly disagree	☐	☐	☐	☐	☐	☐	☐ Strongly agree

I try hard to make the relationship with my client work

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I pay attention to what my client says

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I have a good bond with my client

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I am receptive to my client's ideas

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I value my client

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I take a friendly approach towards my client

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my client I know what they expect of me

1	2	3	4	5	6	7

Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

CTRQ Personal Trainer Version – Metaperspective

The following questions ask you to keep the same client in mind but to evaluate, to the best of your ability, your perceptions about how you think he/she would describe their relationship with you. Please answer as honestly as possible. There are no right or wrong answers.

My client like me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client is committed to me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client appreciates the efforts I make to improve their health and fitness

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client knows what I am trying to achieve when I work with him/her

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my client I feel at ease

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client respects me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client would like to maintain this relationship for as long as possible

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my client he/she knows I am organised (e.g well prepared and punctual)

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client trusts me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client believes in my abilities

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client feels encouraged when I work with them

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client cares about me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client believes this relationship is important for them

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client knows how to interact with me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client has a warm relationship with me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client thinks that this relationship will help me to achieve my career goals

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client responds readily to my efforts

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client has a genuine interest in our achievements

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my client he/she is confident of positive outcomes

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my client he/she is clear about what he/she has to do

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client has a high regard for me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client puts in extra effort with me compared to other trainers they have had (or could have)

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my client they feel relaxed

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client feels he/she can be honest with me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client can seek my views and opinions if needed

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client would not let minor setbacks affect our relationship

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client would like to continue working with me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client knows how to respond to my needs and request

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client enjoys spending time in my company

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client expects to have a good connection with me for the foreseeable future

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client cooperates easily with me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client has a friendly relationship with me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client tries hard to make out relationship work

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client pays attention to what I say

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client has a good bond with me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client is receptive to my ideas

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client values me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My client takes a friendly approach towards me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my client he/she knows what I expect of them

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

About you – Clients

In which sector do you work with your trainer?

O Private personal training O GP referral or other specialist scheme O Other

If you selected Other, please specify:

CTRQ Client Version – Direct

Please think of the personal trainer you are currently working with (or interact with most regularly). In the questions below you will see a series of statements. Please read each one carefully, then indicate the response which best describes your relationship. Please answer as honestly as possible. There are no right or wrong answers.

I like my trainer

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I am committed to my trainer

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I appreciate the efforts my trainer is making to improve my health and fitness

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my trainer I feel at ease

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I respect my trainer

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I would like to maintain the relationship with my trainer for as long as possible

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my trainer I am organised (e.g. pay on time, punctual and prepared for appointments)

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I trust my trainer

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my trainer I believe in their abilities

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my trainer I am encouraged in my actions

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I care about my trainer

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

The relationship with my trainer is important to me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I know how to interact with my trainer

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I have a warm relationship with my trainer

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

The relationship with my trainer helps me to achieve my goals

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I respond readily to my trainer's efforts

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I have a genuine interest in our achievements

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my trainer I am confident of positive outcomes

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my trainer I am clear about what I have to do

1	2	3	4	5	6	7

Strongly disagree	☐	☐	☐	☐	☐	☐	☐ Strongly agree

I have a high regard for my trainer

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I put in extra effort with this trainer compared to other trainers I have had (or could have)

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my trainer I feel relaxed

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

The relationship with my trainer is strong enough to overcome minor setbacks

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I can be honest with my trainer

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I am able to ask my trainer's views and opinions

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I would like to keep working with my trainer

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I know how to respond to my trainer's requests

1	2	3	4	5	6	7

Strongly disagree	☐	☐	☐	☐	☐	☐	☐ Strongly agree

I enjoy spending time in my trainer's company

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I will have a good connection with my trainer for the foreseeable future

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I cooperate easily with my trainer

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I have a friendly relationship with my trainer

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I try hard to make the relationship with my trainer work

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I pay attention to what my trainer says

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I have a good bond with my trainer

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I am receptive to my trainer's ideas

1	2	3	4	5	6	7

Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I value my trainer

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I take a friendly approach towards my trainer

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my trainer I know what they expect of me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

CTRQ Client Version – Metaperspective

The following questions ask you to evaluate, to the best of your ability, your perceptions about how you think your trainer would describe their relationship with you. Please answer as honestly as possible. There are no right or wrong answers.

My trainer likes me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer is committed to me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer appreciates the efforts I make to improve my health and fitness

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer knows what I'm trying to achieve when I work with him/her

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my trainer he/she feels at ease

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer respects me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer would like to maintain this relationship for as long as possible

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my trainer he/she knows I am organised (e.g. pay on time, punctual and prepared)

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer trusts me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer believes in my abilities

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer is encouraged when I work with him/her

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer cares about me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer believes this relationship is important to him/her

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer knows how to interact with me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer has a warm relationship with me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer believes this relationship will help me to achieve my goals

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer responds readily to my efforts

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer has a genuine interest in our achievements

1	2	3	4	5	6	7

Strongly disagree	☐	☐	☐	☐	☐	☐	☐ Strongly agree

When I work with my trainer he/she is confident of positive outcomes

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer has high regard for me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my trainer he/she is clear about what he/she has to do

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer puts extra effort into this relationship compared with other trainers and their clients

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my trainer he/she feels relaxed

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer is able to be honest with me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer would not minor setbacks affect our relationship

1	2	3	4	5	6	7

Strongly disagree	☐	☐	☐	☐	☐	☐	☐ Strongly agree

My trainer is able to ask my views and opinions

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer would like to keep working with me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer is able to adapt to my requests

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer enjoys spending time in my company

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer expects to have a good connection with me for the foreseeable future

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer cooperates easily with me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer has a friendly relationship with me

1	2	3	4	5	6	7

Strongly disagree	☐	☐	☐	☐	☐	☐	☐ Strongly agree

My trainer tries hard to make our relationship work

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer pays attention to what I say

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer has a good bond with me (Please note reverse scoring on this question)

	1	2	3	4	5	6	7	
Strongly agree	☐	☐	☐	☐	☐	☐	☐	Strongly disagree

My trainer is receptive to my ideas

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer values me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

My trainer takes a friendly approach towards me

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

When I work with my trainer he/she knows what I expect of them

1	2	3	4	5	6	7

Strongly disagree	☐	☐	☐	☐	☐	☐	☐ Strongly agree

About your relationship

How long have you worked with your trainer?

What gender is your trainer/client?

The following questions as you to report how satisfied you are with the quality of your relationship in general.

I am satisfied with our relationship

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

Our relationship does a good job of fulfilling my needs

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

Our relationship is better than most other trainer-client relationships

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

Our relationship is close to ideal

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

I enjoy the relationship we have developed

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

The End

You have now completed the survey.

Thank you

Key for selection options

3 – What is your ethnicity
White
Asian/Asian British
Black/African/Caribbean/Black British
Mixed/Multi ethnic groups
Other

4 – Please indicate your highest educational qualification
GCSE or other school leaver's certificate
A Level, NVQ or other level 3 qualification
Degree
Masters degree
Post Graduate Teaching Qualification
Doctoral degree

5- Where do you live?
England
Scotland
Wales
Northern Ireland
Eire
Other

8 – How long have you worked as a trainer in health and fitness?
Less than 6 months
6-11 months
1-2 years
3-5 years
6-10 years
More than 10 years

9 – Do you work full or part-time?
Part time

Full time
10 – How many clients do you currently work with?
1-10
11-20
21-30
More than 30

167- How long have you worked with your trainer/client?
5-10 weeks
10-15 weeks
4-6 months
7-12 months
More than 1 year

168- What gender is your trainer/client
Male
Female

Appendix Ten. Questionnaire for Study Three.

Client-Trainer relationships research survey.

Dear exerciser,

We are looking for regular exercisers who are using the services of a personal trainer or exercise instructor to help us conduct a research study. The study aims to investigate how the emotional intelligence of fitness professionals impacts on the working relationship and clients' perceptions of exercise.

If you have been working with your trainer for 3 weeks or more you can help by completing this anonymous questionnaire and returning it in the stamped addressed envelope provided. You should allow up to 15 minutes to complete it.

You will be asked to answer a series of questions about your perceptions of your trainer's characteristics, your perceptions of your relationship and how you feel generally about exercise. We will not ask for information that can identify you personally and all data collected are stored anonymously.

If you have any questions about this research or would like any more information you can contact Louise Rowe (Principal Lecturer in Sport) at the University of Cumbria.

E-mail: louise.rowe@cumbria.ac.uk

Section One: About You.

1. What is your gender? ☐ Male ☐ Female

2. What is your age? _____

3. What is your ethnicity?

☐ Asian / Asian British

☐ Black / African / Caribbean / Black British

☐ White

☐ Mixed / Multiple ethnic group

4. In what context do you work with your trainer?

☐ Private personal training

☐ GP referral / other specialist population group

☐ Other. Please state.

_____

5. Which of the following best describes the way you work with your trainer?

☐ On a one-to-one basis

☐ As part of a group or class

☐ Other

6. What is your trainer's gender? ☐ Male ☐ Female

7. How long have you been working with your trainer?

☐ 3 – 9 weeks

☐ 10 –16 weeks

☐ 4 – 6 months

☐ 7 – 12 months

☐ More than 1 year

8. Please answer **ONE** question in the table below which best reflects your exercise habits **BEFORE** you started using your current trainer.

Please tick ONE

I was not exercising but thinking of doing something to start	
I was exercising occasionally (but only about half as much as I do now)	
I was exercising as much as I do now but for LESS THAN 6 months before using my trainer	
I was exercising as much as I do now for MORE THAN 6 months before using my trainer	

Section Two: About Your trainer

Your trainer's characteristics.

These questions ask you to agree or disagree with each statement about your impression of your trainer's character. Do not think too long about the exact meaning of each statement. Work quickly and answer every question as accurately as possible by circling one number. There are no right or wrong answers.

1…..…..2…..…..3…..…..4…….5…..…..6…..…..7 **Completely disagree**	**Completely agree**							
9	Expressing his / her emotions with words is not a problem for my trainer	1	2	3	4	5	6	7
10	My trainer often finds it difficult to see things from my viewpoint	1	2	3	4	5	6	7
11	On the whole my trainer is a highly motivated person	1	2	3	4	5	6	7
12	My trainer finds it easy to regulate his / her emotions	1	2	3	4	5	6	7
13	My trainer generally doesn't find life enjoyable	1	2	3	4	5	6	7
14	My trainer can deal effectively with people	1	2	3	4	5	6	7
15	My trainer tends to change his / her mind frequently	1	2	3	4	5	6	7
16	My trainer seems not to be able to figure out what emotion he / she is feeling	1	2	3	4	5	6	7
17	My trainer feels that he / she has a lot of good qualities	1	2	3	4	5	6	7
18	My trainer often finds it difficult to stand up for him / herself	1	2	3	4	5	6	7
19	My trainer is usually able to influence the way other people feel	1	2	3	4	5	6	7
20	On the whole my trainer has a gloomy perspective on most things	1	2	3	4	5	6	7
21	My trainer often doesn't treat those close to him / her right	1	2	3	4	5	6	7
22	My trainer often finds it difficult to adjust their approach according to the circumstances	1	2	3	4	5	6	7
23	On the whole my trainer is able to deal with stress	1	2	3	4	5	6	7
24	My trainer is able to show affection to others	1	2	3	4	5	6	7
25	My trainer is able to "get into someone's shoes" and experience their emotions	1	2	3	4	5	6	7
26	My trainer is able to keep themselves motivated	1	2	3	4	5	6	7
27	My trainer is able to control his / her emotions when they want to	1	2	3	4	5	6	7
28	My trainer seems pleased with their life on the whole	1	2	3	4	5	6	7
29	My trainer is a good negotiator	1	2	3	4	5	6	7
30	My trainer seems to get involved in some things they later wish they could get out of	1	2	3	4	5	6	7
31	My trainer often pauses to think about his / her feelings	1	2	3	4	5	6	7
32	My trainer believes he / she is full of personal strengths	1	2	3	4	5	6	7
33	My trainer tends to "back down" even if they know they are right	1	2	3	4	5	6	7
34	My trainer seems to have no power over other peoples' feelings	1	2	3	4	5	6	7
35	My trainer believes that everything in his / her life will work out fine	1	2	3	4	5	6	7
36	My trainer finds it difficult to bond well with others, including those close to him / her	1	2	3	4	5	6	7
37	Generally my trainer adapts well to new environments	1	2	3	4	5	6	7
38	I admire my trainer for being relaxed	1	2	3	4	5	6	7

Direct relationship perceptions

These questions ask you to tell us what you think about your relationship with your trainer. Please answer every question as honestly as possible. There are no right or wrong answers.

	1…..…..2…..…..3…..…..4…….5...…..6…..…..7							
	Strongly disagree							**Strongly agree**
39	I like my trainer	1	2	3	4	5	6	7
40	I am committed to my trainer	1	2	3	4	5	6	7
41	I appreciate the efforts my trainer is making to improve my health and fitness	1	2	3	4	5	6	7
42	When I work with my trainer I feel at ease	1	2	3	4	5	6	7
43	This relationship with my trainer is important to me	1	2	3	4	5	6	7
44	I respect my trainer	1	2	3	4	5	6	7
45	I respond readily to my trainer's efforts	1	2	3	4	5	6	7
46	This relationship with my trainer is strong enough to overcome minor setbacks	1	2	3	4	5	6	7
47	I trust my trainer	1	2	3	4	5	6	7
48	I am receptive to my trainer's ideas	1	2	3	4	5	6	7
49	I will have a good connection to my trainer for the foreseeable future	1	2	3	4	5	6	7
50	I take a friendly approach towards my trainer	1	2	3	4	5	6	7

Your meta-perceptions

These questions ask you to evaluate, to the best of your ability, your perceptions of how you think your trainer would describe their relationship with you. Please answer every question as honestly as possible. There are no right or wrong answers.

	1…..…..2…..…..3…..…..4…….5…..…..6…..…..7							
	Strongly disagree							**Strongly agree**
51	My trainer likes me	1	2	3	4	5	6	7
52	My trainer is committed to me	1	2	3	4	5	6	7
53	My trainer appreciates the efforts I make to improve my health and fitness	1	2	3	4	5	6	7
54	When I work with my trainer he / she feels at ease	1	2	3	4	5	6	7
55	My trainer believes our relationship is important to him / her	1	2	3	4	5	6	7
56	My trainer respects me	1	2	3	4	5	6	7
57	My trainer responds readily to my efforts	1	2	3	4	5	6	7
58	My trainer would not let minor setbacks affect our relationship	1	2	3	4	5	6	7
59	My trainer trusts me	1	2	3	4	5	6	7
60	My trainer is receptive to my ideas	1	2	3	4	5	6	7
61	My trainer expects to have a good connection with me for the foreseeable future	1	2	3	4	5	6	7
62	My trainer takes a friendly approach towards me	1	2	3	4	5	6	7

Section Three: Your feelings towards exercise.

These questions ask you how you feel about the exercise you do. Please answer every question.

		1……..2……..3…….4…….5				
	I don't agree at all				**I Completely agree**	
63	I feel I have made a lot of progress in relation to the goal (s) I want to achieve	1	2	3	4	5
64	The way I exercise is in agreement with my choices and interests	1	2	3	4	5
65	I feel I perform the activities of my exercise programme successfully	1	2	3	4	5
66	My relationships with my trainer and other people I might exercise with is / are very friendly	1	2	3	4	5
67	I feel that the way I exercise is the way I want to	1	2	3	4	5
68	I feel exercise is an activity I do very well	1	2	3	4	5
69	I feel I have excellent communication with the person or people I exercise with	1	2	3	4	5
70	I feel the way I exercise is a true expression of who I am	1	2	3	4	5
71	I am able to meet the requirements of my exercise programme	1	2	3	4	5
72	My relationships with my trainer and other people I might exercise with is / are close	1	2	3	4	5
73	I feel that I have the opportunity to make choices with regard to the way I exercise	1	2	3	4	5
74	I exercise because it is fun	1	2	3	4	5
75	I enjoy my exercise sessions	1	2	3	4	5
76	I value the benefits of exercise	1	2	3	4	5
77	I find exercise a pleasurable activity	1	2	3	4	5
78	It is important for me to exercise regularly	1	2	3	4	5
79	I get pleasure and satisfaction from exercise	1	2	3	4	5
80	It is important to make an effort to exercise regularly	1	2	3	4	5
81	I get restless if I don't exercise regularly	1	2	3	4	5

Section Four: Your energy and well-being

These questions ask you to indicate how you generally feel when you engage in exercise. Please answer every question.

		1…..…..2…..…..3…..…..4…….5……..6					
	Strongly disagree					**Strongly agree**	
82	I feel alive and vital	1	2	3	4	5	6
83	I feel so alive I just want to burst	1	2	3	4	5	6
84	I have energy and spirit	1	2	3	4	5	6
85	I look forward to each new day	1	2	3	4	5	6
86	I feel alert and awake	1	2	3	4	5	6
87	I feel energised	1	2	3	4	5	6

You have now completed the survey. Thank-you.

Please return your completed survey in the stamped addressed envelope supplied.