

IMPACT OF SELF DETERMINATION THEORY AMONGST INDIVIDUALS WITH
AUTISM SPECTRUM DISORDER AND PHYSICAL ACTIVITY: MODIFYING A
SURVEY

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ABSTRACT

IMPACT OF SELF DETERMINATION THEORY AMONGST INDIVIDUALS WITH AUTISM SPECTRUM DISORDER AND PHYSICAL ACTIVITY: MODIFYING A SURVEY

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Prior research has expressed concern for individuals with autism spectrum disorder (ASD), who may be at risk regarding exercise and physical activity due to lack of interest, delays in motor skill development, and/or social impairment. Self Determination theory (SDT) has been suggested as an effective approach for supporting individuals with ASD across a variety of domains. SDT expresses that with the satisfaction of three fundamental psychological needs (autonomy, competence, and relatedness), higher levels of intrinsic motivation will develop which will lead to enhanced development and well-being. While SDT is an effective approach to promoting motivation, it has been suggested that appropriate support be integrated for this population. Evidence-based practices consist of appropriate strategies that aim to support individuals with ASD and produce positive outcomes. The purpose of this literature is to identify how SDT impacts the success of individuals with ASD through the implementation of autonomy, relatedness, and competence within multiple settings.

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INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder which causes various levels (i.e., Level 1, 2 3) and types (i.e., restricted and/or repetitive) of behaviors which impact social and communication skill development (Center for Disease Control [CDC], 2022). Individuals with ASD also experience significant disparities in overall independence and self-motivation (Schriber et al., 2014; Cheak-Zamora et al., 2020; Chou et al., 2016). An approach to support an individual's abilities to be independent and self-motivated is Self Determination Theory (SDT; Deci & Ryan, 1995).

SDT is a macro-theory that represents a broad framework for the study of human motivation and personality (Deci & Ryan, 2012). SDT aims to support individual's psychological needs through providing autonomy, competence, and relatedness to enhance learning, personality, and identity growth, and sustain behavior change (Ryan & Deci, 2000; Ryan et al., 2023). Within SDT, autonomy is defined as acting on the individual's own interests and values (Deci & Ryan, 1985). Relatedness is defined as experiencing a sense of connectedness and belonging to oneself and a community (Baumeister & Leary, 1995; Bowlby, 1979; Harlow, 1958; Ryan, 1995). Finally, competence is defined as the individual's ability to express their own capabilities of a skill or behavior (Deci, 1975; Harter, 1983; White, 1959).

The psychological needs within SDT provide us with the understanding on how to decide whether aspects of the environment are supportive or harmful towards an individual's development (Reeve et al., 2004). When all three psychological needs are

satisfied, desired outcomes occur (Sheldon & Niemiec, 2006). To satisfy these needs for individuals with ASD, it is suggested to utilize evidence-based approaches (Ryan et. al., 2023; Shogren et. al., 2012; Shogren & Ward, 2018; Wehmeyer et. al, 2010). The purpose of this literature review is to identify how SDT impacts the success of individuals with ASD through the implementation of autonomy, relatedness, and competence within multiple settings.

LITERATURE REVIEW

Autism Spectrum Disorder

With the brain being a complex organ with a wide range of functionality, and with synchronized activity among neuronal and non-neuronal cells, it inhibits individuals to perform a wide spectrum of activities with a variety of complexities (Verma et al., 2019). With the development of the human brain being a regulated process, any change may lead to unpredictable and harmful developmental deficits such as neurodevelopmental disorders (i.e., ASD, intellectual disability, and attention deficit hyperactivity disorder; Verma et al., 2019).

The Autism and Developmental Disabilities Monitoring Network (Maenner et. al, 2020) reported an estimate of about 1 in 36 children around the average age of 8 years old will be diagnosed with ASD. ASD appears in early development years and can be present throughout the entirety of a person's life, with symptoms improving as time passes with consistent support (American Psychiatric Association, 2023; CDC, 2022). Individuals with ASD often demonstrate mild (i.e., Level 1 or 2) to extensive (i.e., Level 2 or 3) social and communication needs (National Institute on Deafness and Other Communication Disorder, 2023). Early signs may also include a lack of language development, insistence on sameness throughout their day, a lack of engagement with their same-aged peers (CDC, 2022). While some behaviors for each individual can

improve with early and consistent support, there are also the chances of those behaviors of regressing if support is removed (Mughal et al., 2022).

Young individuals with ASD often have service needs in behavioral, educational, health, leisure, family support, and other areas (Hyman et al., 2020). Due to sedentary lifestyles individuals with ASD are at an increased risk for heart disease, diabetes, and obesity (World Health Organization, 2002). These sedentary lifestyles may be attributed to individuals with ASD often demonstrating delays in motor skill development (e.g., locomotor and object manipulation; Berkley et al., 2001; Hawks et al., 2020). In 2002, congress declared ASD to be a national health emergency, due to an annual increase of 10% to 17% in the United States, this led Physical Education programs to prioritize physical activity-based programs (Autism Society of America, 2002). Regular physical activity has benefits that include reduced risk of high blood pressure, diabetes, colon cancer, and physiological well-being (Warburton et al., 2006).

Physical Activity & ASD

Physical activity is categorized into two different categories: moderate intensity (heart rate is between 64% - 74% of maximum heart rate) and vigorous intensity (heart rate is between 77% - 93% of maximum heart rate, CDC; 2022). Lochbaum and Crews (2003) expresses that engaging in moderate-intensity physical activity for a minimum of 10-15 minutes in duration has been seen to be favorable in behavior change. With individuals with ASD being at special risk of heart disease, diabetes, and obesity; and because physical exercise has been expressed to be effective to prevent those issues exercise can support individuals with ASD (Sowa & Meulenbroek, 2012).

The CDC (2022) describes exercise to be a type of physical activity that incorporates planned, structured, and repetitive bodily movements to improve or maintain one or more components of physical fitness. Research has expressed a concern for individuals with ASD, who may be at risk regarding exercise and physical activity levels due to delays in motor skill development (Berkley et al., 2001; Lang et al., 2010). Although motor abilities for individuals with ASD may be a relative strength for a child, as time does go on the development of both gross and fine motor skills become an apparent issue amongst these young individuals (Council, 2001). With delays within their motor skill development, individuals with ASD may choose not to participate in physical activities due to skill complexities of physical exercise (Awamleh, 2014). The social and behavioral impairments experienced by children with ASD appear to make participation in structured and unstructured forms of physical activity more difficult (Must et al., 2015).

Self Determination Theory

SDT originated around the focus of intrinsic motivation, and later expanded towards the concept of extrinsic motivation and the factors of extrinsic behaviors as they vary to an individual's autonomy (Deci & Ryan, 1980; Ryan & Connell, 1989). Within SDT, the fundamental psychological needs (autonomy, relatedness, competence) are expressed as essential nutrients for progressive psychological growth, and well-being (Deci & Ryan, 2000). Organizations such as American Psychological Association (O'Hara, 2017), have expressed that with the research done by Ryan and Deci on SDT

presents clear indication that intrinsic motivation flourishes when these three human needs are satisfied. If these basic needs are not met, the individual may express tendencies, such as withdrawal, concern for others, and focus on oneself, or in more extreme cases, find themselves disengaged in social activities (Deci & Ryan, 2000). SDT has been applied in various domains, such as education (i.e., motivation), employment (i.e., job search, flexibility), sport and physical activity (i.e., activity engagement), health and medicine (i.e., nutrition, tobacco abstinence), parenting (i.e., parent-child relationship), media (i.e., eudaimonic), and psychotherapy (i.e., promoting personal integration; Theory-SDT.org, 2023).

Intrinsic and extrinsic motivation

SDT stems from the focus and applications of intrinsic motivation and is an advocate for its incorporation with behaviors. Motivation is a critical component when it comes to maintaining healthy behaviors (Ryan & Deci, 2017). Intrinsic motivation is acting upon something because it is inherently enjoyable, whereas extrinsic motivation is acting upon something because it leads to distinct outcomes (i.e., rewards, status; Ryan and Deci, 2000). When an individual's actions are driven by genuine motives, they have much more interest, engagement, confidence; thus, leading to elevated performances, creativity, and more grit as compared to individuals whose actions are externally motivated (Sheldon, et. al. 1997).

Autonomy

An essential component of SDT is the distinction between autonomous motivation and controlled motivation (Behzadnia et al., 2020; Hagger et al., 2014). Autonomy,

defined by Ryan and Deci (2017), is the need to self-regulate one's own experiences and actions, which expresses that an individual's behavior is consistent with the individual's own interests and values. In other words, the individual's behavior is "self-determined or intrinsically motivated." Controlled motivation on the other hand, is described as performing a behavior for external reward and/or pressure (i.e., trophy, popularity, status; Behzadnia et al, 2020; Hagger et al., 2014). Behaviors that are supportive of one's autonomy, individuals are more motivated to stay engaged, experience more enjoyment, enthusiasm, and confidence that may lead to enhanced performances (Behzadnia et al., 2020; Standage et al., 2008).

Autonomy and ASD

Parsi and Elster (2015) believed that when an individual is diagnosed with ASD, that within itself becomes a reason to question that individual's autonomy. Autonomy is an essential concept that deserves significant observation in understanding conditions such as ASD, as it accounts for a prior understanding of making one's own decision and acting upon the way one would want (Jennings 2016). The ideology of individuals with ASD generally needing more support as opposed to individuals without ASD is oftentimes taken as a precedent reasoning for their lack of capabilities in making their own decisions (Bloom, 2009). Support for autonomy has been demonstrated with experiencing greater intrinsic motivation (Deci & Ryan, 1985; 1991; 2000; Ryan & Deci, 2000; 2017), thus leading toward enhanced performance, positive emotion, persistent behavior, higher self-esteem (Reeve, 2009; Behzadnia et al., 2020), less stress (Milne et al., 2008), better physical and psychological health (Peddle et al., 2008).

Individuals have a need for control, and a strategy that can be utilized within a class setting that can support need within an educational setting could be flexibility within the schedule. Schedules can range from a whole day set of activities to a set of activities that need to be done within an hour. Therefore, within education we can look at this in a variety of ways such as students being able to organize their class schedule (i.e., period 1 art, period 2 P.E, etc.), or scheduling the activities that need to be done within a certain class period (i.e., first walk 3 laps, basketball drills, weight room, etc.). Higher satisfaction within its domain (i.e., employment, education, fitness) has been associated with individuals having access to schedule autonomy (Nadler et al., 2016).

Competence

Competence refers to experiencing progressive development in one's ongoing interaction within one's own community and having opportunities to demonstrate one's own abilities (Deci, 1975; Harter, 1983; White et al., 2021). This need to have a complete understanding and feel a sense of mastery of a task or skill and continue to seek out new learning opportunities is within all individuals (Ryan and Deci, 2017). The need for competence is the reason individuals express persistent behavior, effective focus, and seek out optimal challenges to progressively improve (Legault, 2017). When individuals participate in an activity at an optimal challenge level, they are allowed to stimulate their skills at a suitable level, producing an enjoyable perception of competence which often leads to greater interest and engagement in the activity (Legault, 2017). White et. al. (2021) expressed that physical activity behaviors that allow individuals to feel capable and function efficiently lead to individuals feeling much more competent towards the

activity or subject at hand. Hamm (2018) discussed that competence has had a positive and indirect relationship with exercise, which can suggest practitioners to construct their exercise programs around competency and autonomy for successful results.

Competence and ASD

When it comes to competence, the overall goal is to increase an individual's confidence when performing certain tasks or skills. Among individuals with ASD, common apparent struggles or uncertainties are found within their motor (Lee & Porretta, 2013; Staples & Reid 2009; Pan et al., 2009), and social skills (American Psychiatric Association 2013; Whalon et al., 2015). Motor deficits impact as many as 79% of children with ASD (Green *et al.* 2009). Therefore, competence within these domains becomes a significant focus for individuals with ASD. Within the domains of motor skills individuals with ASD have consistently been associated with poor motor skills compared to their neurotypical peers (Staples & Reid, 2010). For individuals with ASD, their competence may be tied into the amount of support one may need (Kasari & Patterson, 2012). The amount of support an individual may receive is categorized into three different levels, level one being “requiring support”, level two is “requiring substantial support”, and level three is “requiring very substantial support” (APA 2013; Aksoy, 2018).

Multiple organizations, such as the National Professional Development Center on Autism Spectrum Disorder (NPDC; 2015) and National Autism Institute (2011) have identified Evidence Based Practices (EBPs, i.e., visual supports, modeling, scripting, extinction, etc.) as an effective strategy among children, adolescents, and adults (under 22

years of age). EBPs are instructional/intervention strategy or strategies that have been supported with an appropriate level of research which presents positive outcomes from such practices amongst all individuals with ASD (NPDC, 2015). While not all the reported EBPs compare competence to their typically developing peers, many report an improvement in understanding and performance that indicate competence.

EBPs used with ASD

Individuals with ASD have the ability of participating in goal-setting activities, though effectively making self-determined (i.e., autonomous) decisions is difficult even with the few resources available to support their participation (Hodgetts & Park, 2017; Cheak-Zamora et al., 2020; Wehmeyer and Abery, 2013). Research has advised that future interventions should integrate appropriate supports for this population to exert autonomy in their daily lives (Wehmeyer et al. 2010; Cheak-Zamora et al., 2020). An essential practice of SDT pairing it with EBPs to provide generalized practices and interventions (Ryan et al., 2023). Therefore, to support individuals with meaningful and effective practice with the needs embedded in SDT, incorporating evidence-based frameworks to guide your practice may be most appropriate (Shogren et. al., 2012; Shogren & Ward, 2018; Wehmeyer et. al, 2010).

With the support provided using visual support, individuals with ASD may process information much easier and quicker (Sam et. al., 2015¹). Visuals may include concepts such as schedules, token boards, task analysis, shapes, colors, or any visual representation. These instructional devices are utilized to support and encourage learning,

thus increasing individuals' understanding within the context of their activity (Shabiralyani et al., 2015).

Relatedness

Relatedness is defined as the basic need of connecting with others and experiencing the sense of belonging with other individuals or within a community (Baumeister & Leary, 1995; Bowlby, 1979; Harlow, 1958; Ryan, 1995). Relatedness draws from a concept of integrative tendency of life, the tendency to connect with, be significant to, and accepted by others (Duda & Appleton, 2016). Thus, the need to experience the sense of connection with others is not satisfied with external outcomes or a formal status, but more so experiencing unity and communion. Individuals who experience the action of contributing to a community and having the feeling of being cared for by a community embody the influence of relatedness (White et al., 2021). Researchers have shown that individuals with poor social engagement will often result in low levels of physical activity (Pan, 2009). Although, individuals who partake in physical exercise tend to experience a significant improvement within their social engagement (Bremer & Lloyd, 2016). For individuals to feel a sense of motivation while partaking in physical exercise, they must experience a sense of connection to the social community involved or to the activity itself (Deci & Ryan, 1991; Standage et al., 2003).

Relatedness and ASD

An understanding of early childhood ASD within early research, was as though children had an inability to find themselves relating to others and/or situations, this understanding stemmed from the concept of individuals inability to naturally form “usual,

biologically provided affective” connections with others (Kanner, 1943). Followed up by various bodies of research, the social disparities have been identified and confirmed for individuals with ASD (e.g., Hobson & Lee, 1999; Sperry & Mesibov, 2005; Müller et al., 2008). The social impairment or lack thereof social engagement associated with ASD may impact individual’s relationships within their communities and hinder their ability to initiate and sustain relationships (LaGasse, 2017). When we reflect on Deci’s comment about needs not being met, if an individual cannot feel as though they can accessibly connect with others, their motivation to be initiated or engage in social interaction or be involved within a community will diminish.

There are various ways of incorporating a sense of connection or belonging within a class setting and amongst the students within the class. Contact theory proposes that when typically, and non-typically developing individuals experience complimentary contact with one another, they will develop positive attitudes towards the other, in contrast to uncomplimentary contact or no contact which may lead to negative attitudes towards one another (Mavropoulou & Sideridis, 2014). EBPs that promote relatedness through application are structured play groups, and peer-mediated instruction and interventions (PMII). PMII and structured play groups utilize systemic instructions to support typically developing individuals in developing strategies for engaging with individuals with ASD in positive and meaningful interactions (Sam et. al., 2015²). Structured play groups focus on individuals with ASD interacting with their typically developing peers in small group activities, which consist of designated activity, theme,

area, and roles for typically developing peers and an adult in which scaffolds appropriately to support the individual with ASD's performance (Sam et. al, 2018).

Benefits of SDT

With SDT being a general theory, its broad principles are expected to generalize across domains; however, it is important to understand differentiations and adjustments are implemented within each application and their own use of SDT's variables and challenges (Ryan et al., 2023). For instance, an English teachers' autonomy support, and control within the classroom can look different than the autonomy and control a physical education teacher may have in both their respective content and social context.

Within the domain of education, self-determination has been identified as an appropriate practice for instructors when working with individuals with disabilities (Soresi et al., 2011; Wehman, 2012; Wehmeyer and Shogren, 2016). Connections between the application of self-determination and the results of positive outcomes within education (Lee et al., 2010; Shogren et al., 2012), and post-education (i.e., higher education, employment, and community engagement) are apparent (Shogren et al., 2016; Shogren and Ward 2018; Wehmeyer and Palmer 2003). Additionally, self-determination has led towards positive outcomes within recreation and leisure activities (McGuire and McDonnell, 2008), behavioral traits (Carter et al., 2013), and quality of life (Lachapelle et al., 2005; Nota et al., 2007). Carter et al. (2009) and Cheak-Zamora et al. (2020) reported the incorporation of structured interventions within settings, such as school and

community programs, will improve self-determination long-term outcomes amongst individuals with disabilities.

Todd (2007) has suggested SDT to be an effective approach for physical exercise motivational instinct amongst individuals with ASD. An individual's health and wellness fall on the satisfaction of three basic human needs (Behzadnia et al., 2020). With SDT being a navigator for understanding the motivational process of behavior, when these components are met, individuals increase their intrinsic motivation towards physical activity and thus their engagement within physical activity may increase (Hamm, 2018). For these reasons, it is highly encouraged to utilize SDT to support individuals with ASD with motivation and engagement. Specifically, through an established SDT survey, researchers can evaluate how individuals with ASD view themselves within each of the three major components with SDT.

Modified Psychological Need State in Sport Scale

We utilized the scale known as Psychological Need State in Sport Scale (PNSS; Appendix A) by Nikita Bhavsar et al. (2020), aimed to assess the degree to which individuals experience satisfaction or frustration of their basic psychological needs for autonomy, competence, and relatedness. The 29-question, Likert -style scale which focuses on the fundamental needs of SDT is directed towards sports athletes. The scale consists of six major sections: Autonomy satisfaction, Competence satisfaction, Relatedness satisfaction, Autonomy frustration, Competence frustration, and Relatedness frustration.

We first modified the PNSS scale to address the participants' experience with physical exercise (Appendix B) by rewording any terminology associated with sports (i.e., athlete, training) to terminology associated with physical activity (i.e., exercise). To support an individual with ASD's competence with answering questions on their own, rather than it being influenced or second-handed by another individuals, we incorporated an accommodation and modification that may be useful for individuals with ASD. We incorporated the accommodation of a visual aid (Appendix C) to support their knowledge of what each number on the Likert scale represents. The visual representation for the original modified scale consisted of black and white facial expressions, each associated with a number on the scale. We also utilized a visual support with an additional modified scale (Appendix D) that incorporated only five responses (i.e., 1 is strongly disagree, 2 disagree, 3 is neutral, 4 is agree, and 5 is strongly agree). The visual support (Appendix E) that was utilized for the 5-likert style modified scale consisted of color-coded facial expressions (i.e., green-smiley face equivalent to strongly agree, and red-sad face is strongly disagree). By providing a facial expression or a color and associating those with a specific response on the scale, we are providing options for individuals to access to respond to the questions.

CONCLUSION

A clear purpose of our literature review is to promote appropriate practices of SDT that are accessible to individuals with ASD that can be helpful for physical educators. A secondary purpose of this project was to modify the current SDT survey so that teachers and researchers can better understand how children with ASD perceive themselves within the major components of SDT (autonomy, competence, and relatedness). For this specific project we focused on the promotion of SDT using a survey. With suggestions of the use of evidence-based interventions tied with practices of SDT (Ryan et. al., 2023; Shogren et. al., 2012; Shogren & Ward, 2018; Wehmeyer et. al, 2010), we gathered a survey and incorporated strategies that may be beneficial for individuals with ASD completing the survey and instructors for approaching each fundamental need. For this study we modified the accessibility of the survey through the Likert-style responses, but other ideas could include video models as representation of the questions being asked within the survey. When teachers are looking to implement SDT within their program and are seeking feedback from the students on their experience based on the three fundamental psychological needs, it may often begin with a survey. Teachers need to utilize effective practices with students with ASD, when asking questions about their experience in the program that are reflective of the three needs, and within the implementation of SDT.

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APPENDICES

Appendix A

In my main sport, I...	Strongly disagree			Neither disagree nor agree			Strongly Agree
1. Feel free to make choices with regards to the way I train	1	2	3	4	5	6	7
2. Feel pushed to exercise in certain ways	1	2	3	4	5	6	7
3. Feel that I am capable	1	2	3	4	5	6	7
4. Feel like a failure	1	2	3	4	5	6	7
5. Feel supported	1	2	3	4	5	6	7
6. Feel disliked	1	2	3	4	5	6	7
7. Have a say in how things are done	1	2	3	4	5	6	7
8. Feel forced to follow training decisions	1	2	3	4	5	6	7
9. Feel skilled	1	2	3	4	5	6	7
10. Feel useless	1	2	3	4	5	6	7
11. Feel cared for	1	2	3	4	5	6	7

In my main sport, I...	Strongly disagree			Neither disagree nor agree			Strongly Agree
12. Feel excluded	1	2	3	4	5	6	7
13. Have the freedom to make training decisions	1	2	3	4	5	6	7
14. Feel forced to do training tasks that I would not choose	1	2	3	4	5	6	7
15. Am able to overcome challenges	1	2	3	4	5	6	7
16. Feel incapable	1	2	3	4	5	6	7
17. Feel connected	1	2	3	4	5	6	7
18. Feel isolated	1	2	3	4	5	6	7
19. Pursue goals that are my own	1	2	3	4	5	6	7
20. Feel excessive pressure	1	2	3	4	5	6	7
21. Feel confident that I can do well	1	2	3	4	5	6	7
22. Feel hopeless	1	2	3	4	5	6	7
23. Feel accepted	1	2	3	4	5	6	7
24. Feel ignored	1	2	3	4	5	6	7
25. Feel like I can be myself	1	2	3	4	5	6	7
26. Must do what I am told	1	2	3	4	5	6	7

In my main sport, I...	Strongly disagree			Neither disagree nor agree			Strongly Agree
27. Feel that I am good	1	2	3	4	5	6	7
28. Like the people around me	1	2	3	4	5	6	7
29. Feel dismissed	1	2	3	4	5	6	7

Autonomy satisfaction= 1, 7, 13, 19, 25

Competence satisfaction= 3, 9, 15, 21, 27

Relatedness satisfaction= 5, 11, 17, 23, 28

Autonomy frustration= 2, 8, 14, 20, 26

Competence frustration = 4, 10, 16, 22

Relatedness frustration= 6, 12, 18, 24, 29

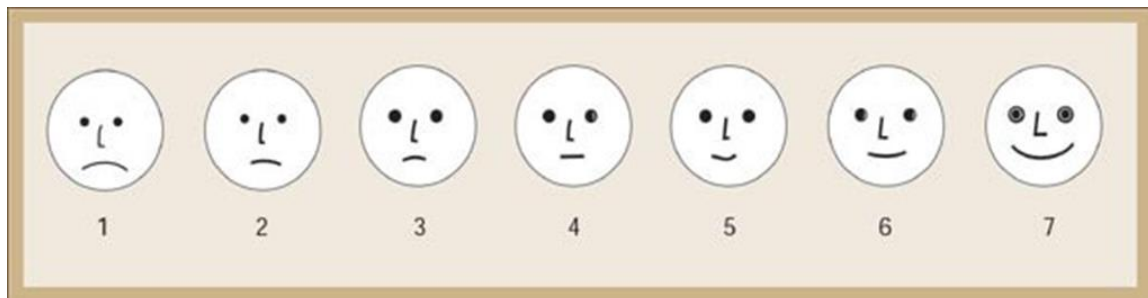
Appendix B

When I am exercising, I...	Strongly disagree			Neither disagree nor agree			Strongly Agree
1. Feel free to make choices with regards to the way I exercise	1	2	3	4	5	6	7
2. Feel pushed to exercise in certain ways	1	2	3	4	5	6	7
3. Feel that I am capable of exercising the way I want to	1	2	3	4	5	6	7
4. Feel like a am not able to exercise the way I want to	1	2	3	4	5	6	7
5. Feel supported	1	2	3	4	5	6	7
6. Feel disliked	1	2	3	4	5	6	7
7. Have a say in how I exercise	1	2	3	4	5	6	7
8. Feel forced to follow specific training decisions	1	2	3	4	5	6	7
9. Feel like I have the skills needed to exercise	1	2	3	4	5	6	7

When I am exercising, I...	Strongly disagree			Neither disagree nor agree			Strongly Agree
10. Feel like I do not possess the skills needed to exercise	1	2	3	4	5	6	7
11. Feel cared for by others	1	2	3	4	5	6	7
12. Feel not welcomed by others	1	2	3	4	5	6	7
13. Have the freedom to make training decisions	1	2	3	4	5	6	7
14. Feel forced to do training tasks that I would not choose to do	1	2	3	4	5	6	7
15. Am able to overcome challenges	1	2	3	4	5	6	7
16. Feel incapable of exercising with others	1	2	3	4	5	6	7
17. Feel connected to others	1	2	3	4	5	6	7
18. Feel isolated when I am around others	1	2	3	4	5	6	7
19. Pursue goals that are my own	1	2	3	4	5	6	7
20. Feel excessive pressure	1	2	3	4	5	6	7

When I am exercising, I...	Strongly disagree			Neither disagree nor agree			Strongly Agree
21. Feel confident that I can do well	1	2	3	4	5	6	7
22. Feel hopeless	1	2	3	4	5	6	7
23. Feel accepted	1	2	3	4	5	6	7
24. Feel ignored	1	2	3	4	5	6	7
25. Feel like I can be myself	1	2	3	4	5	6	7
26. Must do what I am told	1	2	3	4	5	6	7
27. Feel that I am good	1	2	3	4	5	6	7
28. Like the people around me	1	2	3	4	5	6	7
29. Feel dismissed	1	2	3	4	5	6	7

Appendix C



Appendix D

When I am exercising, I...	Strongly disagree	Disagree	Neutral	Agree	Strongly Disagree
1. Feel free to make choices with regards to the way I exercise	1	2	3	4	5
2. Feel pushed to exercise in certain ways	1	2	3	4	5
3. Feel that I am capable of exercising the way I want to	1	2	3	4	5
4. Feel like I am not able to exercise the way I want to	1	2	3	4	5
5. Feel supported	1	2	3	4	5
6. Feel disliked	1	2	3	4	5
7. Have a say in how I exercise	1	2	3	4	5
8. Feel forced to follow specific exercise rules	1	2	3	4	5
9. Feel like I have the skills needed to exercise	1	2	3	4	5
10. Feel like I do not possess the skills needed to exercise	1	2	3	4	5
11. Feel cared for by others when I am exercising	1	2	3	4	5
12. Feel not welcomed by others	1	2	3	4	5

When I am exercising, I...	Strongly disagree	Disagree	Neutral	Agree	Strongly Disagree
13. Have the freedom to make training decisions	1	2	3	4	5
14. Feel forced to do training tasks that I would not choose to do	1	2	3	4	5
15. Am able to overcome challenges	1	2	3	4	5
16. Feel incapable of exercising with others	1	2	3	4	5
17. Feel connected to others	1	2	3	4	5
18. Feel isolated when I am around others	1	2	3	4	5
19. Pursue goals that are my own	1	2	3	4	5
20. Feel excessive pressure	1	2	3	4	5
21. Feel confident that I can do well	1	2	3	4	5
22. Feel hopeless	1	2	3	4	5
23. Feel accepted	1	2	3	4	5
24. Feel ignored	1	2	3	4	5
25. Feel like I can be myself	1	2	3	4	5
26. Must do what I am told	1	2	3	4	5

When I am exercising, I...	Strongly disagree	Disagree	Neutral	Agree	Strongly Disagree
27. Feel that I am good	1	2	3	4	5
28. Like the people around me	1	2	3	4	5
29. Feel dismissed	1	2	3	4	5

Appendix E

