

Master's in Educational Leadership Dissertation

31st July 2020: University of Exeter

BE ACTIVE – BE HAPPY: DOES REGULAR PHYSICAL ACTIVITY IMPROVE HAPPINESS IN ADOLESCENTS?

THE PROBLEM

EXACERBATED DURING LOCKDOWN



Barnardo's, 2020



Sport England, 2020



Youth Sport Trust, 2018

DATA COLLECTED

We surveyed **6,276** young people aged 11-16 (adolescents) from **21** secondary schools across Nottinghamshire about their **happiness** and **Daily Physical Activity (DPA)** habits

MAIN FINDINGS

THE LEAST ACTIVE ARE THE LEAST HAPPY

Over a quarter (27%) of adolescents reporting zero days of physical activity in the previous week also scored themselves at the lowest levels for self-reported happiness (1 or 2 out of 10) whereas 50% of those who were active on five or more days reported higher levels of happiness (8-10).

01

MORE IS BETTER

There appears to be a marked increase in median happiness if two days of physical activity are achieved and a further step change at five days of PA.

02

GIRLS NEED MORE

The tipping point for median happiness for girls occurs at three days of physical activity within the previous week. For boys this occurred at two days.

03

THE FIVE-DAY OFFER

Fewer adolescents reported the lowest happiness scores (1-4 out of 10) if they were physically active on five or more days within a week.

04

SUMMARY



IMPLICATIONS

How can these research findings help?



> POLICY MAKERS

Greater prioritisation of wellbeing and structured daily physical activity opportunities (including physical education) is necessary.



> SCHOOL LEADERS

Increased provision for physical education and daily physical activity are needed for all students (and staff).



> FAMILIES & INDIVIDUALS

Promote happiness and daily physical activity habits by being active together and demand more opportunities in school.

Will Swaithes, July 2020

Abstract

Background

Research suggests a positive relationship between daily physical activity (DPA) and happiness. However, a lack of research on DPA and happiness of adolescents in England exists. This work explores the relationship between physical activity and happiness in adolescents in England.

This research aims to:

- Better understand the effect of physical activity on health, happiness and success in schools
- Influence school leaders and policy makers to increase daily provision for physical activity
- Influence student habits by raising their awareness of the value of physical activity.

Methods

An online survey was used to capture self-reported happiness and physical activity behaviours amongst 6,276 adolescents in Year 7-11 (11 to 16-year olds) from 21 secondary schools across Nottinghamshire. Data were analysed descriptively using Microsoft Excel.

Results

Findings demonstrated similar trends to national data around both DPA and happiness declining with age, especially for girls. In addition, the following results were shown:

1. Over a quarter (27%) of individuals reporting zero days of physical activity in the last week also scored themselves at the lowest levels for self-reported happiness (1 and 2 out of 10 on a Likert scale) whereas over 50% of those who were active on 5 or more days reported much higher happiness ratings of 8-10
2. There appears to be a marked increase in median happiness if two days of physical activity are achieved and a further step change at five days of PA
3. The tipping point of median happiness for girls requires more DPA than for boys, as this appears to happen at three days rather than two

4. Being physically active on five days a week results in the least adolescents reporting the lowest happiness scores (1-4 out of 10) but being active every day could be associated with lower self-reported happiness (especially for girls).

Conclusion

This study has provided evidence which may be of benefit to students, staff, parents, school leaders and educational policy makers in influencing activity habits and educational provision for adolescents. Implications for practice relate to the need for more structured opportunities to embed DPA within the school curriculum. This is especially important for older students and girls, where there are particular challenges around meeting Chief Medical Officer guidelines, their happiness and marginalised physical education time in many schools. Further work is needed to better understand the impact of physical activity interventions, especially for those self-reporting low levels of happiness, and other possible causal factors.

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Acknowledgments

Thanks to Sport England, Sheffield Hallam University, and colleagues from across the 21 schools for allowing me to analyse this powerful data.

Abbreviations

Black, Asian and Minority Ethnic - BAME
 Chief Medical Officer - CMO
 Children and young people – CYP
 Daily Physical Activity - DPA
 Physical Activity – PA
 Randomised control trials – RCTs
 Sheffield Hallam University - SHU
 Special Education Needs and Disability - SEND
 Subjective Wellbeing – SWB
 Moderate to vigorous physical activity - MVPA

Chapter 1: Introduction

“Children in the UK are the least happy they have been in a decade”
(Weaver, 2019)

Structure of dissertation

This chapter presents an introduction to this dissertation. Firstly, the rationale for the work is described, followed by the aims of this study, the research questions and hypothesis. Following that, chapter 2 presents a literature review which explores relevant research in this field. Chapter 3 outlines the study methods. The findings and corresponding discussion are presented in chapter 4, prior to the conclusion and recommendations in chapter 5.

Rationale

In the UK, there has been a significant decline in happiness amongst children and young people since 2009. In fact, more than 219,000 children report low wellbeing (The Children’s Society, 2019) and meanwhile we are becoming increasingly inactive as a nation. Less than 50% of children and young people (CYP) are meeting Chief Medical Officer (CMO) guidelines of an average of 60 minutes of physical activity per day and a staggering 2.1 million do less than an average of 30 minutes a day (Sport England Active Lives Children and Young People Survey, 2019, p5). Despite evidence suggesting that exercise is beneficial for physical and mental well-being, little is known about the links between happiness and ‘dose’ of exercise for adolescents aged 11-16. An additional concern is the increasing focus of schools as ‘exam factories’ (Hutchings, 2015) which may be to the detriment of wider wellbeing and flourishing. The national curriculum in England (Department for Education, 2014) could be criticised for lacking substantive support for young person wellbeing as a formal aspect of their education in comparison to literacy and numeracy. ‘Despite the known benefits of good wellbeing provision, at present the education system is unbalanced. There is too much emphasis on academic attainment and not enough focus on promoting the wellbeing of students.’ (Minds, 2017, p4)

Whilst there is research supporting the use of daily physical activity (DPA) to improve ill-health, for example those with cerebral palsy (Maher et al., 2016) and in other countries, such as Norway (Moljord et al., 2011 and Vedøy et al., 2020), Canada

(Bremer et al., 2018) and Turkey (Cekin, R., 2015), very little exists for young people in England from a 'general population', hence that will be the focus here rather than as an intervention with those who already have health concerns.

I consider these two factors of happiness and physical activity habits to be inextricably linked. This research seeks to build upon existing literature prioritising happiness and how that correlates to physical activity habits and explore the relationship between happiness and physical activity in adolescents in England, to influence both policy and practice.

This feels particularly timely, as whilst most of education and everyday life has been put on hold during Covid-19 pandemic, the UK government (Johnson, 2020 and Public Health England, 2020a) and NHS (National Health Service, 2020) have continued to endorse DPA. That said, curriculum time will be at a premium over the next academic year and beyond, with reports of schools and possibly even government policy encouraging a narrowing of focus towards core subjects of English, mathematics and science (Gibbons, 2020), this evidence could help inform debate and the lobbying potential of physical educators, students and parents advocating consideration of more holistic aspects of school provision.

Analysis of data from 21 Nottinghamshire schools may provide opportunity to influence senior leaders in those schools to increase opportunities and provision for DPA but also to stimulate wider policy making decisions around how DPA is valued and prioritised within schools.

Aims

This dissertation seeks to contribute to the existing evidence base relating to the value of DPA on happiness within the general population of adolescents in England and to identify whether 11-16 year olds who undertake 30+ minutes of physical activity at least four days a week are happier than those who do not.

The aims of the research are to:

1. Investigate changes in activity habits and self-reported happiness for different demographics (gender and school year)
2. Explore the relationship between number of days of physical activity per week and self-reported happiness rating.

Hypothesis

A symbiotic relationship exists between DPA and happiness, where those who do little or no physical activity per week also represent some of the least happy adolescents in the sample population. Any relationship between DPA and happiness is complex, whilst increased exercise habits improve mood, it is recognised that higher self-reported happiness is also likely to result in increased DPA and wellbeing habits – a virtuous cycle (Zhang and Chen, 2019). The data collected does not attempt to suggest direction of causation but merely that a significant relationship exists and perhaps there is a tipping point¹ of the number of days of physical activity required per week to maintain a positive effect on happiness. It is my hypothesis that four or more days per week of PA should have a significant positive impact on self-reported happiness.

Research questions:

1. Is there a relationship between physical activity and happiness?
2. What effect does 30 minutes or more of physical activity at least four times a week have on happiness?
3. Is there a tipping point for the number of days of physical activity per week and positive impact on happiness?
4. How could schools ensure more 11-16-year olds meet CMO guidelines?

¹ For the purpose of this study, 'tipping point' is defined as the point at which a small change in DPA is associated with a marked change in happiness

Chapter 2: Literature Review

Introduction

The link between physical activity and happiness in adolescents in England is an area of relative scarcity, both in terms of empirical research evidence and prioritisation within the education system. This study aims to investigate the correlation and recognises that causation would be harder to determine. Determining whether there is a symbiotic relationship or not, irrespective of the direction of causation, would be valuable to inform future policy, practice and behaviours. It is also important to note the potential transformative influence of sharing data with senior leaders that relates to their own cohorts of students.

This chapter explores existing literature within the field of physical activity and happiness as well as clarifying exactly what is meant by these terms before explaining the intended research aimed at contributing to a gap in findings. A structured literature search was conducted utilising Education Resources Information Center (ERIC) and google scholar. Pre-determined criteria relating to physical activity, exercise, sports participation and happiness, wellbeing, positive mental health and children, adolescents, youth, teenagers revealed 1,707 publications. By refining the search to papers specific to a UK/England/GB context, between 2010 and 2020, this reduced the total number to 160 publications (see appendix 1 for search terms table. The following section presents the findings from the review of the literature.

The systematic review completed by Zhang and Chen in 2019 identified 1,142 records when exploring the relationship between physical activity and happiness. Yet, only 23 of those studies met their criteria for inclusion and of those only one was UK based (Lathia et al., 2017) and a further one study that was from within the European Union (Richards et al., 2015). Lathia et al. (2017) recognised that whilst there is some evidence linking exercise to psychological health, there is very little that looks at all forms of physical activity. Lathia's study is particularly helpful as data was collected from over ten thousand participants utilising a smartphone application to capture self-reported happiness alongside accelerometer data tracked by the device, but this did not focus specifically on adolescents. Richards et al. (2015) suggested happiness as a construct of positive mental health and utilised

Eurobarometer data from 15 European countries back in 2002, with just 17.3% of the total sample of 11,637 data entries coming from 15-24 year olds and a very small number of these from the UK.

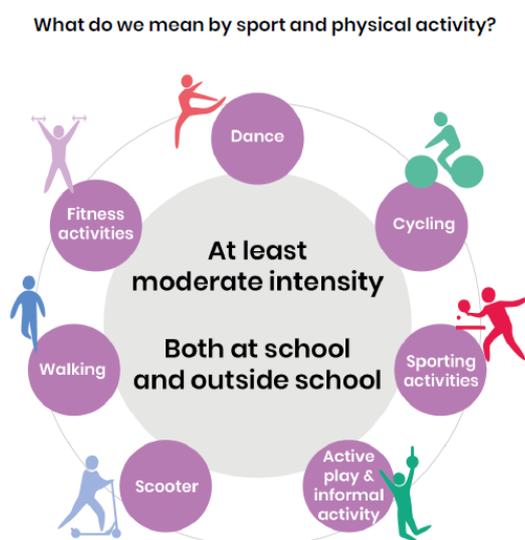
Studies in other countries, with different population groups, such as older adults, and those with health concerns utilising physical activity as an intervention to improve wellbeing are less scarce (Bremer et al., 2018; de Souto Barreto, 2014; Maher et al., 2016; Moljord et al., 2011; Rasmussen and Laumann, 2014; Rasciute and Downward, 2010; Richards et al., 2015; Vedøy et al., 2020; Collins et al., 2018; Visser et al., 2020; Wang et al., 2012) and some learning can be taken from these but there is certainly a gap in understanding at present. Specifically when looking at adolescents in England, who would be considered to have a 'normal' state of mental health, and hence whether greater positive mental health or happiness can be derived from increased physical activity, or conversely if higher levels of happiness result in more physically active habits. Sport England suggests 'physically literate children and young people are happier' (Active Lives Children and Young People Survey, 2019, p.41), where physical literacy can be defined as the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life (IPLA, 2017). However, Zhang and Chen also note that many studies focused on older adults and that future research is required to explore further and determine optimum dosage (2018, p.1305).

Brooks (2014, p.4) summarised evidence to suggest that 'pupils with better health and wellbeing are likely to achieve better academically' whilst 'evidence suggests that participation in physical activity may support young people's current and future mental health' (Rodriguez et al., 2019) and 'two thirds of parents believe the wellbeing of pupils is more important than academic success' (Wilson, 2020) yet school policy and accountability measures in England continue to largely ignore student happiness.

Before exploring the specifics of this dissertation and existing research insight further, it is important to fully understand the two terms being investigated – physical activity and happiness.

Physical activity

Physical activity has been described as any bodily movement that increases energy expenditure above resting levels (Caspersen et al., 1985; World Health Organisation), it includes exercise and has recently been summarised by Sport England in the following infographic:



Source: [Sport England \(2019\) Active Lives Children and Young People Survey p.4](#)

Research suggests that physical activity increases release of the happy hormone endorphin (Dishman and Connor, 2009), raises self-esteem and body image (Goldfield et al., 2015), enables us to connect socially (Cacioppo and Patrick, 2008), feel a sense of purpose and belonging (Lubans et al, 2016) and even increases our ability to learn via increased BDNF (Cotman et al, 2007; Carmichael, 2007; Ratey et al., 2010). The insight from Sport England shows that daily habits of adolescents in our schools do not currently capitalise on this potential. As can be seen by the charts below, 'less active' (i.e. less than an average of 30 minutes physical activity a day) groups include the majority of girls, medium and low family affluence, Years 9-11 (ages 13-16), those with a disability and BAME.

Levels of activity

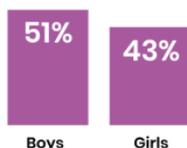


Summary of demographic differences

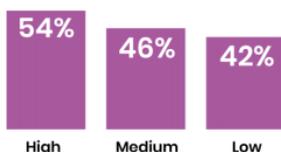
Our data shows there are significant inequalities:

■ Active ■ Less active

1 Gender
Boys (51% or 1.8m) are more likely to be active than girls (43% or 1.5m), with a gap of 319,200 between them.



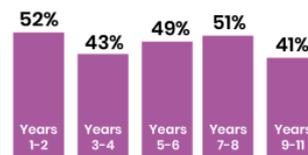
2 Family affluence
Those from low affluence families are the least likely to be active (42%).



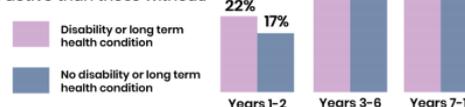
[Link to data tables](#)

* See our [definitions](#) page for the full definition of each demographic group.

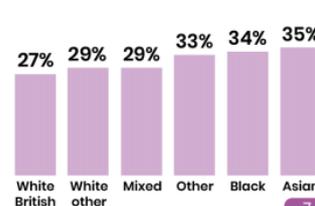
3 Year group
Activity levels peak at school Years 1-2 (ages 5-7, 52%) and Years 7-8 (ages 11-13, 51%).



4 Disability and long term health conditions
Children and young people with a disability or long term health condition are more likely to be less active than those without.



5 Ethnicity
Asian (35%) and Black (34%) children and young people are the most likely to be less active.



Source: [Sport England \(2019\) Active Lives Children and Young People Survey p.7](#)

Sport England’s Active Lives CYP survey was established in September 2017, prior to that Health Survey for England (2016) reported on the proportion of 5 to 15-year olds meeting PA guidelines of 60+ minutes a day in 2008, 2012 and 2015. There has been a sustained and significant trend of less girls meeting the CMO guidelines and further scrutiny of the data tables (see Sheffield Hallam University findings in appendix 3) suggest older adolescents (13-15 year olds) continue to fail most at meeting the CMO guidelines. This research will explore these patterns further.

It is important that this literature review considers all aspects of physical activity, not merely exercise or sports participation or fitness training but takes a holistic look at all forms of movement (including active travel) as contributing to DPA as recognised in the CMO guidance of an average of 60 minutes a day for those aged 5-18.

Happiness

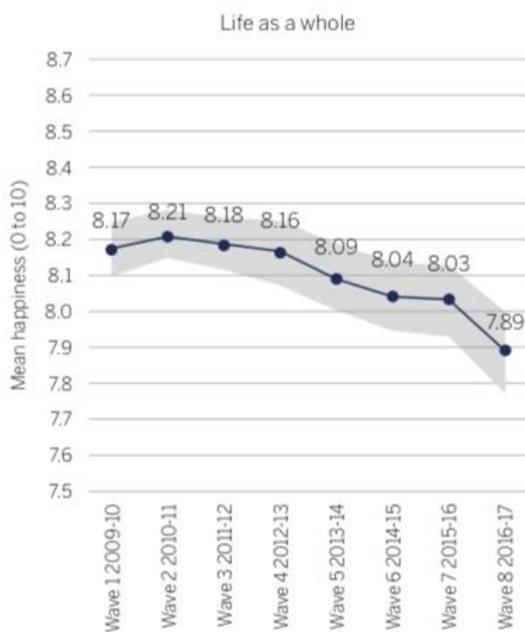
Defining happiness is complex. The Oxford English Dictionary states “The state of being happy” which is particularly unhelpful, although it does suggest feelings of contentment, pleasure and satisfaction. It is a fluid and changeable state and hence

questioning must refer to a particular moment in time rather than a general trait. Ackerman (2019) goes on to explore the meaning of happiness as a central feature of subjective well-being (SWB). I will adopt a similar position, defining happiness as

‘a subjective state of mind characterised by enjoyment and contentment reflecting [an] individual’s overall subject well-being’ (Zhang and Chen, 2019, p.1306).

Recent data from The Children’s Society (2019, p.10) suggests a significant decrease in happiness amongst children and young people since 2009.

Figure 3: Trends in children’s happiness with different aspects of life, UK, 2009–10 to 2016–17



A significant decrease in happiness with **life as a whole**.

The proportion of children with low well-being (a score below the midpoint on a 0 to 10 scale) was:

4.8% in 2016–17.

This would be equivalent to over **219,000** children in the population as a whole based on 2018 ONS mid-year population estimates.

— Mean
— Confidence interval at 99%

Source: [The Children’s Society \(2019, p.10\)](#)

As a construct of positive mental health, the focus of this study is to utilise self-reported levels of happiness against a Likert Scale. Cekin (2015) and many others have utilised a 10-part Likert scale when concluding that ‘regular physical activity should be regarded as a viable tools for improving subjective well-being in emerging adults’ via his study with 375 university students in Turkey.

A randomised control study by Khazaee-Pool et al. (2015) in Iran showed that physical exercise is beneficial to increasing happiness in older adults whereas

research by Rivers and Dilger (2015) with 464 college students found no significant relationships between exercise, self-esteem, general happiness, and body image so perhaps it is not as clear cut as some researchers may hypothesise. Parfitt and Eston (2005) suggested that children achieving more than 12,000 steps a day had a more positive psychological profile than those achieving less than 9,200 steps a day. However, this was a small sample of seventy children over just a 7-day period.

Whilst study has been conducted in this area, 'more research is necessary to determine the optimal dose and type of PA for gaining the benefits of happiness, and explore the pathways through which PA would possibly affect happiness' (Zhang and Chen, 2019, p.1320). Further systematic review by Rodriguez et al. (2019, p.1383) found 'a small but significant overall effect of physical activity on mental health in children and adolescents aged 6-18 years (effect size 0.173, 95%).

Consequently, this study purports to specifically investigate self-reported happiness and physical activity behaviours over the past week amongst Year 7-11 (11 to 16-year old) adolescents in 21 secondary schools across Nottinghamshire. The survey will capture demographic data to allow deeper quantitative investigation. The research aims are as follows:

- Better understand the effect of physical activity on health, happiness and success in schools
- To influence school leaders and policy makers to increase daily provision for physical activity
- To influence student habits by raising their awareness of the value of physical activity.

Research questions:

1. Is there a relationship between physical activity and happiness?
2. What effect does 30 minutes or more of physical activity at least four times a week have on happiness?
3. Is there a tipping point for the number of days of physical activity per week and positive impact on happiness?
4. How could schools ensure more 11-16-year olds meet CMO guidelines?

Summary

This literature review suggests a relationship between physical activity and happiness but has shown a paucity of insight relating to adolescents in England. This suggests there is a need for collection of quantitative data and further investigation to influence both policy and practice.

The following section outlines the methods and research design for the empirical component of this dissertation.

Chapter 3: Methods

Introduction

Why don't we prioritise DPA as an essential element of education to support human flourishing?

'Since 2009 children and young people have become increasingly unhappy. Based on the latest figures we estimate a quarter of a million children are unhappy with their lives, with factors like friends, school and appearance all playing a role' (The Children's Society, 2019)

The Good Childhood Report (2019) has identified this 'significant decrease in happiness' at a time when provision and up-take of DPA within schools and broader society fall drastically short of CMO guidelines (Department of Health and Social Care, 2019). Sport England reported that almost a third of children and young people do less than an average of 30 minutes a day of physical activity (Active Lives Children and Young People Survey, 2019, p.5) and this figure has plummeted further during Covid-19 lockdown in England (Sport England Insight, 2020). These statistics are even more stark for older teenagers, girls, those from low affluence families, those with a disability or Black, Asian and Minority Ethnic (BAME) individuals.

Perhaps it is time for more schools, community groups and families to place a higher priority on DPA to improve health, happiness and in turn raise achievement whilst also decreasing the disadvantage gap. This research seeks to explore the relationship between happiness and physical activity to provide insight to policymakers, school leaders, parents and importantly the children themselves.

This chapter identifies the critical question, provides clarity on the research design and methodology used based on insight from other similar studies and then goes on to provide a detailed account of data collection procedures, participants and analytical techniques utilised. I will then highlight ethical considerations prior to Chapter 4, Findings and Discussion.

Research design and methodology

Identifying whether regular physical activity improves happiness in adolescents is the substantive topic being researched. To achieve greater understanding and focus of this investigation, the research aims have been refined to:

1. Investigate changes in activity habits and self-reported happiness for different demographics (gender and school year)
2. Explore the relationship between number of days of physical activity per week and self-reported happiness rating.

Following positivist principles to obtain scientifically verifiable conclusions based on a quantitative approach to identify relationships between physical activity and happiness rating, for example, on a Likert scale of 0-10. By capturing the number of days that individuals completed 30 or more minutes of physical activity in the previous week, alongside current state of happiness and demographic measurements, it may be possible to explore a tipping point whereby the frequency of PA has the most significant impact on happiness. It is my hypothesis that four or more days per week of PA should have a significant positive impact on self-reported happiness. There will also be the potential to further investigate for differences based on gender and age.

Quantitative data was collected via an online survey that was distributed to teachers in 21 Nottinghamshire schools to complete with a sample of their students in Years 7-11. The survey formed part of the surveillance tool utilised by a Sport England funded Secondary Teacher Training Programme that these schools are a part of. Sheffield Hallam University, as the independent evaluator, has designed the survey to capture insight on a wider range of attitudes, habits and behaviours towards physical education, school sport, physical activity and wellbeing more broadly (see appendix 5 for full set of survey questions). As programme lead, my access to an anonymised dashboard of data enabled use of specific questions relating to DPA, happiness and demographic information for analysis.

The ambition was to capture over 5,000 responses, which account for over 20% of the student population, and hence create a significant and representative sample. The use of an online survey distributed to students via virtual learning environments and platforms like 'Show My Homework', utilised by a great many schools, enabled exceptional reach to the target audience and low-cost capture of quantitative self-reported data.

The specific student questions that enabled statistical analysis and reasoning for their inclusion is as follows:

- In the past week, on how many days have you done a total of 30 minutes or more physical activity, which is enough to raise your breathing rate? This may include sport, exercise, and brisk walking or cycling for recreation or to get to and from places

By providing clarity of 'what counts' as physical activity and capturing student recollection of behaviours over the previous week, the reliability of response is sufficient. Radial box options of 0-7 days will allow simple capture.

- Overall, how happy did you feel yesterday?
- Is this how you usually feel?

Asking students to rate their happiness yesterday recognises the 'state' nature of this construct, providing a 10-point Likert Scale response (0 representing not happy at all, 10 representing completely happy) complies with the most popular rating methodology as identified by Zhang and Chen, 2019, (p.1309). The additional question capturing how the individual feels 'usually' controlled for normal feeling, enabling researchers to reject data that suggests out of character or abnormal responses (for example, recognising that current state of happiness could be adversely affected by family issues or school problems).

Headteachers and PE teachers from the 21 Nottinghamshire schools who are part of a large Teaching School Alliance were invited to participate in the study and informed on how data would be collected and used. To ensure informed consent and provide the opportunity to opt out of the study, a letter was sent to parents. The option to withdraw was provided again at the start of the online survey, which collected anonymised data.

As secondary data was utilised (see appendix 5 for further details), influencing what is collected is not possible. However, the literature review revealed that style of questioning and utilising a self-reported happiness rating on a Likert scale (Cekin, 2015; Zhang and Chen, 2019, p1309) was appropriate for these purposes.

Analysis strategy

Initial analysis required data cleansing, for example removing schools from the sample who had not generated significant responses to be considered as representative of their wider population. Data was then tabulated, and graphical representation created, to illustrate and investigate whether the typical patterns of physical activity and in fact happiness were reflected in this data set – namely decreased DPA habits with age and within female populations.

The relationship between self-reported happiness rating and engagement in physical activity over the previous week was further examined to look for patterns within the whole population and any significant differences based on age (school year) or gender.

Ethical considerations

Utilising secondary data collected by Sheffield Hallam University (SHU) for schools involved in a Sport England funded project has been the central focus of this study. The data is held on a secure online dashboard and, once downloaded for analysis within Microsoft Excel, was password protected throughout. The data will be held until completion of the project in July 2021 and then destroyed. Permission to analyse the data was sought from the Principle Investigator at SHU and feedback of findings scheduled for 28th July 2020. University of Exeter ethical approval was sought and approved (see Appendix 4, approval number M1920-148) prior to analysis.

The British Educational Research Association (BERA, 2018) ethical guidelines were followed to ensure appropriate respect for participants observed and that teachers didn't put unnecessary pressure or influence on their students to complete the online survey. Ensuring all data was anonymised and collated across the group of schools helped with this endeavour. There was no incentive to completion other than the additional insight it provides each school with regarding their student habits and feelings. Data was stored electronically with password protection and no ability to uncover the source of individual data sets (i.e. no way of identifying the student who completed it).

Chapter 4: Findings and Discussion

Introduction

Seeking to uncover a correlation between physical activity and happiness in adolescents from a sample of students who attend secondary schools across Nottinghamshire was made possible via data from an online survey completed as part of a Sport England funded project to raise the profile and value of physical education, school sport and physical activity for all students. This chapter presents the study findings and is followed by a discussion, including strengths and limitations, prior to the chapter summary.

Findings

A total of 7,339 survey responses from adolescents in Years 7-12 (eleven to seventeen years of age) from 26 different schools formed the initial data sample. It was found that 5 of the schools had a completion rate of less than 10 which suggests these would not be representative of the population, so these 21 responses were removed along with a further 217 sixth form (year 12) responses which, again, represented a challenge in terms of validity due to low response rate. This left 7,101 responses.

The two questions of particular interest for this study were:

- In the past week, on how many days have you done a total of 30 minutes or more of physical activity, which was enough to raise your breathing rate? This may include sport, exercise, and brisk walking or cycling for recreation or to get to and from places.
- How happy did you feel yesterday? 0 = not happy at all and 10 = completely happy

In addition, students were asked 'is this how you usually feel?' It is important to recognise the 'state' or fluctuating nature of happiness due to other factors and consequently it was decided to remove all responses that suggested this happiness rating was not typical for them. Once these 825 had been removed it left a total

sample size of 6,276 from 21 different secondary school settings across Nottinghamshire. Gender and school year group demographic information for each data entry was also available for further analysis.

The analysis revealed similar patterns [see tables 1a and 1b] to national data around both DPA and happiness declining with age and girls reporting lower levels of both. Beyond this, the four most significant findings that will be unpicked and discussed in more detail are:

1. Over a quarter (27%) of individuals reporting zero days of physical activity in the last week also scored themselves at the lowest levels for self-reported happiness (1 and 2 out of 10 on a Likert scale) whereas over 50% of those who were active on 5 or more days reported much higher happiness ratings of 8-10 [see table 2]
2. There appears to be a marked increase in median happiness if two days of physical activity are achieved and a further step change at five days of PA [see chart 1]
3. The tipping point of median happiness for girls appears to happen at three days rather than two for boys [see chart 3]
4. Being physically active on five days a week results in the least adolescents reporting the lowest happiness scores (1-4 out of 10) but being active every day could be associated with lower self-reported happiness (especially for girls) [see chart 4].

Table 1a: Year group total responses (and percentages) for the number of days of physical activity in the last week for all young people, then filtered by boy and by girl.

All responses	# of days PA								
Year Group	0	1	2	3	4	5	6	7	Grand Total
7	38	87	261	313	291	371	126	262	1,749
	2%	5%	15%	18%	17%	21%	7%	15%	100%
% doing X days or more	100%	98%	93%	78%	60%	43%	22%	15%	
8	37	83	203	228	248	280	112	240	1,431
	3%	6%	14%	16%	17%	20%	8%	17%	100%
% doing X days or more	100%	97%	92%	77%	61%	44%	25%	17%	
9	45	88	191	261	244	234	121	190	1,374
	3%	6%	14%	19%	18%	17%	9%	14%	100%
% doing X days or more	100%	97%	90%	76%	57%	40%	23%	14%	
10	56	86	148	172	151	171	81	140	1,005
	6%	9%	15%	17%	15%	17%	8%	14%	100%
% doing X days or more	100%	94%	86%	71%	54%	39%	22%	14%	
11	46	85	102	94	105	129	50	106	717
	6%	12%	14%	13%	15%	18%	7%	15%	100%
% doing X days or more	100%	94%	82%	68%	54%	40%	22%	15%	
Grand Total	222	429	905	1,068	1,039	1,185	490	938	6,276
% of all students doing X days or more	100%	96%	90%	75%	58%	42%	23%	15%	

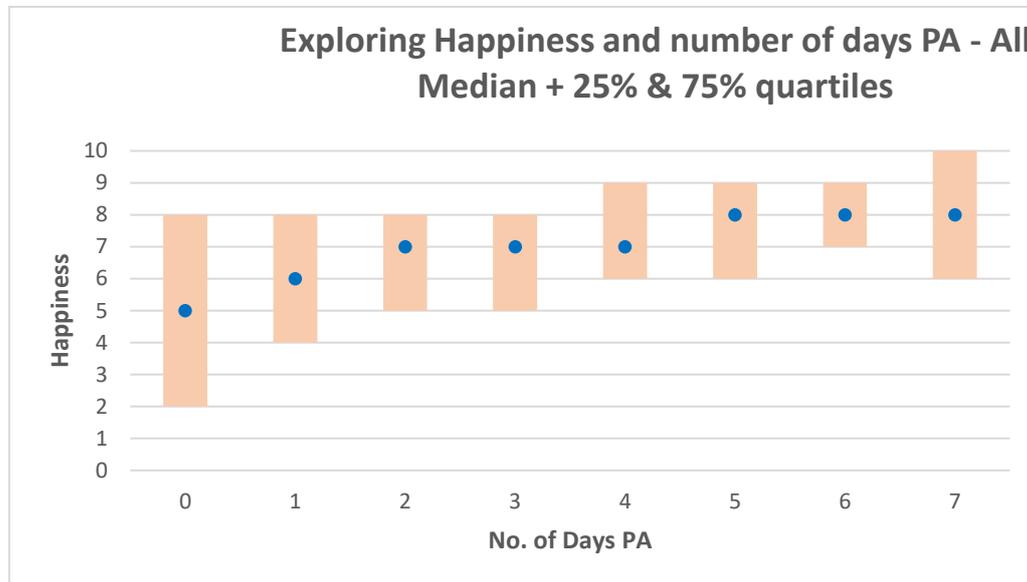
Table 1b: Year group total responses (and percentages) for the number of days of physical activity in the last week for young people filtered by boy and by girl.

Boys									
	# of days PA								
Year Group	0	1	2	3	4	5	6	7	Grand Total
7	14	33	115	145	135	172	74	153	841
	2%	4%	14%	17%	16%	20%	9%	18%	100%
8	14	43	99	83	103	116	44	123	625
	2%	7%	16%	13%	16%	19%	7%	20%	100%
9	14	36	86	105	123	118	61	105	648
	2%	6%	13%	16%	19%	18%	9%	16%	100%
10	24	24	55	56	61	63	39	66	388
	6%	6%	14%	14%	16%	16%	10%	17%	100%
11	20	32	45	37	50	67	26	53	330
	6%	10%	14%	11%	15%	20%	8%	16%	100%
Grand Total	86	168	400	426	472	536	244	500	2,832
% of all boys doing X days or more	100%	97%	91%	77%	62%	45%	26%	18%	
Girls									
	# of days PA								
Year Group	0	1	2	3	4	5	6	7	Grand Total
7	14	52	135	160	150	193	52	101	857
	2%	6%	16%	19%	18%	23%	6%	12%	100%
8	18	40	97	133	139	155	65	106	753
	2%	5%	13%	18%	18%	21%	9%	14%	100%
9	20	50	97	141	116	110	55	66	655
	3%	8%	15%	22%	18%	17%	8%	10%	100%
10	26	54	89	109	86	101	36	70	571
	5%	9%	16%	19%	15%	18%	6%	12%	100%
11	23	47	54	54	51	56	23	47	355
	6%	13%	15%	15%	14%	16%	6%	13%	100%
Grand Total	101	243	472	597	542	615	231	390	3,191
% of all girls doing X days or more	100%	97%	89%	74%	56%	39%	19%	12%	

This table supports other national data (Sport England, 2019; Health Survey for England, 2015) to suggest girls are less active than boys, for example only 39% of girls were physically active for at least 30 minutes on five or more days over the previous seven days whereas 45% of boys were. The additional analysis for all responses (Table 1a) shows a cumulative total (in green) that also reinforces what we know nationally about physical activity decreasing with age during secondary

school. For example, the percentage exercising two or more days shows steady decline with age, from 93% in Year 7 to 82% in Year 11.

Chart 1: Boxplot representation of happiness relative to number of days physical activity for all adolescents.



Utilising the data from table 3 (see appendix 3), it was possible to establish the median happiness score for each variable in the number of days physical activity in the last week and consequently demonstrate a significant increase from an average of 5 to an average of 8 on self-reported happiness. There appears to be a marked increase in happiness at two days per week (to 7 out of 10 on the Likert scale) and the median value jumps again to 8 for those who have done at least five days of physical activity in the last week.

Whilst the spread of responses covered all possible happiness ratings for all variations in PA, an attempt has been made to remove outliers by displaying upper and lower quartiles at 75% and 25% respectively. This chart also depicts the broader range in happiness for those participating in physical activity every day of the week and, whilst the upper quartile is at 10, the lower quartile is at 6 and will be investigated further in chart 4 below.

Chart 2: Boxplot representation of happiness relative to number of days physical activity for boys.

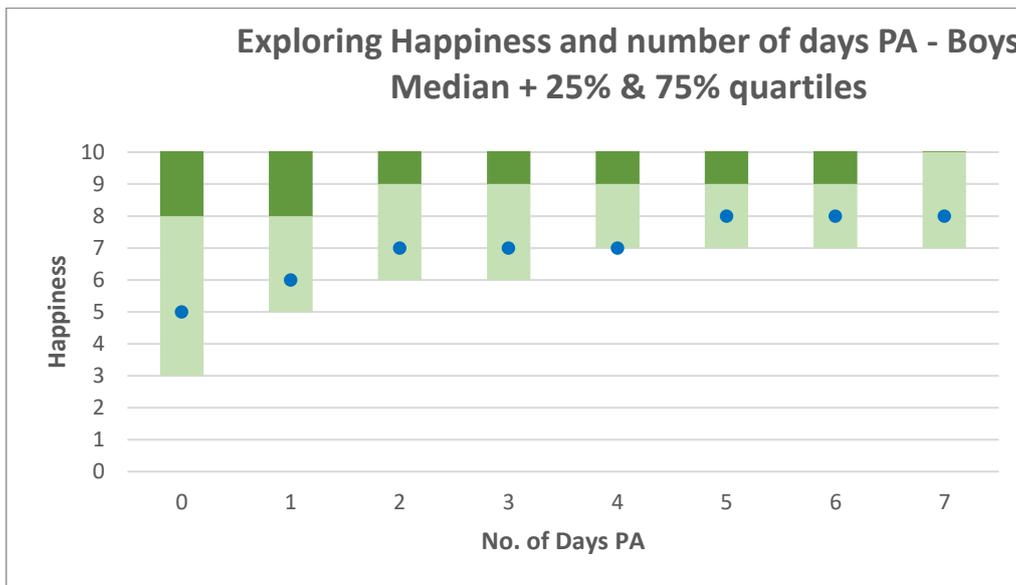
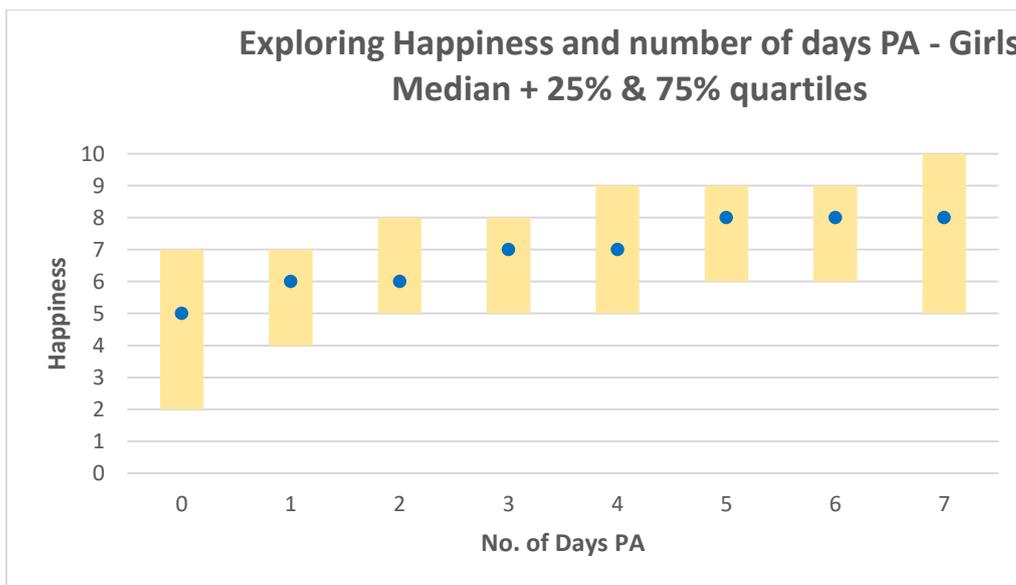


Chart 3: Boxplot representation of happiness relative to number of days physical activity for girls.



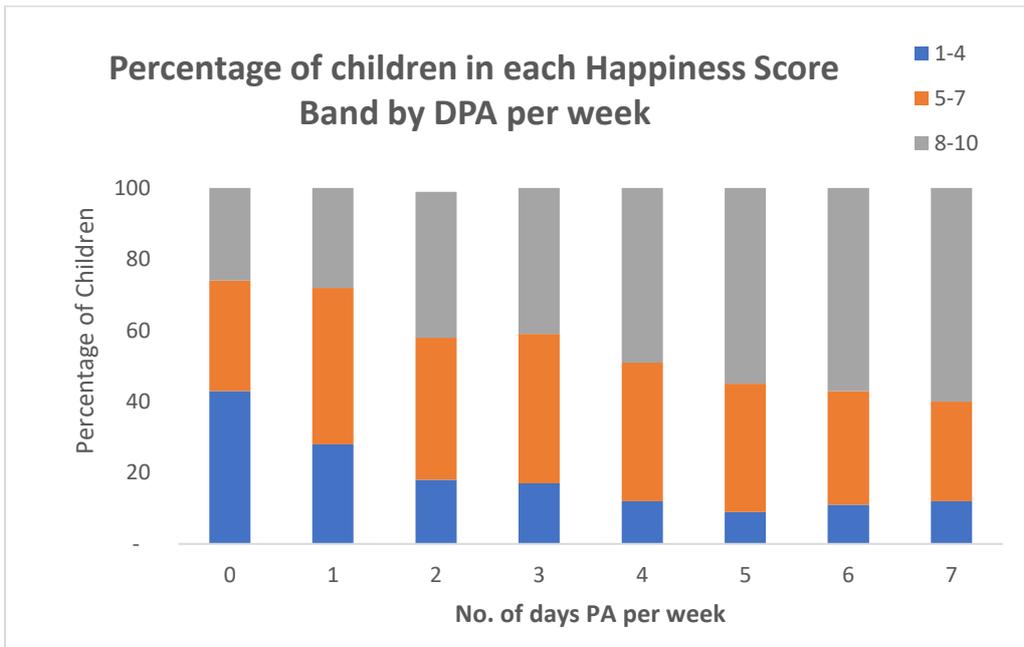
In further exploring the differences between boys and girls (charts 2 and 3), the tipping point of happiness for girls appears to be slightly higher than that for boys (three days compared to two). This supports an argument for three periods of physical education per week, especially for older girls many of whom many report doing no structured exercise or sport beyond that on the curriculum (YST Girls Active, 2019, p3 – see appendix 5).

Table 2: Percentage of children self-reporting each happiness rating against the total number of children recorded as physically active for at least 30 minutes on zero through seven days in the past week.

Of those who do X days PA, what % rate themselves at each value for happiness?								
# of days PA →	0	1	2	3	4	5	6	7
Happiness rating:								
1	22%	8%	4%	4%	3%	2%	3%	4%
2	5%	4%	4%	2%	2%	1%	2%	2%
3	9%	6%	4%	4%	3%	3%	2%	3%
4	7%	10%	6%	6%	5%	3%	4%	3%
5	15%	16%	11%	11%	11%	9%	6%	8%
6	6%	9%	11%	11%	9%	9%	7%	8%
7	10%	19%	18%	20%	19%	18%	18%	12%
8	12%	12%	19%	18%	22%	22%	22%	18%
9	5%	7%	12%	12%	13%	15%	18%	15%
10	9%	8%	11%	12%	14%	17%	16%	28%
Total	100%	100%	100%	100%	100%	100%	100%	100%

As highlighted in yellow, over a quarter (27%) of those surveyed who had completed no physical activity over the past seven days self-reported at the very lowest ratings for happiness. In contrast, over 50% (highlighted in 3 shades of green) of those who were physically active for five or more days self-reported at the highest levels for happiness.

Chart 4: Bar chart illustrating percentage of children self-reporting within three different happiness bands (scoring 1-4; 5-7 and 8-10 respectively) against each record for number of days physical activity in the last week (see chart 7 in appendix 3 showing numbers are sufficiently large in each group).



This bar chart shows an increase in children reporting lower levels of happiness when active every day compared to 5 or 6 days over the previous week.

Discussion

The primary aim of the work presented in this dissertation was to explore the relationship between the number of days adolescents were physically activity (DPA) and self-reported happiness. Furthermore, this work aimed to identify if a tipping point could be established. It was hypothesised that four or more days of PA a week would have a significant impact on happiness. Analysis of survey data has provided unique insights into a) happiness levels for adolescents who are inactive (particularly older adolescents and girls), b) the tipping point for achieving the median self-reported happiness score of 7 then 8 (out of 10), and c) that for those adolescents who exercise every day, there was a wide variation (inter-quartile range) of happiness scores.

'Children in England [are] near bottom in international happiness table' (Gayle, 2016) and urgent work is needed by the education sector and society at large to improve this position. Happiness, as 'a subjective state of mind characterised by enjoyment and contentment reflecting individual's overall subjective wellbeing' (Diener, 2000; Veenhoven, 2010 in Zhang and Chen, 2019, p.1306) is a fundamental human right and contributes towards Maslow's hierarchy of needs.

There is significant research and literature to support the effect of PA on reducing depression and anxiety and relatively little that explores 'the relationship between PA and positive mental constructs' (Strohle, 2009 in Zhang and Chen, 2018, p.1306). Consequently, this study aimed to further this understanding about the relationship between PA and happiness (or SWB).

UK Chief Medical Officers' Physical Activity Guidelines for Children and Young People (2019, p24) were recently revised in response to research findings to identify three priorities:

- Children and young people should engage in moderate to vigorous physical activity (MVPA) for an average of at least 60 minutes per day across the week. This can include all forms of activity such as physical education, active travel, after-school activities, play and sports
- Children and young people should engage in a variety of types and intensities of physical activity across the week to develop movement skills, muscular fitness, and bone strength

- Children and young people should aim to minimise the amount of time spent being sedentary, and when physically possible should break up long periods of not moving with at least light physical activity.

a) Happiness and physical activity levels for adolescents

With regards to happiness levels for adolescents who are inactive, analysis (see tables 1a and 1b) reinforced the pattern seen nationally that DPA habits decline with age and that, on average, boys are more active than girls. For example, 45% of boys were active on five or more days of the week whereas only 39% of girls were. This proportion was as low as 35% for Year 11 girls. Table 2 reveals an even bleaker pattern whereby 27% of those surveyed that had done zero PA in the past week reported the lowest happiness levels (1 or 2) and almost 60% reported as 5 or less. This is in stark contrast to those recording five or more days of PA in the past week where well over 50% recorded the highest happiness levels (8, 9 or 10).

My literature review revealed positive associations between PA and happiness via previous studies into the impact of cycling on adults happiness (Rasciute and Downward, 2010), over 60s in France (de Souto Barreto, 2014), 25-34 year olds via smartphone self-reporting (Lathia et al., 2017), Norwegian adolescents (Moljord et al, 2011; Rasmussen and Laumann, 2014; Vedøy et al., 2020), young people with cerebral palsy (Maher et al., 2016), Iranian adolescent girls (Fararouei et al., 2013) and Australian 6-8 year olds (Visser et al., 2020) but very little research with UK adolescents or into the dose-response relationship between PA and happiness.

b) Tipping point of PA provision for happiness

Seeking a tipping point of DPA that is associated with a step change in happiness was a significant ambition of this research. To my knowledge, no other studies have explored frequency of PA and the relationship with happiness for a general population of adolescents in the UK. As cultural context would be expected to have a significant impact, this study provides significant value added. As can be seen from charts 1-3, the median (most frequent) response for happiness increases relative to the number of days of PA (from 5 up to 8 which is a significant shift). Amongst the full sample of 6,276 responses (see appendix 3 table 3), every variable of 1-10 for happiness was registered in every year group (varying from a minimum frequency of 15 responses of happiness rating 2 in Year 7 to a maximum frequency of 394 responses of happiness rating 10, again in Year 7). However, focusing on upper and

lower quartiles of 75% and 25% respectively, we are also able to recognise a clear upward shift in the central 50% band of happiness scores as DPA increases.

Two days of PA represents a median of 7 for happiness (see chart 1), although when filtering for gender this tipping point to a median happiness of 7 doesn't happen until three days of PA. This suggests, especially for older girls, programming at least three days of physical education a week would be advantageous as we know many do not participate in PA beyond PE lessons (YST Girls Active, 2019, see appendix 6). This median happiness shifts again to 8 out of 10 for five or more days of PA. This reinforces the ambition of the previous Labour government's 'five-hour offer' ambition (DCMS, 2008).

c) Exercising every day may not be the answer

An unanticipated finding was that a wider spread of happiness scores was identified for those adolescents who were physically active all seven days. This is illustrated in chart 1 and 3 suggesting variability is most significant for girls. Further analysis of table 3 (appendix 3) and additional research would be recommended to understand this more thoroughly but perhaps exercise-addiction or too much focus on PA every single day can actually be less beneficial than meaningful engagement on five or six days a week?

The ability of the survey to capture self-reported PA levels over the previous week and current state of SWB (happiness) alongside mitigation for 'normal' feelings provided a very valuable large dataset that robustly reflects the variable nature of happiness.

Findings by Zhang and Chen (2018, p.1317) 'suggest that PA frequency and PA volume are essential factors in the relationship between PA and happiness, and more importantly, even a small change of PA makes a difference in happiness'. This study supports this view via analysis of the total number of days of 30+ minutes of PA per week and corresponding self-assessed happiness ratings.

Strengths and limitations

This novel survey study enabled data from a large sample from one region in England to be collected. To my knowledge this is the first study to explore these factors, in this context, at this scale. Schools within the sample represented a mix of deprived and affluent areas thus making transferability of findings possible for a wide audience.

Anonymised data from such a large sample of schools allows significant analysis. However, utilising secondary data does have some limitations which have been considered, and where possible, mitigated. The following section explores the most significant.

Firstly, with this data it was not possible to see direction of the effect – i.e. is physical activity leading to improved happiness or are happier adolescents choosing to be more physically active? Research suggests PA leads to improved happiness but there is also evidence to suggest that happier people choose to be more physically active. Whilst it would be challenging to suggest causation rather than correlation, it is felt that evidence to demonstrate a strong correlation is still of significant value and perhaps a future intervention study which considers confounding factors could be conducted to explore the direction of causation further, or, work involving qualitative methods could help to better understand the experiences of DPA and happiness in adolescents.

Secondly, accuracy of self-perception in happiness could cause issues of validity. Using a well-recognised global happiness scale (Zhang and Chen, 2019, p1309) will align findings to the current body of research.

Thirdly, reliance on individual schools to select a suitable sample of students and minimise the chance of polarised or influenced responses is also a challenge. If survey completion is optional then those who love or hate PA may be more likely to respond. Every effort was made to influence school leaders to carefully consider who and how they target to ensure a representative sample. As data was anonymous, the risk of influenced responses was mitigated, and five schools were removed from the sample due to minimal response rates.

The ability to accurately capture PA participation is also a challenge. This study did not use accelerometers or smartphones as a means to accurately capture DPA minutes, but most other studies have accepted this method of self-reporting as valid (Rodriguez-Ayllon et al., 2019; Zhang and Chen, 2019).

Summary

Several previous studies (Kye et al. 2016 and Baruth et al. 2011) found a correlation between happiness and PA in boys or men respectively, but not in girls or women and not in the UK. This study demonstrates that a marked difference exists between genders. Moljord et al. (2011) concluded similar findings in Norway, suggesting the frequency of PA participation by adolescents affected happiness, more specifically those who engaged two or more times per week having significantly higher happiness levels than those who just participated once a week or not at all.

Results from this study suggest that two or more PA days per week (three for girls) and then five or more triggers a step change in happiness rating. However, 'several cross-sectional studies found no difference in happiness levels between active individuals and very active individuals' (Zhang and Chen, 2018, p1318).

Randomised Control Trials (RCTs) exploring the effects of PA on happiness have revealed inconsistent results (Zhang and Chen, 2018, p.1314). This study lays the foundations for further study of intervention programmes aimed at the least active to manipulate DPA habits and capture the change in happiness rating. Unfortunately, this goes beyond the scope and capacity of this project but would warrant future exploration now strong school links and appetite for further learning have been developed.

Chapter 5: Conclusions and Recommendations

Conclusions

Physical activity has an axiomatic impact on adolescent wellbeing, but how often is it utilised to have a marked impact on happiness and does the absence of empirical evidence within a specific school setting prevent school leaders from acting on the generic research? This study aimed to uncover the relationship between frequency of DPA and happiness in 21 Nottinghamshire schools to influence those young people and school leaders to support change whilst also adding to the body of credible evidence that will help campaign for system wide change and promotion of PA for SWB. This dissertation adopted a pragmatic perspective and set out to explore the relationship between DPA and happiness.

Findings (charts 2-5) suggest that happier people tend to be more active and crucially more active people tend to be happier, thus supporting the study hypothesis. To this end, being physically active at least two times (three for girls) and ideally five times a week appears to have the biggest positive effect. Adjusting curriculum provision to ensure more physical education is provided would be a sensible recommendation, especially given current marginalisation at key stage 4 towards just one lesson a week of PE in many schools in England (YST, 2018). Certainly, the previous Labour government's 'five hour offer' as part of its PE, School Sport and Club Links Strategy appears to hold significant merit (School Sport Partnerships Briefing Paper, 2015).

Recommendations for practice and future research

Identification of a tipping point of happiness based on minimal DPA could be a game changer in terms of provision within education. This study has suggested the amount of weekly physical activity required by girls to achieve a median happiness rating of 7 out of 10 is three days a week. Moreover, DPA five or more days a week elicits an average happiness rating of 8 out of 10. Further research is needed to ratify this claim and crucially some intervention work to change PA habits with the ambition of raising happiness for adolescents within secondary education would be extremely insightful. This could provide the impetus needed by school leaders and policy makers to change expectations on provision within school.

Many important issues have been raised by this work and warrant further research. Firstly, better understanding is needed with regards to the confounding factors that may be associated with a wider spread of happiness scores for those adolescents who undertake PA every day. Factors such as exercise addiction, fatigue, pressure from sports clubs etc may contribute to some students reporting lower levels of happiness even when physically active every day but this could not be ascertained in this study. Secondly, further research is needed which explores happiness and physical activity for those BAME, SEND and for a range of socio-economic status amongst adolescents. Finally, an intervention study to change DPA habits and explore the relative impact on happiness would be extremely valuable although the literature review revealed significant challenges around the use of RCTs.

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Appendices

Appendix 1: Literature search

Utilising ERIC, there were 1,707 publications related to physical activity/ exercise/ sports participation AND happiness/ wellbeing/ positive mental health AND children/ adolescents/ youth/ teenager. Once I also filtered for England/ GB/ UK this reduced further to 160 publications between 2010 and 2020. A quick review revealed just 3 relevant publications.

Repeating the search to only include those specifically referencing ‘happiness’ revealed just 13 results, with only 2 of these relevant and captured in the table below.

The screenshot shows the ERIC search interface with the following search terms: "physical activity or exercise", "AND happiness", and "AND teenagers or adolescents or young adults". The search results table lists 13 items, each with a search ID, search terms, search options, and actions. The results are as follows:

Search ID	Search Terms	Search Options	Actions
S7	S5 AND S6	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	View Results (0) View Details Edit
S6	UK or united kingdom or britain or england or wales or scotland or northern ireland	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	View Results (87,643) View Details Edit
S5	(physical activity or exercise) AND happiness AND (teenagers or adolescents or young adults or teens or youth)	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	View Results (13) View Details Edit
S4	S1 AND S2 AND S3	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	View Results (262) View Details Edit
S3	children or adolescents or youth or child or teenager	Limiters - Date Published: 20100101-20191231 Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	View Results (100,004) View Details Edit
S2	happiness or well being or life satisfaction	Limiters - Date Published: 20100101-20191231 Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	View Results (10,615) View Details Edit
S1	physical activity or exercise or fitness or physical exercise or sport	Limiters - Date Published: 20100101-20191231 Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	View Results (15,861) View Details Edit

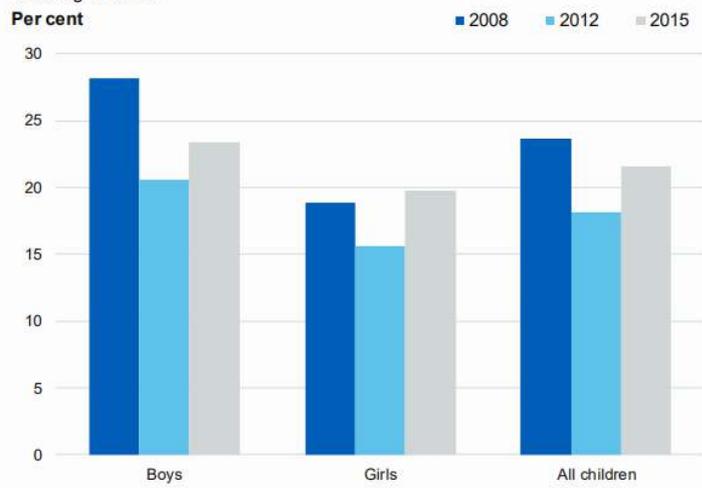
The screenshot shows the ERIC search interface with the following search terms: "physical activity or exercise", "AND happiness", and "AND teenagers or adolescents or young adults". The search results table lists 13 items, each with a search ID, search terms, search options, and actions. The results are as follows:

Search ID	Search Terms	Search Options	Actions
S7	S5 AND S6	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	View Results (0) View Details Edit
S6	UK or united kingdom or britain or england or wales or scotland or northern ireland	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	View Results (87,643) View Details Edit
S5	(physical activity or exercise) AND happiness AND (teenagers or adolescents or young adults or teens or youth)	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	View Results (13) View Details Edit
S4	S1 AND S2 AND S3	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	View Results (262) View Details Edit
S3	children or adolescents or youth or child or teenager	Limiters - Date Published: 20100101-20191231 Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	View Results (100,004) View Details Edit
S2	happiness or well being or life satisfaction	Limiters - Date Published: 20100101-20191231 Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	View Results (10,615) View Details Edit
S1	physical activity or exercise or fitness or physical exercise or sport	Limiters - Date Published: 20100101-20191231 Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	View Results (15,861) View Details Edit

Appendix 2: Health Survey for England

Figure 6 Proportion meeting recommendations (excluding activities in school lessons) in 2008, 2012 and 2015

Base: Aged 5 to 15



Source: NHS Digital

Source: [Health Survey for England \(2015, p16\)](#)

Table 14: Children's physical activity levels, by survey year, age and sex

Health Survey for England 2008, 2012, 2015. Children aged 0-15¹

Levels of physical activity ^{2,3}	Age group				Total %
	5-7 %	8-10 %	11-12 %	13-15 %	
BOYS⁴					
Meets recommendations⁵					
2008	30	29	25	28	28
2012	24	26	19	14	21
2015	30	26	18	15	23
Some activity					
2008	37	40	45	40	40
2012	39	40	38	44	41
2015	38	40	47	40	41
Low activity					
2008	33	32	30	32	32
2012	37	34	43	42	39
2015	31	34	35	45	36
<i>Unweighted bases</i>					
2008	723	734	514	782	2753
2012	192	175	123	153	643
2015	656	591	351	464	2062
<i>Weighted bases⁶</i>					
2008	667	717	473	771	2628
2012	183	175	125	188	672
2015	578	544	369	460	1951
GIRLS⁴					
Meets recommendations⁵					
2008	25	22	13	14	19
2012	23	16	14	8	16
2015	26	26	16	9	20
Some activity					
2008	36	41	43	35	38
2012	37	41	44	38	40
2015	34	39	37	32	35
Low activity					
2008	39	36	44	51	43
2012	40	43	42	54	45
2015	40	36	47	60	45
<i>Unweighted bases</i>					
2008	715	775	531	781	2802
2012	182	190	133	146	651
2015	606	576	376	520	2078
<i>Weighted bases⁶</i>					
2008	637	681	449	728	2495
2012	174	168	133	162	637
2015	552	511	350	463	1876
ALL CHILDREN⁴					
Meets recommendations⁵					
2008	28	26	19	21	24
2012	24	21	16	11	18
2015	28	26	17	12	22
Some activity					
2008	36	41	44	38	39
2012	38	41	41	41	40
2015	36	39	42	36	38
Low activity					
2008	36	34	37	41	37
2012	38	38	43	48	42
2015	36	35	41	52	40
<i>Unweighted bases</i>					
2008	1438	1509	1045	1563	5555
2012	374	365	256	299	1294
2015	1262	1167	727	984	4140
<i>Weighted bases⁶</i>					
2008	1304	1398	922	1500	5123
2012	357	343	258	350	1309
2015	1131	1055	718	923	3827

Source: Health Survey for England, NHS Digital

Source: [HSE 2016 data tables available here.](#)

Appendix 3: Additional data tables

Table 3: Year group against happiness rating

By Year, level of Happiness						
17. What is your gender? (All)						
Sum of Count	Column Labels					
Row Labels	7	8	9	10	11	Grand Total
1	30	50	73	74	38	265
2	15	30	39	34	29	147
3	31	52	70	46	36	235
4	51	55	85	71	54	316
5	114	154	132	146	97	643
6	125	114	156	108	75	578
7	279	257	236	188	134	1,094
8	377	283	260	180	114	1,214
9	333	208	151	71	54	817
10	394	228	172	87	86	967
Grand Total	1,749	1,431	1,374	1,005	717	6,276

Table 4: Happiness rating by number of days of physical activity for all participants then sorted by gender.

Sum of Count	# days PA							Sum of Count	# days PA										
Happiness rating	0	1	2	3	4	5	6	7	Grand Total	Happiness rating	0	1	2	3	4	5	6	7	Grand Total
1	0.76%	0.56%	0.59%	0.69%	0.41%	0.35%	0.21%	0.65%	4.22%	1	48	35	37	43	26	22	13	41	265
2	0.19%	0.27%	0.57%	0.37%	0.29%	0.21%	0.16%	0.29%	2.34%	2	12	17	36	23	18	13	10	18	147
3	0.33%	0.40%	0.59%	0.73%	0.49%	0.61%	0.16%	0.43%	3.74%	3	21	25	37	46	31	38	10	27	235
4	0.24%	0.72%	0.88%	1.07%	0.78%	0.59%	0.35%	0.41%	5.04%	4	15	45	55	67	49	37	22	26	316
5	0.53%	1.08%	1.63%	1.91%	1.80%	1.66%	0.49%	1.15%	10.25%	5	33	68	102	120	113	104	31	72	643
6	0.21%	0.62%	1.61%	1.85%	1.50%	1.74%	0.54%	1.15%	9.21%	6	13	39	101	116	94	109	34	72	578
7	0.37%	1.27%	2.58%	3.35%	3.17%	3.43%	1.43%	1.83%	17.43%	7	23	80	162	210	199	215	90	115	1,094
8	0.43%	0.84%	2.71%	3.04%	3.65%	4.24%	1.75%	2.68%	19.34%	8	27	53	170	191	229	266	110	168	1,214
9	0.18%	0.49%	1.67%	1.98%	2.15%	2.88%	1.43%	2.23%	13.02%	9	11	31	105	124	135	181	90	140	817
10	0.30%	0.57%	1.59%	2.04%	2.31%	3.19%	1.27%	4.13%	15.41%	10	19	36	100	128	145	200	80	259	967
Grand Total	3.5%	6.8%	14.4%	17.0%	16.6%	18.9%	7.8%	14.9%	100.0%	Grand Total	222	429	905	1,068	1,039	1,185	490	938	6,276

Table 5: Percentage (and total number) of boys' responses to each self-assessed rating of happiness (1 = not happy at all and 10 = completely happy) and number of days physical activity.

17. What is your gender? Boy									17. What is your gender? Boy										
Sum of Count	# days PA								Sum of Count	# days PA									
Happiness rating	0	1	2	3	4	5	6	7	Grand Total	Happiness rating	0	1	2	3	4	5	6	7	Grand Total
1	0.42%	0.60%	0.46%	0.18%	0.21%	0.28%	0.18%	0.39%	2.72%	1	12	17	13	5	6	8	5	11	77
2	0.14%	0.18%	0.32%	0.14%	0.07%	0.14%	0.04%	0.18%	1.20%	2	4	5	9	4	2	4	1	5	34
3	0.32%	0.11%	0.39%	0.21%	0.28%	0.49%	0.07%	0.21%	2.08%	3	9	3	11	6	8	14	2	6	59
4	0.21%	0.39%	0.64%	0.64%	0.39%	0.35%	0.28%	0.35%	3.25%	4	6	11	18	18	11	10	8	10	92
5	0.28%	0.67%	1.24%	1.69%	1.66%	1.17%	0.49%	0.81%	8.02%	5	8	19	35	48	47	33	14	23	227
6	0.14%	0.46%	1.66%	1.73%	1.45%	1.77%	0.46%	1.38%	9.04%	6	4	13	47	49	41	50	13	39	256
7	0.35%	1.20%	2.65%	3.43%	3.46%	3.46%	1.80%	2.33%	18.68%	7	10	34	75	97	98	98	51	66	529
8	0.56%	0.95%	3.07%	3.04%	4.24%	4.63%	2.19%	3.71%	22.39%	8	16	27	87	86	120	131	62	105	634
9	0.18%	0.42%	1.77%	2.01%	2.30%	3.00%	1.59%	3.04%	14.30%	9	5	12	50	57	65	85	45	86	405
10	0.42%	0.95%	1.94%	1.98%	2.61%	3.64%	1.52%	5.26%	18.33%	10	12	27	55	56	74	103	43	149	519
Grand Total	3.0%	5.9%	14.1%	15.0%	16.7%	18.9%	8.6%	17.7%	100.0%	Grand Total	86	168	400	426	472	536	244	500	2,832

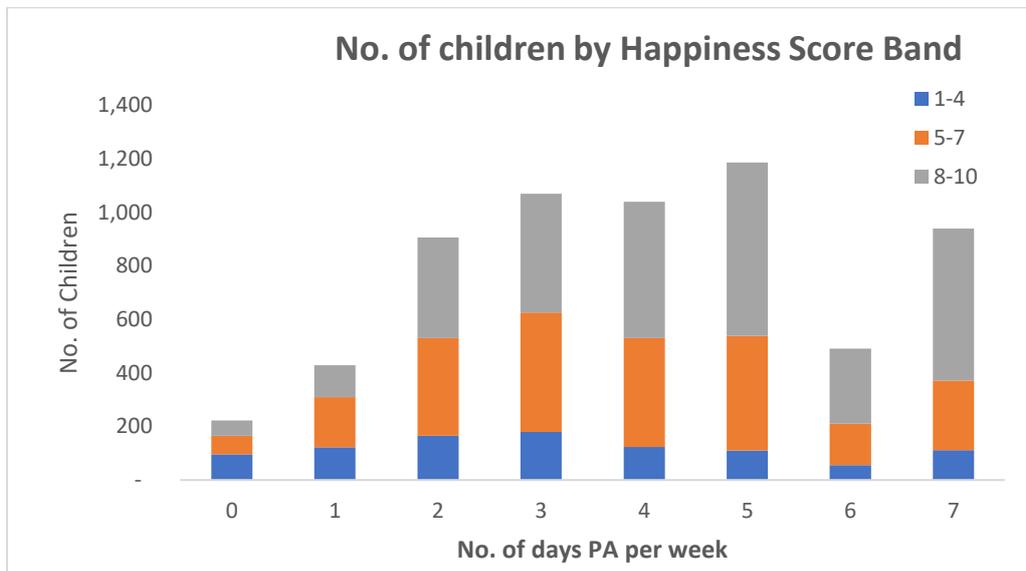
Table 6: Percentage (and total number) of girls responses to each self-assessed rating of happiness (1 = not happy at all and 10 = completely happy) and number of days physical activity.

17. What is your gender? Girl										17. What is your gender? Girl											
Sum of Count	# days PA									Grand Total	Sum of Count	# days PA									Grand Total
Happiness rating	0	1	2	3	4	5	6	7		Happiness rating	0	1	2	3	4	5	6	7			
1	0.72%	0.47%	0.63%	0.88%	0.60%	0.31%	0.19%	0.66%		4.45%	23	15	20	28	19	10	6	21		142	
2	0.19%	0.34%	0.72%	0.50%	0.44%	0.28%	0.25%	0.34%		3.07%	6	11	23	16	14	9	8	11		98	
3	0.28%	0.56%	0.69%	1.22%	0.66%	0.66%	0.25%	0.47%		4.79%	9	18	22	39	21	21	8	15		153	
4	0.22%	0.91%	1.07%	1.38%	1.07%	0.81%	0.41%	0.50%		6.36%	7	29	34	44	34	26	13	16		203	
5	0.56%	1.50%	2.01%	1.97%	1.94%	2.04%	0.50%	1.32%		11.85%	18	48	64	63	62	65	16	42		378	
6	0.22%	0.78%	1.63%	1.97%	1.60%	1.72%	0.60%	0.94%		9.46%	7	25	52	63	51	55	19	30		302	
7	0.34%	1.41%	2.57%	3.42%	3.10%	3.51%	1.13%	1.44%		16.92%	11	45	82	109	99	112	36	46		540	
8	0.28%	0.75%	2.48%	3.17%	3.32%	4.11%	1.44%	1.82%		17.36%	9	24	79	101	106	131	46	58		554	
9	0.19%	0.60%	1.63%	2.07%	2.16%	2.95%	1.32%	1.60%		12.50%	6	19	52	66	69	94	42	51		399	
10	0.16%	0.28%	1.38%	2.13%	2.10%	2.88%	1.16%	3.13%		13.22%	5	9	44	68	67	92	37	100		422	
Grand Total	3.2%	7.6%	14.8%	18.7%	17.0%	19.3%	7.2%	12.2%	100.0%	101	243	472	597	542	615	231	390		3,191		

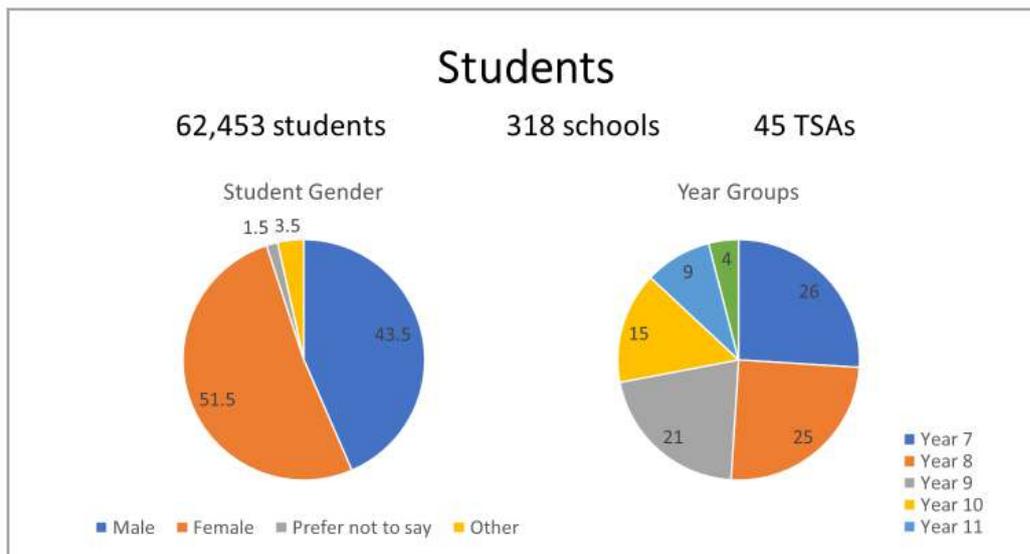
* note – 253 students responded with other or prefer not to say.

These tables was used to generate the graph showing the total number and then percentage of children in each happiness score band (1-4; 5-7 and 8-10) against number of days physical activity which drew the conclusion that 5 days of PA represents the strongest correlation with happiness and, in fact, 7 days of physical activity is actually associated with a lower percentage of adolescents self-reporting happiness of 8-10.

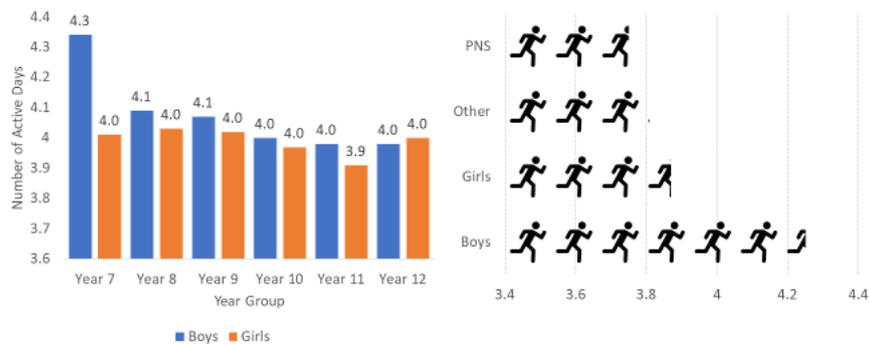
Chart 7: Number of children reporting within each happiness score band relative to number of days physical activity in the last week.



Sheffield Hallam University findings across whole sample:



How active are our students?



Appendix 4: Approved ethics paperwork

GRADUATE SCHOOL OF EDUCATION DISSERTATION ETHICS FORM

When completing this form please remember that the purpose of the document is to clearly explain the ethical considerations of the research being undertaken. As a generic form it has been constructed to cover a wide-range of different projects so some sections may not seem relevant to you. Please include the information which addresses any ethical considerations for your particular project which will be needed by your tutors to approve your proposal. **Please refer to the Graduate School of Education Taught Postgraduate Ethics application guidance notes.**

Please note that this form and process applies to taught postgraduate dissertations only.

Guidance on all aspects of the GSE Ethics application process for taught postgraduates can be found on ELE at <http://vle.exeter.ac.uk/course/view.php?id=2804>.

SUBMISSION PROCEDURE Students and supervisors should follow the procedure below.

1. Send a draft application to your supervisor.
2. Complete any changes requested and re-send to your supervisor.
3. Your supervisor will then forward your application to a second tutor for checking. Your application will then either be approved or returned for further changes. If further changes are required, return to step 1.

NB. If either your supervisor or the second tutor deem the research to require full review, the application will be sent to the GSE Ethics Officer before approval can be given. See the document minimal risk descriptors for the criteria regarding full review.

4. You will receive confirmation of approval from the GSE ethics administrator.

Please note:

- You should not gather any data until your ethics form has been approved.
- This form must be included as an appendix in your assignment.

Applicant details

Student number	680061943
-----------------------	------------------

UoE email address	Ws330@exeter.ac.uk
Programme	MA in Educational Leadership
Name of supervisor	Pallavi Banerjee

Duration for which permission is required

You should request approval for the entire period of your research activity. The start date should normally be at least two weeks from the date that you submit this form. Students should use the anticipated date of completion of their module as the end date of their work. Please note that retrospective ethical approval will never be given.

Start date:22/05/2020	End date:02/08/2020	Date of application:08/05/2020
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Certification for all submissions

I hereby certify that I will abide by the details given in this application and that I undertake in my research to respect the dignity and privacy of those participating in this research. I confirm that if my research should change radically I will complete a further ethics proposal form.

Will Swaites

Submission of this ethics proposal form confirms your acceptance of the above.

TITLE OF YOUR PROJECT

Be active, Be happy: Does regular physical activity improve happiness in adolescents?

Are 11-16 year olds in 20 Nottinghamshire schools who undertake 30+ minutes of physical activity at least four days a week happier than those who do not?

SYNOPSIS OF THE RESEARCH PROJECT

As a guide – approx. 200 words.

A sample of students from 20 Nottinghamshire secondary schools will be asked to complete an online survey to capture insight about their PE, sport and physical activity attitudes, habits and wider wellbeing feelings. The survey has been developed by Sheffield Hallam University with support from myself and other experts as a surveillance tool for a Sport England Secondary Teacher Training Programme that is running across the country.

The survey has already been completed by over 5,000 students in schools that I am supporting and it is my intention to interrogate data from two important aspects of the survey – physical activity habits within the last week and current feeling of happiness.

Quantitative analysis of this secondary data utilising SPSS will focus on the following questions:

1. In the past week, how many times have you done a total of 30 minutes or more physical activity, which is enough to raise your breathing rate? This may include sport, exercise, and brisk walking or cycling for recreation or to get to and from places

By providing clarity of 'what counts' as physical activity and capturing student recollection of behaviours over the previous week, the reliability of response is sufficient. Radial box options of 0-7 days will allow simple capture.

2. Overall, how happy did you feel yesterday?
3. Is this how you usually feel?

It is important to ascertain how the respondents usually feel to explore the impact of negating responses that are 'unusual' in terms of feelings.

The findings of the analysis will add to existing literature and evidence in the field to help teachers, school leaders and policy makers to recognise and prioritise daily physical activity as a part of the school 'diet' in order to improve the mental health of students. This will, in turn, have a knock on positive impact on attendance, attainment, achievement and fulfilment but those markers fall beyond the scope of this project.

INTERNATIONAL RESEARCH

England, more specifically Nottinghamshire in the East Midlands

The following sections require an assessment of possible ethical consideration in your research project. If particular sections do not seem relevant to your project please indicate this and clarify why.

RESEARCH METHODS

The data collected is quantitative and reflects anonymous perceptions of 11-16 year olds.

- Surveys completed electronically in 20 schools
- Data gathered within secure platform ready for extracting relevant questions into SPSS
- Data will be analysed collectively within SPSS with the ability to separate by gender and age to explore the impact of those demographics on .

PARTICIPANTS

A sample of 11-16 year olds from each of 20 schools will complete the survey.

THE VOLUNTARY NATURE OF PARTICIPATION

Adolescents had the option to withdraw from the data collection which was based on informed consent.

SPECIAL ARRANGEMENTS

N/A

THE INFORMED NATURE OF PARTICIPATION

Parents/ Guardians at participating schools were written to by Sheffield Hallam University to explain the purpose of the data collection survey and explain that all data is anonymous, preventing the identification of individuals. There is also a tick box at the beginning of the online survey to confirm consent for the data to form part of the research.

See SHU evaluation information sheet V3 attached for further details

ASSESSMENT OF POSSIBLE HARM

There is little likelihood of harm. Students will be surveyed anonymously and there is no way to identify their personal responses and consequently the risk of harm to individuals is protected. The further analysis I will be conducting using aspects of the full survey will also obviously be anonymised as well.

DATA PROTECTION AND STORAGE

The participant responses will be stored on a secure server with password protected dashboard access that I have as a project co-ordinator. I have asked for consent to extract as an excel spreadsheet for further analysis within SPSS.

The data will be processed according to the data protection legislations of the University of Exeter and the British Educational Research association's guidelines (BERA 2020).

DECLARATION OF INTERESTS

N/A

USER ENGAGEMENT AND FEEDBACK

The aim is to generate some powerful generalised correlations between physical activity habits and happiness to share back with school leaders and PE staff. It is hoped this in turn will be shared with students to help influence their future choices along with intelligence from the literature review and other similar research studies.

The insights from the data collection will be used to inform future policy and provision.

Appendix 5: Student survey questions



Awarding funds from
THE NATIONAL LOTTERY®

Behaviour and attitudes survey towards physical activity

Physical activity behaviour

1. In the past week, on how many days have you done a total of 30 minutes or more of physical activity, which was enough to raise your breathing rate? This may include sport, exercise, and brisk walking or cycling for recreation or to get to and from places.

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

2. Do you walk, cycle or use a scooter to get to school?

- Yes
- No

3. Please tell us how much you agree or disagree with the following statements:

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
I enjoy taking part in exercise and sports	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident when I exercise and play sports	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find exercise and sports easy	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I understand why exercise and sports are good for me	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to get involved and improve my skills in lots of different types of exercise and sports	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Please tell us how much you agree or disagree with the statements about your PE / sport lessons at school.

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
I think PE lessons are important	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a say in what we do in PE lessons	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident during PE lessons	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find PE lessons easy	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are lots of activities to choose from in PE	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think I am good at PE	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel included in PE lessons	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like the school PE kit	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think the school's PE facilities are good	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like the way we are grouped for PE	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Think about PE / sport lessons in the last month and choose which statement most applies to you.

- I always enjoy PE
- I usually enjoy PE
- I sometimes enjoy PE
- I often don't enjoy PE
- I don't enjoy PE

6. Which type of activities do you enjoy the most? Please tick your top two.

- | | |
|---|--|
| <input type="checkbox"/> Team sports | <input type="checkbox"/> Karting and motorsports |
| <input type="checkbox"/> Racquet sports | <input type="checkbox"/> Water sports |
| <input type="checkbox"/> Combat sports/martial arts/target sports | <input type="checkbox"/> Horse riding |
| <input type="checkbox"/> Running/athletics/multi-sports | <input type="checkbox"/> Ice skating |
| <input type="checkbox"/> Fitness activities/yoga/pilates | <input type="checkbox"/> Golf |
| <input type="checkbox"/> Gymnastics/trampolining/cheerleading/dance | <input type="checkbox"/> I don't enjoy any of the above activities |
| <input type="checkbox"/> Swimming/diving/water polo | <input type="checkbox"/> Other |
| <input type="checkbox"/> Adventure/outdoor sports | <input type="text" value=""/> |

7. Please tell us how much you agree or disagree with the statements about being active in school outside of PE lessons including playing sport at school or being physically active (e.g. running around) during lunch or breaks.

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
I think being active at school outside of PE lessons is important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy being active at school outside of PE lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident when being active at school Outside of PE lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The school promotes physical activity outside of PE lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My teachers encourage me to be active outside of PE lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like it when my teachers encourage me to be active or would like it if they did	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are lots of different ways to be active at school outside of PE lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. What impact do you think PE, Sport and physical activity have on:

	Very negative impact	Negative impact	No impact	Positive impact	Very positive impact
Your school work	<input type="radio"/>				
Your behaviour	<input type="radio"/>				
Your health	<input type="radio"/>				
Your mood	<input type="radio"/>				
Your pride in the school	<input type="radio"/>				
Making friends	<input type="radio"/>				

9. How easy is it to be active at these times during your school day?

	Very difficult	Difficult	Neither easy nor difficult	Easy	Very easy
Before lessons begin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During lessons (not including PE / sport)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During breaks including lunch	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After lessons have finished	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Overall, how happy did you feel yesterday, where 0 = not happy at all and 10 = completely happy.

1 - not at all 2 3 4 5 6 7 8 9 10 - always

11. Is this how you usually feel?

- Yes all of the time
- Yes most of the time
- No

12. Overall, how satisfied are you with your life nowadays?

0 - Not at all satisfied 1 2 3 4 5 6 7 8 9 10 - Completely satisfied

13. Overall, to what extent do you feel that the things you do in your life are worthwhile?

0 - Not at all worthwhile 1 2 3 4 5 6 7 8 9 10 - Completely worthwhile

14. What motivates you to be physically active? Select your top 3.

- | | |
|--|--|
| <input type="checkbox"/> Being healthy | <input type="checkbox"/> Trying new things |
| <input type="checkbox"/> Feeling good | <input type="checkbox"/> Learning skills |
| <input type="checkbox"/> Improving your appearance | <input type="checkbox"/> Challenging myself |
| <input type="checkbox"/> Having fun | <input type="checkbox"/> Competing against others |
| <input type="checkbox"/> Being with friends | <input type="checkbox"/> Leading / organising others |
| <input type="checkbox"/> Being with family | <input type="checkbox"/> Other |
| | <input type="text"/> |

15. What stops you from being physically active? Select your top 3.

- | | |
|--|--|
| <input type="checkbox"/> Lack of confidence in my ability | <input type="checkbox"/> Lack of transport |
| <input type="checkbox"/> Feeling self-conscious or shy | <input type="checkbox"/> Lack of information |
| <input type="checkbox"/> Haven't found something I enjoy | <input type="checkbox"/> Lack of local provision / opportunities |
| <input type="checkbox"/> No-one to take part with | <input type="checkbox"/> Provision is not accessible |
| <input type="checkbox"/> Lack of time e.g. because of school or family commitments | <input type="checkbox"/> Nothing stops me from being active |
| <input type="checkbox"/> Lack of money | <input type="checkbox"/> Other |
| | <input type="text"/> |

16. What would you like to learn in PE? Tick all that apply

- | | |
|---|---|
| <input type="checkbox"/> The benefits of being physically active | <input type="checkbox"/> How to lead/organise physical activities for other people |
| <input type="checkbox"/> How to be physically active outside of school / for life | <input type="checkbox"/> The skills that will help me in life e.g. problem-solving, communication |
| <input type="checkbox"/> How to take part in physical activity outside of school | <input type="checkbox"/> Don't have a preference |
| <input type="checkbox"/> The knowledge and skills I need for GCSE/A-Level PE | <input type="checkbox"/> Other |
| | <input type="text"/> |

Demographics

17. What is your gender?

- Girl
- Boy
- Other
- Prefer not to say

18. What is your age?

Please select one ... ▼

19. What is your ethnicity?

- White (British or English)
- White (Not British or English)
- Mixed Race
- Asian or British Asian
- Black or Black British
- None of these
- Prefer not to say

20. Do you have a disability, or a special educational need (e.g. dyslexia), which means you need extra help to do things?

- Yes
- No
- Prefer not to say

21. Does this disability, or special educational need affect you in any of the following areas?

- | | |
|--|---|
| <input type="checkbox"/> Moving around including walking and running | <input type="checkbox"/> Using numbers (e.g. dyscalculia) |
| <input type="checkbox"/> Using your hands for writing or to pick things up | <input type="checkbox"/> Coordination (e.g. dyspraxia) |
| <input type="checkbox"/> Seeing and using your eyes | <input type="checkbox"/> Your mental health and how you feel |
| <input type="checkbox"/> Hearing and using your ears | <input type="checkbox"/> How you behave in a way which makes life difficult |
| <input type="checkbox"/> Speaking and communicating; Breathing (e.g. asthma) | <input type="checkbox"/> Gives you pain |
| <input type="checkbox"/> Difficulty learning new things | <input type="checkbox"/> Affects your health for a long time |
| <input type="checkbox"/> Reading or writing (e.g. dyslexia) | <input type="checkbox"/> Affects you in another way |
| | <input type="checkbox"/> None of these |

22. Do you need any support to access PE?

- Yes
- No
- Prefer not to say

23. Which school do you attend?

School

Please select one ... ▼

YST GIRLS ACTIVE

Executive summary

- Young people understand the importance of an active lifestyle
- Girls say they do less PE and the amount of PE they do decreases throughout the school years
- **Boys are more likely to be active both inside and outside of school** - nearly a quarter of secondary aged girls (23%) do not do any sport or physical activity outside of school
- Girls in year 10 are most likely to be concerned about **body image** and have negative feelings about the way they look
- Girls who are coaches, leaders, administrators or organisers are more likely to feel **confident, happier** and like taking part in **physical activity, PE and learning at school**

Motivators

- Girls in KS4 are less likely to feel that their school and parents encourage them to take part in sport or physical activity
- Girls are less likely to enjoy competition than boys, however, **competition generally does not emerge as a big motivating factor for girls or boys to be physically active.** The value placed on competition decreases throughout the school years.

Barriers

- **For secondary aged pupils, boys were more than twice as likely to say they have no barriers to sport and physical activity than girls**
- For girls from a BAME background, **having their period** is the biggest barrier to participating in sport and physical activity
- Confidence remains a continual barrier for girls
- The largest barrier that secondary aged girls experience to participating in sport or physical activity outside of school is **time**, with **26% of girls saying that they do not have time because of their school work.**

PRIMARY GIRLS BARRIERS IN SCHOOL	SECONDARY GIRLS BARRIERS IN SCHOOL
I don't like getting hot and sweaty I am not confident I am not good at it	I am not confident I don't like other people watching me When I have my period

The percentage of young people that love PE and being physically active decreases throughout the school years

More active girls have higher scores of wellbeing and more likely to like learning at school

Having fun is a key motivator for all age groups, genders and demographics

Boys are more likely to say they have no barriers to sport and activity than girls