Predictors and Associations of Physical Activity in College Students: Self-Efficacy, Self-Regulation, Social Support and Socioeconomic Status

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Acknowledgements

I would like to express my gratitude to Marianne Breen for her continuous support and generous professional guidance throughout this project.

I would also like to thank my family and friends, for their patience in what has been a long endeavour.
Using Bandura’s Social Cognitive Theory (SCT) as a framework, this study employed a correlational design to examine the predictive strengths of self-efficacy, exercise goal-setting, exercise planning and scheduling, family social support and friends social support on physical activity behaviours in college students. Additionally, associations between physical activity, income, subjective social status in the community and subjective social status in Ireland were assessed through online surveys. The SCT model predicted 14% of the variance in physical activity, with exercise goal-setting ($\beta = .404$) and family social support ($\beta = .293$) emerging as the strongest predictors. Findings indicated males reported higher levels of physical activity and self-efficacy than females. Results revealed no significant association between SSS in the community, SSS in Ireland, income and physical activity. The present results enhance our understanding of the underlying mechanisms that lead college students to adopt an active lifestyle. Implications for future interventions are discussed.
Physical activity refers not only to exercise but any activity which involves body movements that are part of playing, working, active transportation, house work, and other recreation (HSE, 2009). Regular physical activity is essential for optimal physical and psychological health (Young et al., 2014). Benefits of regular physical activity include strengthening of bones and muscles, controlling of weight and maintaining a healthier body composition, increasing the resistance to diseases, and improving the chance of living longer (CDC, 2011). The psychosocial health benefits of regular physical activity can improve mental health and enhance the quality of life by increasing enjoyment, self-esteem, energy, and desire to engage in social activities, which improves social skills and networks, and reduces isolation and loneliness (Armstrong & Oomen-Early, 2009; CDC, 2011d). In contrast, low levels of physical activity present as an independent risk factor for several chronic diseases, such as cardiovascular diseases, cancer and respiratory diseases. Physical inactivity has been defined as the fourth leading risk factor for global mortality, and accounts to an estimated one million deaths per year in the European region (WHO, 2012).

Recent data has demonstrated the decline in physical activity rates internationally in both young people and adults (Hallal et al. 2012), likely contributing to the rising global obesity rates (Lancet, 2014). College students in particular, are a unique subset of the population undergoing an important transitional period in their lives (Doerksen et al., 2009). During this crucial period, students are exposed to numerous adversities that affect health behaviour such as stressors, drastic environmental changes and increased independence. It is believed that various physical, social, and personal factors influence or alter college students’ activity behaviour, but the exact determinants of their activity behaviour change is not yet fully understood (Lowry et al., 2000; Sallis, 2000). Therefore, further research is required to explore this phenomenon in more depth. More specifically, research conducted by the
National Heart Foundation Ireland (2011) revealed only 2 in 10 Irish students achieve the recommended 30 minutes of physical activity five days per week. 29% of Irish students play sports or exercise three to four times each week, while 26% do so once or twice a week.

In contrast, an alarming 20% of students only exercise or play sport every fortnight or more. Moreover, both international and Irish research have observed significant gender differences, concluding higher levels of physical activity participation among males. (Clán Survey, 2003; De Róiste & Dineen, 2005; Morgan et al., 2008; Hope et al., 2005). As only 41% of Irish adults take part in regular physical activity, the national guide on physical activity (i.e. Get-Ireland-Active) aims to promote physical activity for everyone (HSE, 2009).

In an attempt to combat such low levels of regular physical activity and to magnify the possibility of attaining the aforementioned health benefits, Get-Ireland-Active, a government initiative policy strives to improve health and well-being, based on the World Health Organisations recommended guidelines for physical activity. Actions focus on modifying unhealthy lifestyle habits whilst promoting the benefits of physical activity in a health and socioeconomic context. The programme categorizes the population into three age groups: up to 18 years, 18 to 65 years and over 65 years. The guidelines for the 18-65 years category recommends engaging in 30 minutes of moderate to vigorous activity 5 days a week.

Furthermore, understanding which psychosocial predictors have the greatest manipulative and predictive effects on physical activity behaviours will enable health professionals to formulate interventions that target those predictors (Keating et al., 2005). Moreover, the current study aims to address the significant gap in literature and provide a fundamental basis for enhancing PA behaviours in college students. As research evidence suggests theory based physical activity interventions are more effective than theoretical based approaches (Michie et al., 2004). Numerous theoretical frameworks have been employed to examine and understand the process by which psychosocial and social cognitive variables
affect health behaviours; for example, Fishbein and Ajzen’s (1975) Theory of Reasoned Action, Ajzen’s (1985) Theory of Planning Behaviour, and Bandura’s (1986) Social Cognitive Theory. Thus, focusing on the social cognitive determinants of physical activity, using Bandura’s Social Cognitive Theory as a framework, the aim of this study is to determine the predictive strengths of self-efficacy, self-regulation, and social support on physical activity. Also, in view of existing literature on the positive association between socioeconomic status and physical activity (Trost et al., 2002), this study measures the predictive strength of socioeconomic status on physical activity behaviours among college students, in an attempt to shed further light into the determinants of physical activity.

**Bandura’s Social Cognitive Theory**

In attempts of providing underlying explanations of human behaviour, theorists have categorized these cognitive variables into explanatory frameworks called ‘Social Cognitive Theories’. A predominant social cognitive theory within the literature that has received widespread attention is Banduras social cognitive theory (SCT), (Bandura, 1986; Bandura 1997; Bandura; 2004), which is the focus of the current review. The social cognitive theory has been used extensively and successfully to explain, predict, and elicit health behaviour change (e.g., Anderson, Winett, & Wojcik, 2000), including physical activity (McAuley et al., 2000). The social cognitive theory is centred on the belief that human behaviour is explained by triadic reciprocal determinism. That is, human behaviour is uniquely determined by the continuous interaction of personal factors (cognitive and biological properties), behaviour (actions) and environment influences (roles, models, relationships).

Therefore, each facet is bi-directionally influential (i.e. personal factors-behaviours, environment-behaviours, and behaviours, personal factors-environment) and operates as an
interacting determinant within the cognitive process. However, reciprocal causation does not suggest each factor has an equal influential contribution to human behaviour. In fact, Bandura (1989) posits that the reciprocal influences do not all occur simultaneously. The key constructs within the SCT of physical activity (PA) include self-efficacy, outcome expectations, and social/environmental supports (Bandura, 1997). Conducive to this, researchers who have evaluated a SCT model of physical activity have typically explored only one to two constructs of the SCT. This is evident in the literature, where the majority of SCT research in the PA domain has focused solely upon self-efficacy, or examined self-efficacy in combination with only one or two variables (Rhodes & Nigg, 2011).

*Self-efficacy*

Self-efficacy is widely regarded as the most significant contribution of SCT to the PA literature, (Rhodes & Niggs, 2011), with an extensive body of research indicating self-efficacy to be strongly and consistently associated with PA (McAuley & Blissmer, 2000). Bandura (1986, 1989, 1997) defines self-efficacy as beliefs about capabilities to achieve a favourable outcome when performing a certain behaviour. That is, self-efficacy is the extent of one’s personal belief to achieve a desired result with the skills acquired. Such beliefs can be modified by motivational influences and environmental observations, affecting cognitive patterns, subsequently encouraging or hindering behaviour. According to Bandura (1989, 1993), it is through this relationship that knowledge of the associated variables enable physical activity behaviour to be understood, predicted and changed. Self-efficacy is a pivotal construct within the SCT, which appears to operate both directly and indirectly, influencing each other model component.
McAuley & Blissmer, (2000) highlighted the complex reciprocal relationship that exists between physical activity and self-efficacy. Considering this complex relationship, McAuley & Blismmer (2000) specified the importance of embracing all SCT constructs in order to further explore the interrelations among biological, cognitive and environmental influences on physical activity participation. Further, research revealed high levels of self-efficacy resulted in higher levels of participation and maintenance of physical activity among college students (Sullum, Clark, & King, 2000). More specifically, Patterson et al. (2006) findings revealed males demonstrated higher levels of physical activity and higher levels of self-efficacy than females in an Irish college population. Although the aforementioned study was conducted in Ireland, the sample consisted of second year undergraduate science and engineering students attending Dublin Institute of Technology. Using such a small sample from across the population, results cannot be generalised to students across Ireland. In light of this, this study attempts to combat this limitation by recruiting participants from colleges across the nation.

Wallace et al., (2000) reported self-efficacy as the strongest predictor of stages of change in physical activity, with students exerting higher levels of exercise self-efficacy being more likely to participate in this behaviour. Despite the majority of research focusing on self-efficacy as a single construct, few studies have examined self-efficacy in conjunction with the other SCT constructs. Rovniak et al., (2002) used structural equation modelling (SEM) to examine the social cognitive constructs of physical activity in college students. The SCT model explained 55% of the variance observed in physical activity. Consistent with the model, results suggested that individuals with higher levels of exercise self-efficacy are significantly more likely to participate in regular exercise, which is largely mediated though their use of self-regulatory skills such as self-monitoring, goal setting and planning. Although, Rovniak’s sample consisted of college students; participants were recruited only
from psychology courses. Similar to Patterson et al., (2006), these results cannot be
generalised beyond the sample studied. Thus, this study aims to expand these findings by
recruiting participants attending a wider range of courses across Ireland.

Despite self-efficacy consistently emerging as the strongest predictor of PA behaviours in
literature (Andersen et al., 2006), the total effect of self-regulation on PA among participants
significantly exceeded the total effect of self-efficacy, emphasizing the significance of self-
regulation to an active lifestyle (Bandura, 1997). Thus, this study aims to addresses the
current gap in the literature, examining self-regulation under two constructs, within a college
population.

**Self-Regulation**

A further construct within Bandura’s social cognitive theory is goals. Bandura (1991) concluded that humans have the ability to control their behaviour through a process
known as self-regulation. In addition to exhibiting a direct effect on behaviour, goals are also
viewed as being able to mediate the influence of all other model constructs (Bandura, 2004).
Moreover, goals can be distal, to serve as a general guide, or specific and proximal, to inform
current actions (Bandura, 1997). Self-regulation is a significant component for examination
as Bandura notes intentions or motivation alone are not sufficient to succeed in performing a
behaviour. Instead, self-regulation operates through a set of psychological sub functions; self-
observation (assessing oneself in order to inform and motivate progress towards goal
attainment), judgement (comparing his/her performance to their personal or created
standards) and self-response (reward/punish his/herself for success/failure for meeting
standards).

Although, Bandura’s (1997) Social Cognitive Theory (SCT) has been used
extensively and successfully to explain, predict and elicit health behaviour changes (e.g.,
Anderson, Winett, & Wojcik, 2000), less research has explored the relationship between self-regulation and physical activity. Self-regulation involves skills for planning, organising, and managing exercise activities (Bandura, 1997). Despite several of the most prominent physical activity interventions incorporating a self-regulation component, according to Rovniak et al. (2012) there is a lack of published reliable and valid measures of the exercise self-regulatory skills, described by Bandura, including goal setting, planning, problem solving, and self-monitoring. Thus, this study will adopt the measures developed by Rovniak et al. (2012), to examine self-regulation under two constructs: the exercise planning and scheduling scale and the exercise goal-setting scale. Rovniak’s model provided a good fit to the data explaining 55% of the variance in physical activity. Each scale demonstrated good internal consistency and stability over time. These findings reinforce research supporting the significance of self-regulatory subskills for initiating and sustaining physically active lifestyles (King et al., 1998; Sallis et al., 1999). Although the significance of self-regulatory skills has been documented for adults (McGaha, 1996; Petosa 1993), it has yet to be further explored as a determinant for college students’ physical activity behaviours. Many people lack the self-regulation skills necessary to engage in the complex set of behaviours supporting adherence. Short-term studies suggest that interventions that teach goal setting, planning, self-monitoring, and self-reward skills can increase exercise adherence (Dishman et al., 1985). Considering the importance of these skills, self-regulation will be measured under two constructs: exercise planning and scheduling and exercise goal-setting.

Social Support

Furthermore, social support has been underlined as a significant predictor of health behaviours, including physical activity behaviours among college student (Gruber, 2008; Wallace et al., 2000). Social support is defined as support for a given behaviour from important others (Anderson et al., 2007), primarily family and friends. However, studies have
documented the importance of different forms of social support that may vary with the characteristics of physical activities performed (Sallis et al., 2002). For example, social support from family usually include transportation, equipment and encouragement to engage in leisure-time physical activities (Seabra et al., 2008), whereas friends are more inclined to provide more support by engaging in more vigorous physical activities and competitive sports (Langford, 1997). Additionally, through social support, behaviour can be encouraged or hindered (Anderson et al., 2007; Rovniak et al., 2002). Therefore, having supportive social networks can increase self-efficacy, simultaneously supplying accountability and encouragement when environmental obstacles arise (e.g., weather and schedule conflicts). However, if students have little or no social support, self-efficacy and health behaviours have a greater potential to decrease. For example, the transition from school to college may result in significant changes to an established support network. This drastic change may be a significant contribution in the documented weight gain in the first two years of college (Hoffman et al., 2006; Racette et al., 2005).

Rovniak et al., (2002) stated that a supportive environment which encourages physical activity also promotes the facilitation and maintenance of participation in physical activity. Within the college setting, social support for physical activity from friends and peers is often associated with college students perceiving positive experiences and expectations (Gruber, 2008; Petosa et al., 2003). In contrast, Petosa reported the majority of students in the sample report low use of self-regulatory skills, also finding social support did not appear to support the development of skills and beliefs consistent with exercise adherence. However, recent health trends indicate college students’ social networks may not be supporting this healthy behaviour, clearly demonstrated by the common decline in physical activity occurring at a high rate during this transition (Caspersen et al., 2000; Racette et al., 2005; Carlson et al., 2010). Given that research suggests college student’s networks may be inadequately
supporting or possibly hindering physical activity behaviours, it might be plausible to modify their social support networks, in order to potentially reverse this trend (Gene & Farren, 2014). Research has consistently found, across various ethnic groups, those with more social support are more likely to engage in regular physical activity than those without social support (Eyler et al., 1999; Marquez & McAuley, 2006; Trost et al., 2000.). Further, data has revealed social support is a more important factor of regular physical activity for women than for men; overall females report getting more encouragement to exercise from their friends and peers than males (Gruber, 2008; Molloy et al., 2010).

Within the physical activity domain, few studies have compared the relative influence of family versus friends social support. For example, research has consistently indicated that social support from friends is more predictive of physical activity in adolescents than parental support (Beets et al., 2006; Prochaska et al., 2002). However, within a college sample Pugliese & Okun (2015) findings suggested friends play a more influential role on physical activity during young adulthood.

Aside from the documented physical health benefits of physical activity, research has also repeatedly found that having a strong social support network by itself enhances individuals’ psychological well-being (Lincoln, 2000). These additional health benefits are the reasons cited as to why social support has been identified as an important variable in the promotion of physical activity (Anderson et al., 2007; Gruber, 2008; Sallis et al., 1987), and reinforces the requirement to assess its predictive strength among college students.

*Socio-economic status*

According to Adeniyi et al, (2012), the SCT provides a framework that simultaneously addresses self-efficacy, perceived barriers, outcome expectancies and self-regulatory behaviours as related to physical activity participation. However, non-modifiable factors such
as Socio-Economic Status (SES) have also been identified as significant constructs contributing to health behaviours (Abegunde et al., 2007). SES may affect knowledge of benefits and health-promoting behaviours (Morenoff et al., 2007), and is considered a significant mediator of physical activity (Lindstrom et al., 2001). Socio-economic status (SES) is an economic and sociological combined total measure of a person's work experience and of an individual's or family's economic and social position in relation to others, based on income, education, and occupation. (National Centre For Educational Statistics, 2008). SES is commonly measured by education and income however these metrics may hold different implications across and within countries (McLaren, 2007), and fail to capture the uniqueness of social class structures.

Subjective or perceived social status (SSS) reflects relative social standing and includes an individual’s perception of current circumstances, educational and socioeconomic background, and future opportunities (Singh-Manoux et al., 2003), and is thought to capture additional pathways and add meaningfulness to the association of SES and health (Adler et al., 2000; Demakakos et al., 2008). However, according to Ding et al., (2016), the economic burden of physical inactivity remains unquantified at a global level. Physical inactivity is estimated to cost Ireland €1.6 million per year and will continue to rise unless the problem is addressed (NHF, 2010). Socioeconomic status (SES) has been documented as having a profound influence on sport and physical activity. The effect of income on PA has been examined by Farrell and Shields (2002) in determining sporting participation in England. Results revealed low income households participated less in sports than did high income households. In contrast, Cheah and Poh, (2014) documented individuals earning higher levels of income reduced the likelihood of physical activity participation. The relationship between SES and physical activity participation has been extensively studied within the adult population, consistently revealing higher SES is synonymous with increased involvement in sport and
physical activity regardless of whether SES is measure by education, income, and/or occupational status (Bloom et al., 2005). However, the association between SES and physical activity among children and adolescents indicate mixed results. Gorley et al., (2004) and Sallis et al., (2000) argue it is not possible to establish a clear relationship, and hence requires further observations. In contrast, Brodersen (2007) suggests a higher socio-economic status and parent’s education levels are positively associated with physical activity. More specifically, within an Irish context, Morgan et al (2008) findings revealed 27% of the population in the highest social class were highly active in comparison to the lowest social class being only 25% active. In sum, research has revealed mixed results investigating socioeconomic status in relation to physical activity. Thus, to gain a deeper insight to the effects of socioeconomic status on physical activity, while also addressing the current gap in the literature between child and adolescent research and research within the adult population, this study will measure the umbrella term socio-economic status under three categories; socioeconomic status in the context of the community, socioeconomic status in the context of Ireland, and income earned per annum.

**Criticisms**

Although, a recent meta-analysis (Young et al., 2014) revealed the Social Cognitive Theory explained almost one-third of the variance in physical activity behaviour, meeting Baranowski et al.’s (1998) recommendation for a theory to be considered a useful framework for intervention, it has notable limitations. Prior studies failed to investigate the potential significance of gender, the significance of goals and goal structures, the differentiation between family and friend social support, and the non-modifiable factor; social class. Additionally, although Bandura clearly detailed a network or socio cognitive constructs, self-efficacy has received considerably more attention than other model components (Rhones &
Niggs, 2011). This is reflected in the literature where the majority of SCT research in the PA domain has focused solely upon self-efficacy, or examined self-efficacy in combination with only one or two variables (Rhones & Niggs, 2011). Hence, the current investigation addresses the gap in literature by examining a multitude of constructs in order to gain a deeper understanding of the reasons why college students engage in physical activity.

Research objectives

Understanding which psychosocial predictors have the greatest manipulative and predictive effects on physical activity behaviours will enable health professionals to formulate interventions that target those predictors (Keating et al., 2005). As physical inactivity is gradually becoming the social norm that young adults are observing, learning, and replicating (Bauman et al., 2009), effectively establishing regular physical activity during development is imperative. Using Bandura’s social cognitive theory as a framework for this study, four correlates of physical activity have been selected to represent effective predictors of physical activity. The aim of this research is to determine the predictive strength of self-efficacy, self-regulation, social support and socioeconomic class in physical activity behaviours among college students. Specifically, because research has indicated that frequency of participation is highly related to gender (Kilpatrick, Herbert, Bartholomew, 2005; Martin, Morrow, Jackson, & Dunn, 2000), this study will also examine the relations of gender. The strength of this relationship will indicate how changes in the predictor variables should influence physical activity. This study will compliment current literature by enhancing the understanding of the social cognitive determinants of physical activity as they develop throughout the college years. As noted above, a multitude of correlations exist in relation to physical activity behaviours. Furthermore, by examining which social variables best predict physical activity behaviour, it might be plausible to manipulate, or enhance them to initiate action. Given that physical activity behaviour represents significant contributions to mental
and physical health and that many of the factors that can influence an individual to adopt an active lifestyle can be modified, this research may prove useful in establishing more effective interventions in the college population and reverse the decline in physical activity that is associated with the population.
Hypotheses

It is hypothesised that self-efficacy, exercise goal-setting, exercise planning and scheduling, family social support and friends social support will significantly predict physical activity in college students.

It is hypothesized that there will be a positive association between physical activity and income, subjective social status in the community and subjective social status in Ireland.

It is hypothesised that males will report higher levels of physical activity and self-efficacy than females.
Methodology

Participants

The target population for this project were college male and female Irish college students. Participants were accessed online (Facebook) and through the use of the snowball effect. Questionnaires will be administered via google forms. The survey was uploaded to Facebook college pages and the snowball technique was employed to recruit the remainder of participants. The inclusion criteria requires participants to be over 18 and the only other criterion required of participants was an adequate ability to read and respond to questions in English. A sample of 100 participants agreed to take part in this study consisting of 57 females and 43 males. No cases were excluded due to missing data.

Design

This study employed a correlational design with a cross-sectional quantitative survey using convenient sampling, to measure physical activity as the continuous criterion variable, and social support for physical activity, self-regulation for physical activity, self-efficacy for physical activity and socioeconomic status on physical activity as predictor variables.

Materials

An online survey questionnaire was compiled that included the following instruments to measure the criterion and predictor variables (See Appendix).
*Physical activity* (PA) was measured using the short form version of the International Physical Activity Questionnaire (IPAQ, 2002). The IPAQ assesses physical activity across a comprehensive set of domains including: work/college, transport, leisure and domestic/garden domains. Within the last 7 consecutive days, IPAQ items assess frequency (reported in number of days; ‘During the last 7 days, on how many days did you do…’) and average duration per day (reported in hours and minutes; “How much time did you usually spend on one of those days doing…”) engaging in these specific PA domains. Participants were prompted to record only those activities within a minimum length of 10 consecutive minutes, as scientific evidence indicates episodes of at least 10 minutes of any activity is required for health benefits. Responses less than 10 minutes are recoded as zero. Per recommendation, the continuous indicator is presented as median MET (Metabolic rate)-minutes/week. Using the recommended values for analysis, MET equivalents for the three activity levels are calculated by multiplying the minutes per week by the factor 3.3 for walking, 4.0 for moderate activity, an 8.0 for vigorous activity. All values exceeding 960 minutes (16 hours) is applied to the sum of all walking, moderate and vigorous times are considered unreasonably high, and should be excluded from the analysis. Total MET minutes per week for each participant is calculated by summing all three. The IPAQ sitting question is an indicator of the time spend in sedentary activity and was not included as part of the summary score of total physical activity. The IPAQ is an effective measure of general activity as it includes all types of energy expenditure and is appropriate determining whether individuals meet public health guidelines for regular physical activity (Dishman, Vandenberg, Motl, & Nigg, 2010). Further, Craig et al., (2003) reported good reliability (Spearman’s p=0.8) and moderate criterion validity (p=0.3) when measuring population levels of PA among 18-65 year old adults.
Self-Efficacy was measured using the Self-Efficacy to Regulate Exercise Scale (Bandura, 2006). The 18-item scale requires participants to rate their belief capabilities from 0 (cannot do at all) – 100 (highly certain can do) in the given situations. Situations include physical, social and self-evaluative barriers that have may potentially hinder the maintenance of regular physical activity. Examples of questions include: After experiencing personal problems, during bad weather, when I feel tired, without the support from my family or friends. Self-efficacy for physical activity is calculated by summing the responses for each situation; total scores can range from a minimum of 0 to a maximum of 1800. Hypothesis testing using multiple regression has shown this scale to have high reliability ($R^2$ from 0.38 to 0.76); $\_\_ = 0.92$ and good validity in predicting exercise activity ($F=78.8; p<0.05$) using a 15:1 participant to variable ratio (Resnick & Jenkins, 2000).

Self-Regulation – Self-Regulation was assessed under two constructs: Exercise Goal-Setting Scale (EGS) (Rovniak et al., 2002) and Exercise Planning and Scheduling Scale (Rovniak et al., 2002). The exercise planning and scheduling scale (EPS; Rovniak et al., 2002) included 10 items relating to how people plan and schedule physical activity (e.g. I schedule my exercise at specific times each week.) Participants were asked to indicate the extent to which the statement describes themselves on a scale of 1 (Does not describe) to 5 (Describes completely). Responses were then averaged, resulting in a possible range from 1 to 5. The second measure of self-regulator behaviour was the Exercise Goal-Setting Scale. This 10-item scaled assessed three components of self-regulatory behaviour (a) goal setting (e.g., I often set exercise goals), (b) self-monitoring (I have developed a series of steps for reaching my exercise goals) and (c) problem solving (e.g., if I do not reach an exercise goal, I analyse what went wrong). Participants responses to items using the same scale as the EPS (1= does
not describe me, 5 = completely describes me). Scores were averaged across the 10 items for a possible range of 1 to 5.

**Social Support**: Social support was assessed using The Family and Friend Support for Exercise Habits Scale (SSEH) (Sallis, Grossman, Pinski, Patterson, & Nader, 1987), which measures the extent to which students are socially supported in physical activity participation. Participants were given a mean score based on items with responses ranging from 1 (*Never*) to 5 (*Very often*). Items assessed both the perceived number of supports from family and friends and the degree to which the participants were satisfied. The SSEH scale contains two subscales: participation (e.g. changed their schedule so we could exercise together) and rewards and punishments (e.g., got angry at me for exercising). Participants were given a mean score based on items with responses ranging from 1 (*Never*) to 5 (*Very often*). Prior studies provided sufficient evidence of the internal consistency of the measure with Cronbach’s alphas ranging from .84 to .92 for family social support .86 to 90 for friend social support (Resnick et al, 2002, Willcox et al., 2003). Evidence of validity was based on statistically significant relationships between the social support scale and exercise behaviour (Resnick et al., 2002; Sallis et al., 1987).

**Socioeconomic status** was assessed under three measures. The first measure adopted the MacArthur Scale of Subjective Social Status (1999). In pictorial format, it presents a ‘social ladder’ assessing community social status, which accompanies the following question:

‘Think of this ladder as representing where people stand in their communities. People define community in different ways; please define it whatever way is most meaningful to you. At the top of the ladder are the people who have the highest standing in their community. At the
bottom are the people who have the lowest standing in their community. Where would you place yourself on this ladder? Please indicate what rung (1-10) where you think you stand at this time in your life, relative to other people in your community.’

The second measure required participants to identify their socio-economic status within the context of Ireland.

‘Think of this ladder as representing where people stand in Ireland. At the top of the ladder are the people who are the best off - those who have the most money, the most education and the most respected jobs. At the bottom are the people who are the worst off - who have the least money, least education and the least respected jobs or no job. The higher up you are on the ladder the closer you are to the people at the very top; the lower you are, the closer you are to the people at the very bottom. Where would you place yourself on the ladder? Please indicate what rung (1-1) where you think you stand at this time in your life, relative to other people in Ireland’

Lastly, participants were asked to indicate which bracket you/ your parents earn per annum (under €20,000, €20-35000, €35000-€55000, or over €55,000)

Procedure

Prior to collecting data, the study was submitted to the Department of Psychology, Dublin Business School. Upon approval, surveys were uploaded onto college Facebook pages via google forms. A cover sheet outlining the purpose of the study preceded the questionnaire. Participants were also informed each questionnaire is anonymous and confidential, thus ensuring no identifiable information can be attributed to responses. Participants were notified participation is voluntary and only applicable to individuals over 18 years old.
Ethical Considerations

Ethical approval for this research was obtained from the Dublin Business School ethics review board. Research was conducted in accordance with Dublin Business School’s ethical guidelines for research with human participants.
Results

SPSS version 24 was used for all statistical procedures. After all preliminary analyses were undertaken descriptive and correlational analyses were conducted to gain insight into the relationship between the predictor and criterion variables. Independent-samples t-test were performed to determine the mean differences of the social cognitive variables across gender. Multiple regression analyses were performed to assess the predictive strength of the social cognitive constructs on physical activity behaviour. Finally, three separate ANOVA’s were employed to assess any mean differences of physical activity across subjective social status in the community, subjective social status in Ireland and income.

Preliminary analysis were run on the data to ensure that there was no violation of the assumptions. As recommended by the IPAQ (2002), all total physical activity figures exceeding 960 minutes of PA per week, which are considered unreasonably high, were excluded. In the current data set, 13 figures were excluded. Data revealed total IPAQ scores (skewness = .346, shapiro-wilk = .000) were not normally distributed. Similarly, self-efficacy scores (skewness = -.514, shapiro-wilk = .005), exercise goal-setting (skewness = -.589, shapiro-wilk = .002), SES community (skewness = -.094, shapiro-wilk = .000), SES Ireland (skewness = .136, shapiro-wilk = .001) or income (skewness = .538, shapiro-wilk = .000) were not normally distributed. However, a multiple regression was conducted as there is no non-parametric alternative.

The sample comprised of 100 students, 57 females (57%) and 43 males (43%). Table 1 presents demonstrates mean scores that participants endorsed on the respective scales.
Table 1.1 Descriptive data across each variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA in MET/Week</td>
<td>626.65</td>
<td>454.72</td>
</tr>
<tr>
<td>Self-efficacy for PA</td>
<td>85.48</td>
<td>32.38</td>
</tr>
<tr>
<td>Exercise Goal Setting for PA</td>
<td>3.09</td>
<td>.910</td>
</tr>
<tr>
<td>Exercise Planning and Scheduling for PA</td>
<td>2.93</td>
<td>.652</td>
</tr>
<tr>
<td>Social Support from Family for PA</td>
<td>2.84</td>
<td>.927</td>
</tr>
<tr>
<td>Social Support from Friends for PA</td>
<td>3.10</td>
<td>.904</td>
</tr>
<tr>
<td>Socioeconomic Status within the Community for PA</td>
<td>6.21</td>
<td>1.55</td>
</tr>
<tr>
<td>Socioeconomic Status within Ireland for PA</td>
<td>5.84</td>
<td>1.41</td>
</tr>
<tr>
<td>Income on PA</td>
<td>2.10</td>
<td>1.27</td>
</tr>
</tbody>
</table>

Independent T-Test

An independent t-test was performed to check any significant differences between gender and physical activity. Results revealed there was a statistically significant difference between physical activity levels in males (M=543.21, SD=237.62) and females (M=430.49,
SD=30.42), (t(97) = -2.275, p= .025, CI (95%) -211.25 -> -14.20). Males reported higher levels of physical activity, thus the null hypothesis can be rejected.

Figure 1.1 Bar Chart displaying physical activity MET/Week by Gender
Table 1.2 An independent samples t-test displaying mean differences in physical activity for males and females

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPAQ - Females</td>
<td>217.27</td>
<td>30.42</td>
<td>-2.28</td>
<td>84</td>
<td>.025</td>
</tr>
<tr>
<td>IPAQ - Males</td>
<td>543.21</td>
<td>237.62</td>
<td>-2.237</td>
<td>68.81</td>
<td>.029</td>
</tr>
</tbody>
</table>

An independent samples t-test was conducted to explore differences between self-efficacy scores for males and females. There was a statistically significant difference in scores for males (M=93.16, SD=28.76) and females (M=78.93, SD=33.64) (t(98) = -2.38, p=.019, CI (95%) -27.91 -> -2.54). Therefore the null hypothesis can be rejected.

Table 1.3 An independent samples t-test displaying mean differences in self-efficacy for males and females.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Efficacy - Females</td>
<td>78.93</td>
<td>33.64</td>
<td>-2.383</td>
<td>98</td>
<td>.019</td>
</tr>
<tr>
<td>Self-Efficacy - Males</td>
<td>94.16</td>
<td>28.76</td>
<td>-2.436</td>
<td>96.41</td>
<td>.017</td>
</tr>
</tbody>
</table>
Hierarchical multiple regression

A multiple regression was conducted to determine the predictive strength of self-efficacy, exercise goal-setting, exercise planning and scheduling, social support from family and social support from friends on physical activity. The results of the regression indicated that the model explained 14% of the variance (R² = .149, F(5,94) = 4.458, p<.001). It was found that self-efficacy did not significantly predict physical activity (β = -.082, p=.505, 95% CI = -4.556 to 2.260). Results indicated exercise Goal Setting significantly predicted physical activity (β = .404, p=.008, 95% CI = 53.64 – 350.30) as did social support from family (β=.293, p=.014, 95% CI(29.18 to 258.17)). Exercise Planning and Scheduling did not predict physical activity behaviour (β= -.133, p=.289, 95% CI = -266.62- 80.29) nor did social support from friends (β= -.123, p=307, 95% CI = -181.64).

Table 2.1 Regression Model Summary

<table>
<thead>
<tr>
<th>R</th>
<th>R Square</th>
<th>Adjusted R</th>
<th>F Change</th>
<th>Df1</th>
<th>Df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>.438</td>
<td>.192</td>
<td>.149</td>
<td>4.458</td>
<td>5</td>
<td>94</td>
<td>.001</td>
</tr>
</tbody>
</table>
A one way analysis of variance was employed to determine any differences in the mean scores of physical activity across subjective social status (SSS) rankings within the community. Anova analysis revealed no significant differences in physical activity levels across SSS groups (F(6, 79)=.623, p=.711). Descriptive statistics revealed no participants indicated their SSS on rankings 3 or 4. 46 out of 86 participants indicated their SSS on ranks
five and six out of ten, which indicates over half of participants perceived their social status average within the community.

Table 3.1 One Way Analysis of Variance displaying mean differences in physical activity scores across subjective social status rankings in the community

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>205419.897</td>
<td>6</td>
<td>34236.649</td>
<td>.623</td>
<td>.711</td>
</tr>
<tr>
<td>Within Groups</td>
<td>4338348.316</td>
<td>79</td>
<td>54915.801</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4543768.212</td>
<td>85</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Similarly, a one way analysis of variance was conducted to determine any differences in the mean scores of physical activity across SES rankings in Ireland. Results revealed no statistically significant differences in physical activity between SSS rankings in Ireland (F(7,78) = 6.28, p=.639).
Further, a one way analysis of variance was conducted to determine any differences in physical activity across income groups. Results indicated there was no statistically significant differences in physical activity across income levels $F(3,82) = .950, p=.420)$. Table 3.3 displays mean differences of physical activity across income groups.
Table 3.3 One way analysis of Variance displaying mean differences of physical activity across income levels

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>242452.145</td>
<td>7</td>
<td>34636.021</td>
<td>.628</td>
<td>.731</td>
</tr>
<tr>
<td>Within Groups</td>
<td>4301316.067</td>
<td>78</td>
<td>55145.078</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4543768.212</td>
<td>85</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Discussion

The purpose of this project was to investigate the predictive utility of the individual, cognitive and social factors for physical activity in college students. An age related decline in physical activity is widely documented (Kimm et al., 2002; Sallis & Saelens, 2000), with the highest rate of decline occurring between 18 and 24 years of age (USDHHS, 2000). This transition from adolescence to adulthood is a crucial but overlooked time for examining modifiable weight related behaviour (Nelson, et al., 2008). In Ireland, obesity is a major public health concern where more than 50% of the adult population are not active enough to be healthy (HSE, 2009). This research employed Bandura’s social cognitive model as a framework with the additional measurement of socioeconomic status in selecting constructs to represent daily interactions that may lead college students to adopt an active lifestyle.

Based upon the tenets of the theory and previous research, it was hypothesized that self-efficacy, exercise goal-setting, exercise planning and scheduling, family social support and friends social support would significantly predict physical activity behaviours for students. Additionally, it was hypothesized that there would be a significant difference in physical activity behaviours across income, subjective social status in the community and subjective social status in Ireland. Finally, it was hypothesized males would report higher levels of physical activity and self-efficacy than females.

A multiple linear regression analysis indicated the social cognitive model explained 14% of the variance in physical activity. As hypothesized, exercise goal-setting and family social support were significant predictors of physical activity. Contrary to hypothesis self-efficacy, exercise planning and scheduling and friends social support were found to be non-significant predictors of physical activity in college students. Contrary to the second hypothesis, three
separate ANOVA’s no significant association between physical activity levels across income, subjective social status in the community and subjective social status in Ireland were not significant predictors of physical activity. Lastly, supporting the final hypothesis, results indicated males reported greater levels of physical activity and self-efficacy for physical activity than did females.

Self-efficacy

Despite self-efficacy consistently emerging as the strongest predictor of PA behaviours in existing literature (Andersen et al., 2006), in the current study self-efficacy was not a significant predictor of physical activity (B=-.082, Sig = .505). However, mean self-efficacy scores indicated that participants had positive but not complete confidence in their ability to participate in regular physical activity (i.e Mean = 85.48 on a 100-point scale). Supporting McAuley & Blissmer’s (2002) suggestion, evidentially the reciprocal relationship between physical activity and self-efficacy appears more complex than it seems. Clearly, efficacy does not predict activity patterns at all times; similarly, not all PA stimuli have equal effects on self-efficacy (McAuley & Blissmer, 2002). Therefore, the relationship between self-efficacy and physical activity may alter depending on the nature and context of the activity performed. For example, efficacy cognitions are more predictive of behaviour under challenging circumstances than under habitual demands (McAuey et al., 1993). A plausible explanation for this non-significant result may be attributed to the fact duration and intensity of activity was not accounted for. Moreover, the salience of self-efficacy perceptions for most individuals will depend on what stage an individual is currently engaging in with physical activity participation (Bandura, 1997). Furthermore, Oman and King (1998) suggested that self-efficacy has differential effects across the time course of exercise; while self-efficacy
significantly predicted exercise adoption, it was less significant during exercise maintenance. Thus, students may be currently engaging in different stages of physical activity behaviours, which may have produced the non-significant result. However, considering the documented significance of self-efficacy on physical activity, it may be necessary to target increasing student’s self-efficacy, as when self-efficacy increases, favourable changes in self-regulatory strategies and health behaviour are likely (Bandura, 1997). The significance of increasing self-efficacy is further endorsed by the mediating relationship between self-efficacy and high-related quality of life or satisfaction with life (Elavsky et al., 2005; McAuley et al., 2006).

Gender

Consistent with Patterson et al., (2006) data supported the final hypothesis, demonstrating males reported higher levels physical activity and higher levels of self-efficacy than females. These results indicate that students with lower perceived confidence in their ability to engage in physical activity are more likely to inactive than those with higher levels of perceived confidence. These findings are consistent across other numerous populations (Zimmerman-Sloutkis, et al., 2010; Eyler, et al., 20002; Dowda, et al., 2003), namely, reporting males are more active than females. This may be attributed to the decline in female participation rates in organised sports and exercise participation which is observed steadily throughout adolescence (Currie et al., 2004). By adulthood, this trend in gender difference becomes particularly evident for strenuous physical activity. (SLAN, 2007).

Self-Regulation

The present study found that exercise goal-setting (β = .404, p=.008) was a significant predictor of physical activity, however results indicated exercise planning and scheduling (β= -.133, p=.289) was not a significant predictor of physical activity. As Rovniak et al., (2002)
findings reinforced the significance of self-regulatory subskills for initiating and sustaining physically active lifestyles (King et al., 1998; Sallis et al., 1999), this study tested the predictive usefulness and validity of the Exercise Goal-Setting Scale (EGS; Rovniak et al., 2002) and the Exercise Planning and Scheduling Scale (EPS; Rovniak et al., 2002). While the EGS scale was developed in accordance with Weinberg’s recommendations on goal-setting strategies, the exercise planning and scheduling scale was developed based on pilot study. Results in this study lend support to the EGS scale, but failed to replicate findings utilizing the EPS scale. The mixed results further corroborate the established body of evidence highlighting the importance of the ‘goal construct’. Exercise goal-setting which is a central subskill within the social cognitive approach to changing health behaviour (Bandura, 1997), emerged as the most influential variable on physical activity behaviours (p=0.008) in the current study. Participants in this study asserted they predominantly set exercise goals, which is an integral component of self-regulatory skills (Schunk, 2001). However, participants they did not seem to employ the corresponding planning and scheduling strategies. These results are consistent with Mudrak (2011) who found a significant association between exercise goal-setting and physical activity in senior Chech citizens, but failed to find a positive association for planning and scheduling on physical activity. In contrast, Dorough, A., (2005) highlighted planning and scheduling physical activity was the most preferred type of self-regulatory strategy, suggesting that interventions should assess and match individuals to physical activity preference dimensions.

**Social Support**

As hypothesized, social support from family significantly predicted PA (β = .293, p=0.14). In contrast, social support from friends did not significantly predict physical activity in college
students (β = -.123, p=.307). Findings suggest social support from family for physical activity is more important than social support from friends. These results are unexpected considering, young adults spend more time with their peers and depend less on family emotionally and financially (Arnett, 2000). During college years, individuals start exploring extra-familial influences (Windle, 2002). However, the non-significant association may be attributed to the different sources and types of social support that may vary with the characteristics of the physical activities performed (Sallis, et al., 2002). For example, social support provided by parents is usually in the form of transportation, sports equipment and reinforcement. However, these findings are in contrast to evidence that has suggested friends have more influence on college students’ frequency of doing exercise than family has. Moreover, these findings suggest that at least in some domains, parents continue to be an important socialization agent of college-age youth (Collins & Steinberg, 1998).

*Socioeconomic Status*

Independent of the social cognitive variables, results revealed no statistically significant difference in physical activity across income (p=.420), subjective social status in the community (p=.711), or subjective social status in Ireland (p=.731).

These findings are inconsistent with Frerichs’s (2014) comparable SSS across Asian countries. The study revealed a direct association between subjective social status and physical activity, the findings in the present study do not support. Although numerous studies have reported the association between household income and physical activity (Hill, et al., 2012; Seefedlt et al., 2002; Trost et al., 2002), this study failed to replicate such findings. In light of these results, associations between socioeconomic status warrants further investigation, however, perhaps with more reliable and valid measures.
Limitations

Several limitations are inherent in the study and must be addressed. The first notable limitation is the self-reported measures. While self-reported data allows for easier collection, research has suggested that direct measures are more valid, accurate, and reliable (Prince et al., 2008). Assessing physical activity behaviours is difficult and discrepancies are known to exist between self-reported physical data and objectively measured physical data (Mackay, Oliver, & Schofield, 2011). If feasible, future researchers should employ more objective measures of physical activity such as pedometers to obtain more reliable and valid results.

The second limitation to this study was using a cross-sectional research design, which does not allow for the determination of cause and effect relationships. Due to the short time frame afforded to conduct this study, a longitudinal design was not possible. However, future studies should utilize longitudinal or prospective designs to enhance the understanding of the possible casual associations between social cognitive constructs and physical activity behaviour. The third potential limitation was the use of an online survey questionnaire. While past research has shown Internet questionnaires to be valid and reliable, online participants did not have the opportunity to ask clarifying questions (Meyerson & Tryon, 2003). This could results in participants over reporting information. The third limitation of this study was the relatively small sample size, which may limit the generalizability of the findings to similar samples.

In spite of its many limitations, the current research contributes to the limited body of research that exists surrounding the determinants of physical activity behaviour in college students. A significant strength of using a social cognitive model is that the same framework can be applied to construct interventions to increase physical activity behaviours during this
critical period. Further, this study explored two subscales of two SCT constructs, which provided a clearer insight into the effect of each variable. Lastly, although the sample size is considering a limitation, participants were recruited from colleges across Ireland, thus increasing generalization of results.

Implications

Although modest in its scope, these findings have important implications for understanding physical activity behaviour in college students and designing effective interventions.

Although, self-efficacy was not significant predictor of physical activity, it is a modifiable construct. In light of extensive research suggesting it is the strongest predictor of PA, it may be necessary for future interventions to typically increasing self-efficacy in order to subsequently increase physical activity levels. Interventions can subsequently target the four sources of efficacy proposed by Bandura (1977): mastery experience, vicarious experience, verbal persuasion and physiological or affective states. A recent meta-analysis (Ashford et al., 2010) of physical activity intervention studies that have attempted to increase physical activity self-efficacy revealed that interventions that used vicarious experience, and feedback on past or others’ performance produced significantly higher levels of physical activity self-efficacy than interventions where these techniques were not included. Although students employed high levels of exercise goal-setting, results suggest that students are not equipped with sufficient planning and scheduling strategies. Thus, it might be plausible to educate students on the sufficient skills to employ in order to enhance PA participation. Although this research documented the significant effect of family social support on physical activity, future studies should assess specific types of social support (e.g. encouragement, transportation) in order to further differentiate effects of family and friend influences. In sum,
longitudinal research is required that monitors students from undergraduate studies throughout post graduate education into their respective lives, in attempt to further understand strategies to foster the adoption and maintenance of a physically active lifestyle.

**Conclusion**

Although modest in its scope and findings, this research has further contributed to the understanding of the determinants that lead college students to adopt an active lifestyle. The study identified exercise goal-setting and family social support as significant predictors of PA participation among college students. Findings suggesting that self-efficacy, exercise planning and scheduling, income, subjective social status in the community, subjective social status in Ireland do not have an significant effects on PA throughout this period. Gender differences occurred, revealing males reported higher levels of physical activity and self-efficacy than females. As demonstrated in this study, the determinants of PA are complex. However, the ultimate goal is to develop interventions to enhance our understanding of how physical activity is imperative to a healthy lifestyle.
References


Adeniyi AF, Idowu OA, Ogwumike OO, Adeniyi CY. Comparative influence of self-efficacy, social support and perceived barriers on low physical activity development in patients with type 2 diabetes, hypertension or stroke. Ethiop J Health Sci. 2012; 22(2): 113


My name is Aoife Dolan and I am conducting research in the Department of Psychology that explores the predictors of physical activity in college students specifically self-efficacy, self-regulation, social support and socioeconomic status. This research is being conducted as part of my studies and will be submitted for examination.

You are invited to take part in this study and participation involves completing and returning the attached anonymous survey. While the survey asks some questions that might cause some minor negative feelings, it has been used widely in research. If any of the questions do raise difficult feelings for you, contact information for support services are included on the final page.

Participation is completely voluntary and so you are not obliged to take part.

Participation is anonymous and confidential. Thus responses cannot be attributed to any one participant. For this reason, it will not be possible to withdraw from participation after the questionnaire has been collected.

The questionnaires will be securely stored and data from the questionnaires will be transferred from the paper record to electronic format and stored on a password protected computer.

**It is important that you understand that by completing and submitting the questionnaire that you are consenting to participate in the study.**

Should you require any further information about the research, please contact @mydbs.ie. My supervisor Marianne Breen can be contacted at

Thank you for taking the time to complete this survey.
Think about all the **vigorous** activities that you did in **the last 7 days**.

**Vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Think *only* about those physical activities that you did for at least 10 minutes at a time.

1. During the **last 7 days**, on how many days did you do **vigorous** activities like heavy lifting, digging, aerobics, or fast bicycling?
   
   _______ days per week

   No vigorous physical activities skip to question 3.

2. How much time do you usually spend doing vigorous physical activities on one of those days?

   _______ hours per day
   _______ minutes per day
   _______ Don’t know/Not sure

3. Think about all the **moderate** activities that you did in the **last 7 days**. **Moderate** activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

4. During the **last 7 days**, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis?

   _______ days per week.

   No moderate physical activities skip to question 5.

5. How much time do you usually spend doing moderate physical activities on one of those days?

   _______ hours per day
   _______ minutes per day.
   _______ Don’t know/Not sure.

   Think about the time you spent **walking** in the **last 7 days**.

   This includes at work and at home, walking to travel from place to place, and any other walking that you have done solely for recreation, sport, exercise, or leisure.
6. During the last 7 days, on how many days did you **walk** for at least 10 minutes at a time?
   _______ Days per week
   _______ Don’t know/Not sure

7. How much time did you usually spend **walking** on one of those days?
   _______ hours per day
   _______ minutes per day
   _______ Don’t know/Not sure

The next question is about the time you spent sitting on weekdays during the last 7 days. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

8. During the **last 7 days**, how much time did you spend **sitting** per day?
   _______ hours per day
   _______ minutes per day
   _______ Don’t know/Not sure.
**DIRECTIONS:** A number of situations are described below that can make it hard to stick to exercise regularly. On the items below, please rate your confidence that you can perform exercise on a regular basis. Please rate your degree of confidence by recording in each of the blank spaces a number from 0 to 100 using the scale below.

0 10 20 30 40 50 60 70 80 90 100

Cannot do at all  Moderately can do  Highly certain can do

**Confidence** (0-100)

1. When I am feeling tired.  
2. When I am feeling under pressure from work.  
3. During bad weather.  
4. After recovering from an injury that caused me to stop exercising.  
5. During or after experiencing personal problems.  
6. When I am feeling depressed.  
7. When I feeling anxious.  
8. After recovering from an illness that caused me to stop exercising.  
9. When I feel physical discomfort when I exercise.  
10. After a holiday.  
11. When I have too much work to do at home.  
12. When visitors are present.  
13. When there are other interesting things to do.  
14. If I don’t reach my exercise goals  
15. Without support from my family or friends.  
16. During a holiday.  
17. When I have other time commitments.  
18. After experiencing family problems

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Goals

The following questions refer to how you set exercise goals and plan exercise activities. Please indicate the extent to which each of the statements below describes you:

1. I often set exercise goals
2. I usually have more than one major exercise goal
3. I usually set dates for achieving my exercise goals
4. I don’t typically write down my exercise goals
5. My exercise goals help to increase my motivation for doing exercise
6. I find it difficult to measure whether or not I have achieved my exercise goals
7. I tend to break more difficult exercise goals down into a series of smaller goals
8. I usually keep track of my progress in meeting my goals
9. I have developed a series of steps for reaching my exercise goals
10. I usually achieve the exercise goals I set for myself
11. If I do not reach an exercise goal, I analyse what went wrong
12. I make my exercise goals public by telling other people about them
13. My exercise goals tend to focus on beginning or maintaining a regular exercise routine
14. My exercise goals tend to focus on improving my appearance and/or performance

Plans

The following questions refer to how you fit exercise into your lifestyle. Please indicate the extent to which each of the statements below describes you:

1. I never seem to have enough time to exercise
2. Exercise is generally not a high priority when I plan my schedule
3. Finding time for exercise is difficult for me
4. I try to fit in exercise when I have free time
5. I schedule all events in my life around my exercise routine
6. I schedule my exercise at specific times each week
7. I plan my weekly exercise schedule
8. When I am very busy, I don’t do much exercise

9. Everything is scheduled around my exercise routine—work, etc.

10. I try to exercise at the same time and same day each week to keep a routine going

11. I write my planned activity sessions in an appointment book or calendar

12. I try to fit in exercise if there is time left after scheduling other activities
The following questions refer to social support for your exercise.

Below is a list of things people might do or say to someone who is trying to exercise regularly. Please read and answer every question. If you are not exercising regularly, then some of the question may not apply to you. In that case, please choose “6” for “does not apply”.

Please rate each question twice. Under “Family”, rate how often anyone living in your household has said or done what is described, during the last 3 months. Under “Friends”, rate how often you friends or co-workers have said or done what is described, during the last 3 months.

Please choose one number from the following rating scale in each space.

<table>
<thead>
<tr>
<th>None</th>
<th>Rarely</th>
<th>A few times</th>
<th>Often</th>
<th>Very Often</th>
<th>Does not apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

SAMPLE:

1. If my family rarely exercises with me, and my friends very often do, I would answer like this:

   a. Exercises with me.                      a. 2                                    a. 5

   During the past 3 months, my family (or members of my household) and friends:

   a) Exercised with me                              _______  ______
   b) Gave me encouragement to stick with my exercise programme                  _______  ______
   c) Changed their schedule so we could exercise together            _______  ______
   d) Offered to exercise with me                        _______  ______
   e) Gave me helpful reminders to exercise                 _______  ______
   f) Discussed exercising with me                       _______  ______
   g) Talked about how much they like to exercise         _______  ______
   h) Helped plan events around my exercising              _______  ______
   i) Asked me for ideas on how they can exercise more    _______  ______
   j) Took over work/chores so I had more time to exercise  _______  ______
k) Made positive comments about my physical appearance
l) Got angry with me or complained about the time I spend exercising
m) Criticized or made fun of me for exercising
n) Gave me rewards for exercising such as bought or gave me something I like
‘Think of this ladder as representing where people stand in their communities. People define community in different ways; please define it whatever way is most meaningful to you. At the top of the ladder are the people who have the highest standing in their community. At the bottom are the people who have the lowest standing in their community. Where would you place yourself on this ladder? Please indicate what rung (1-10) where you think you stand at this time in your life, relative to other people in your community.’
‘Think of this ladder as representing where people stand in Ireland. At the top of the ladder are the people who are the best off - those who have the most money, the most education and the most respected jobs. At the bottom are the people who are the worst off - who have the least money, least education and the least respected jobs or no job. The higher up you are on the ladder the closer you are to the people at the very top; the lower you are, the closer you are to the people at the very bottom. Where would you place yourself on the ladder? Please indicate what rung (1-10) where you think you stand at this time in your life, relative to other people in Ireland’
Please indicate which bracket you/ your parents earn per annum

- under €20,000
- €20-35000
- €35000-€55000
- over €55,000