



# A qualitative investigation of the perceived influence of adolescents' motivation on relationships between domain-specific physical activity and positive and negative affect

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## ABSTRACT

**Background:** Evidence shows that the relationship between physical activity and mental wellbeing varies across different life domains. However, little is known about the reasons for such variation. We aimed to explore motivation as a potential underlying factor that may explain some of the variation, by qualitatively examining adolescents' physical activity experiences and perceived affective outcomes during leisure-time, active travel, and physical education.

**Method:** We conducted computer-assisted-self-interviews with 144 adolescents ( $M$  age = 14.42 years) about physical activity experiences they believed led to positive and negative affect. The participants were asked when the activities occurred, their reason for participation, and with whom they participated. Participants also responded to questions specifically about leisure-time, active travel, and physical education.

**Results:** Thematic analysis revealed that adolescents perceived leisure-time physical activity led to positive affect, because it was fun, increased self-esteem, and provided a sense of belonging. However, active travel was associated with positive affect among those who participated for enjoyment or health benefits, far more than those who participated because it was their only means of transportation. Similarly, those who believed physical education was fun, and experienced a sense of belonging, were more likely to report it led to positive affect, compared to those who participated in physical education because they were forced.

**Conclusions:** Compared to other life domains, more adolescents associate leisure-time physical activity with positive affect. However, promoting more autonomous motivation may enhance the effect of physical activity on wellbeing in other domains, such as active travel and physical education.

## 1. Introduction

Abundant evidence shows that physical activity (PA) is associated with greater mental health and a reduced risk of mental ill-health (Biddle & Asare, 2011). However, the strength of the association between PA and mental wellbeing varies considerably between different studies. Early attempts to understand such inconsistency focused on determining the frequency, duration, and intensity required for optimal mental health benefits. However, researchers have been unable to confirm an optimal PA dose, with evidence supporting both higher and lower amounts of light, moderate, and vigorous PA (Biddle, 2000; Haarasilta, Marttunen, Kaprio, & Aro, 2004; Janssen & LeBlanc, 2010; Teychenne, Ball, & Salmon, 2008). These findings suggest that the

amount of PA, and the intensity of PA, are not responsible for the large variation in the strength of association between PA and mental wellbeing, or at least, cannot be the only factors that influence the strength of association.

Given that PA is defined as any muscular movement that expends energy (Shephard, 2003), the term PA includes a broad range of bodily movements that are conducted in a variety of life domains (i.e., different areas of life including work or school, travel, and leisure-time). Recent meta-analytic evidence shows that the relationship between PA and mental health is not consistent across different life domains, and that PA during leisure-time has a stronger positive association with mental health than PA during work, transport, housework, and physical education (PE) (White et al., 2017). However, no study has explored

*Abbreviations:* PA, physical activity; PE, physical education; SDT, self-determination theory

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factors that may help to explain why leisure-time PA is more optimal than other domains. Additionally, no study has identified ways of making PA within less optimal domains more beneficial to mental health. However, the majority of people's weekly PA does not occur during leisure-time (Active Healthy Kids Australia, 2014; Jurakić, Pedišić, & Andrijašević, 2009; Smith, Berdel, Nowak, Heinrich, & Schulz, 2016) and, therefore, it is of the utmost importance that we understand why leisure-time PA appears optimal, and what factors increase the strength of association in other domains. This understanding would enable the development of strategies to enhance other life domains, and to tailor interventions and physical activity guidelines, in order to ensure that mental health benefits are derived from as much of people's daily PA as possible, regardless of the domain it occurs.

One factor that may partially explain why leisure-time PA is more strongly associated with mental health is motivation. It has been suggested that leisure-time PA may be a more self-determined behaviour than PA during other domains (e.g., active travel) (Asztalos et al., 2009; Kull, Ainsaar, Kiive, & Raudsepp, 2012), and this higher quality motivation may explain why leisure-time PA holds a stronger positive relationship with mental wellbeing (Asztalos et al., 2009; Kull et al., 2012). Self-determination theory (SDT; Deci & Ryan, 1985) supports this idea, as it theorises that more self-determined behaviours lead to more positive psychological outcomes because they are more likely to satisfy people's need for autonomy, competence, and relatedness (Deci & Ryan, 2002a). However, no study has examined the role of motivation in the PA and mental health relationship, either in terms of total PA, or within specific PA domains.

Self-determination theory classifies motivation along a continuum from self-determined to non-self-determined, and explains that autonomous motivation is the most self-determined form of motivation and is defined as acting “with a full sense of volition and choice because the activity is interesting or personally important” (Williams, 2002, p. 235). In the middle of the continuum lies controlled motivation – “engaging in an activity for internal (e.g., guilt) or external pressure (e.g., external rewards)” (Gillet, Vallerand, Lafrenière, & Bureau, 2012, p. 455). Amotivation lies on the opposing end to autonomous motivation, is the least self-determined, and is defined as “lacking intention to act” (Deci & Ryan, 2002b, p. 17).

Based on: (1) meta-analytic evidence demonstrating that life domain influences the strength of association, (2) strong theoretical support for motivation as an important contextual factor, and (3) the absence of studies investigating the role of motivation within different PA domains, this study aims to explore adolescents' experiences of PA and affect within different PA domains, and among PA undertaken for different motivation reasons. The purpose of examining these relationships is to identify factors that may be important in explaining the varying strength in association between PA and mental health within different domains. This could then lead to tailored guidelines and interventions so that not only leisure-time PA is beneficial to mental health. Given that (1) a large portion of adolescents' weekly PA occurs at school (Carlson et al., 2016) or when travelling to and from school (Cooper, Andersen, Wedderkopp, Page, & Froberg, 2005), and (2) few studies have examined mental health or wellbeing associated specifically with PA during school or travel, the current study focuses on PE, active travel, and leisure-time.

## 2. Methods

### 2.1. Methodological approach and epistemological perspective

Qualitative methods are important in understanding the mechanisms that underlie the effect of PA on wellbeing (Mutrie, 1997) and are particularly useful in understanding a relationship in detail in different contexts (Faulkner & Biddle, 2004). Therefore, we conducted this study using a qualitative method to begin to explore the potential role of motivation in relation to PA and mental wellbeing in different life

domains. We also employed a realist epistemological perspective as realism purports that investigating an event (i.e., PA) as well as the context and mechanisms associated with that event (i.e., life domain and motivation) lead to an enhanced understanding of the outcomes experienced (i.e., positive and negative affect; Pawson & Tilley, 1997). However, when exploring a new topic or relationship, combining quantitative and qualitative data can enhance the interpretation of findings (Onwuegbuzie & Leech, 2004). As such, we also included frequency counts and percentages to indicate the proportion of participants reporting certain affective experiences and motivational constructs when describing PA participation in different domains. Including this data adds meaning to the interpretation of the qualitative findings by demonstrating the strength of certain themes.

### 2.2. Participants

In order to describe the role of motivation in detail within a specific population (i.e., adolescents; Patton, 2002), we invited Year 9 students from two independent secondary schools in Western Sydney, Australia to participate. With regards to the socioeconomic status of the schools, one school was close to, and within one standard deviation of, the average Australian score on the SEIFA Index of Relative Socio-economic Advantage and Disadvantage (Pink, 2011), and the average score on the Australian Curriculum Assessment and Reporting Authority's (2013) Index of Community Socio-Educational Advantage (ICSEA). The second school was slightly above average, being within two standard deviations of the mean on both the SEIFA and ICSEA indexes. All Year 9 students at both schools were invited to participate and 114 students provided parental consent and participant assent and agreed to participate ( $M$  age = 14.42 years,  $SD$  = 0.58, 28% female). While common guidelines recommend between 20 and 50 participants for qualitative studies (Creswell & Clark, 2007; Patton, 2002), the participants in this study answered questions in the absence of a researcher. Although the questions included many probing questions, there was no researcher present one-on-one with the participant. Therefore, a larger sample size was advantageous as it ensured enough data was collected overall if some participants gave relatively short answers. The second reason for the large sample size was because of the need to recruit students from at least two different schools to increase triangulation, which is advantageous to the transferability of the results (Patton, 2002). Data saturation occurred after collecting data from the two schools, as new data failed to add new themes or extend the understanding of existing themes (Weed, 2009). Further, the main aim of this study was to present qualitative findings; quantification is merely included to supplement the qualitative results discussed. As such, 114 was deemed large enough for qualitative analysis, and a third school was not recruited. The Western Sydney University Human Research Ethics Committee provided ethics approval.

### 2.3. Procedures

Although interviews are perhaps the most common method of qualitative data collection and can lead to the creation of large amounts of data, they can often lead to high levels of social desirability bias, particularly when discussing topics such as affect (Bowling, 2005). Self-administered questionnaires can increase respondents' willingness to disclose sensitive information, and reduce social desirability bias, due to the absence of an investigator (Bowling, 2005; Richman, Weisband, Kiesler, & Drasgow, 1999). Computer technology provides a platform for self-administering open-ended questions and collecting anonymous responses. Multiple studies have shown that interviews conducted using computer self-administration methods reduce social desirability distortion compared with face-to-face methods (Richman et al., 1999). Computerised methods also enable the collection of responses from a larger and more diverse sample of students than face-to-face methods. Additionally, adolescents have reported feeling comfortable reporting

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