



The Effects of Video Priming on Motivation and Future Investments towards Sport in Young

Females

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## Submission of Thesis and Dissertation

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### **Abstract**

The present study investigated whether intrinsic motivation can be primed using generalisable stimuli with the underpinnings from observational learning theory. This study also investigated whether this predicts higher future investment towards sport in young females aged 18-24. The PDSQ measure was used to explore the relationship between sport club membership under the age of eighteen and after the age of eighteen. Research has shown autonomous motivation can be primed in laboratory settings with unrelated priming tasks such as ‘word scramble test’. The current study sought to expand on this research and increase the ecological validity of priming in real-life settings using videos with matching gender role models. A total of 59 female participants completed the experiment, 28 in the experimental group and 31 in the control group. Findings from an independent t-test found significantly higher investment towards sport for the control group but not for the experimental group. A paired samples t-test found a significant difference in motivation in the experimental group but not the control group. Post hoc analysis using Wilcoxon Signed Rank test found a significant difference from time 1 to time 2 in all variables from the BREQ-2 scale for both groups. There was no correlation found using Spearman rho between sport club memberships before and after the age of eighteen. The findings from this study provide empirical evidence that motivation can be primed however, the prediction of behaviour from motivation needs further investigation. Practical implications regarding education, health and media priming are discussed.

*Keywords: video priming, motivation, self-determination, observational learning, female, sport.*

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## **Introduction**

The definition of sport can be described as a subset of physical activity that is structured, competitive, and goal based (McPherson, Curtis, & Loy, 1989), whereas physical activity is bodily movement using energy, that can be performed alone or in a group. The World Health Organisation, (2020) recommends for adolescents to have at least 75 minutes of moderate-to vigorous-intensity physical activity (MVPA) daily which may include sport. This has been recommended to help battle global obesity (Kriska, 2003) and other health issues such as cardiovascular disease, hypertension (Christie, 2017), diabetes, and cognitive decline in aging adults (Thompson et al., 2003).

## **Physiological and Psychological outcomes of Physical Activity vs Sport**

The benefits of moderate to vigorous-intensity physical activity (MVPA) have been well documented (Lombard et al., 2009; Penedo & Dahn, 2005; Warburton, Nicol, & Bredin, 2006). However, research suggests only 8% of people reach the recommendation (Matthews et al, 2008). Additionally, females are less likely to engage in physical activity (PA) than males, regardless of age (Colley et al., 2011). Female participation in PA peaks at early adolescence, at the age of thirteen (Zimmermann-Sloutskis, Wanner, Zimmermann, & Martin, 2010) which is followed by a steep decline in participation (Sallis, 2000). The physical benefits of participating in either PA or sport are similar however, the psychological outcomes are not. Due to cooperation, teamwork (Wiersma & Fifer, 2008), negotiation, attempted conflict resolution (Howie et al., 2010) and the social support of sport there is a psychological and social benefit that PA lacks (Eime et al., 2013). A study conducted by Taliaferro and colleagues (2008) found sport participation was a significant factor in reducing suicidality among male and female college students after controlling for physical activity. Additional studies have found sport

participation reduced risk in considering or planning suicide for girls (Sabo et al., 2005; Taliaferro et al., 2009). Further evidence suggests participation of a team sport improves mood (Dishman et al., 2006), self-esteem (Brettschneider, 2001; Findlay & Coplan, 2008; Tracy & Erkut, 2002), emotional self-efficacy (Valois et al., 2008), life satisfaction (Hiremath, 2019), reduces depressive symptoms (Boone & Leadbeater, 2006; Gore, Farrell, & Gordon, 2001; Snyder, 2010) and aids in the building of meaningful relationships (Fonagy & Target, 2002; Wiersma & Fifer, 2008).

Furthermore, the frequency of sport participation correlated with positive health outcomes (Michael, Jeannin, & Suris, 2006). Therefore, playing a team sport may act as a buffer against negative psychological symptomology while building resilience. Comparatively, PA has all the physiological health outcomes but may lack the psychological protectors and supports that sport provide (Taliaferro et al., 2009). Unger (1997) found females that engaged in vigorous aerobic activity without team sports positively correlated to higher rates of suicidal behavior. Maladaptive attempts at weight control and eating habits may contribute to these controversial findings. Exercise had positive psychological outcomes for female college students when not associated with an eating disorder (Thome & Espelage, 2004). This suggests that the dynamic between females and exercise influences mental health in complex ways.

It should be noted that research suggests there may also be risks associated with sport engagement. Males that participate in sport are more likely to get into a fight at school and drink alcohol (Guevremont, Findlay, & Kohen, 2014). This is supported by numerous systematic reviews that have shown that most studies demonstrate positive correlations between sport participation and alcohol use (Diehl et al., 2012; Kwan et al., 2014; Lisha & Sussman, 2010). These findings may be influenced by age of participants at recruitment, gender, race, and socio-

economic status (Mays, Gatti, & Thompson, 2011). It has been found that those who engage in team and technical sports increased their alcohol use compared to those who engage in individual endurance sports respectively (Wichstrom & Wichstrom 2009).

### **Motivation Theory in Sport**

According to Self-determination Theory (SDT) (Deci & Ryan, 1985; Deci & Ryan, 2000; Ryan & Deci, 2007) motivation is a continuum of three main types of motivation (1) amotivation the absence of motivation, (2) intrinsic motivation (autonomous) and (3) extrinsic motivation (controlled), which are regulated from internal or external factors, respectively. Intrinsic motivation represents the freedom of choice to explore a task for the enjoyment of it. Enjoyment motivated intrinsically commonly produces adaptive behaviours in tasks such as persistence (Pelletier et al., 2001) and satisfaction (Edmunds, Ntoumanis, & Duda, 2008). Extensive research suggests that enjoyment is one of the main reasons to participate in sport and the lack of enjoyment or fun is also a reoccurring theme in the reduction of sport engagement (Crane & Temple, 2015; Gardner, Magee, & Vella, 2017; Pfeiffer et al., 2006; Stern et al., 1990; Scanlan et al., 1993; Weiss and Williams, 2004;).

Extrinsic motivation is controlled from external factors such as rewards and praise. Rewards may undermine autonomy and change behaviour (Deci, Koestner, & Ryan, 1999; Radel, Sarrazin, & Pelletier, 2009). Banting, Dimmock, & Grove (2011) found that when controlled motivation was primed this reduced PA. External regulated behaviours have been found to be contingency dependent and show poor maintenance once the contingencies are removed (Deci & Ryan, 1985). This highlights the need to take into consideration the different types of motivation influencing behaviour (Friedman et al., 2010) and whether this predicts intentions for future behaviour (Wilson & Rodgers, 2004). SDT has provided substantial

evidence to suggest autonomous motivation predicts behaviour (Cerasoli, Nicklin, & Ford, 2014). Intrinsic motivation is a subcategory of autonomous motivation and has been associated with having a positive influence on greater interest (Grolnick & Ryan, 1987), exercise commitment and duration (Ryan et al., 1997).

### **Priming Motivation**

The Auto-Motive model developed by Bargh (1994) helps explain the motivational unconscious process that is connected to other constructs. Bargh's research suggested a person could set a goal and achieve it without their prior knowledge of ever setting the goal or awareness of pursuing it, otherwise called priming (Bargh & Chartrand, 1999). A previous study investigated supraliminal priming by first exposing the participant to intrinsic motivational words from a confederate (i.e., "I really enjoy running"), then provided the option for the participant to stop running on a treadmill (Scarapicchia et al., 2013). The participant was aware that the confederate was saying positive words however, they were not aware of the influence this would have on their choice to stop running themselves. Research supports supraliminal priming can influence motivation (Levesque & Pelletier, 2003). It is important that this is done unawares of the participant as to measure the non-conscious regulatory process, as evidence suggests motivational processes (Bargh, 1997) and goal directed behaviour are regulated by automatic processes (Bargh, 2005; Burton et al., 2006). Most researchers use what seems to be unrelated tasks, for example using a word scramble sentence task (Levesque & Pelletier, 2003; Banting, Dimmock, & Grove, 2011; Radel, Sarrazin, & Pelletier, 2009; Magaraggia, Dimmock, & Jackson, 2014) informing the participant it is a separate study and then to later observe physical activity or sport.

However, as research in this area expands and matures progressive problems have begun to emerge. Subliminal priming in laboratory settings is becoming un-generalisable to real life. Not many people would have a scheduled autonomous motivation task in the form of hidden words before they engage in physical activity. Limited empirical work has used video to intrinsically motivate participants prior to physical activity (Loizou & Karageorghis, 2015). Previous supporting research on priming motivation, suggests higher pleasure (Loizou & Karageorghis, 2015) longer duration of engagement (Scarapicchia et al., 2013) and improved performance (Bishop, Karageorghis & Loizou, 2007) when intrinsically motivated. The use of music primes seems ecological and generalisable to real life as many people would listen to music as they participate in general physical activity. Gyms are fitted with sound systems that play upbeat music and they also have video monitors attached to some cardiovascular machines, influencing motivational states while exercising (Hutchinson, Karageorghis & Jones, 2015). Rebar et al., (2016) found that there is mounting evidence to suggest priming has a direct effect on sport, but considerable research is needed to better understand how these non-conscious processes can be manipulated to help maintain regular engagement.

### **Social Learning Theory in Sport**

Observational learning (Bandura, 1978) is rarely mentioned in sport, particularly in the context of gender and how role models of the same sex influence behaviour. Social learning theory (Bandura, 1989) suggests that observational learning is stronger when the model is of same sex. If there are no same sex models for females in sport, it is plausible females do not associate themselves with playing sport. Females are underrepresented in sport from primes such as media sporting coverage. Female sport represented less than 2% of all sports coverage in Malta and Greece (Women in sport, 2018). The UK in recent years has increased its female sports coverage

having broadcasted the Women's European Championships in 2017, which attracted over 9.6 million viewers (Women in sport, 2018). Evidence shows that attitudes and behaviours can be adopted including those of media personalities (Fagot, Rodgers & Leinbach, 2000). Therefore, if young females were exposed to female sporting personalities, they would have the potential to be imitated as role models.

Kroger (2006) suggest role models outside typical gender stereotypes are important in influencing identity formation. Girls are more vulnerable to gender intensification (Archer, 1992) and therefore comply or conform to gender roles during early adolescence (McCabe & Ricciardelli, 2005; McHale et al., 2004), which is a critical time when forming identity (Erikson, 1943). The Bem Sex Role Inventory (BSRI) was established to rate desirable traits for males and females (Bem, 1974). BSRI desirable feminine traits include being affectionate, cheerful, gentle, loving of children, tender, soft spoken and yielding. Desirable masculine traits include leadership, aggressiveness, ambition, athleticism, being competitive, dominance and a willingness to take risks (Bem, 1981). A review of this traditional gender perception in 2000, found that female participants rated all feminine traits and 18 of the 20 masculine traits as still valid (Auster & Ohm, 2000). Further investigation of traditional standard gender roles found males are repeatedly described as assertive, competitive and goal orientated. Sport, by definition, is goal orientated and can be competitive or non-competitive (McPherson, Curtis, & Loy, 1989). These are the same traits found to be socially desirable in males. Further supporting a gender stereotype that playing sport is a masculine trait and that sport is masculine in nature (Fredricks & Eccles, 2005; Koivula, 1999). Evidence shows that the threat of stereotypes (Steele, 1997) can also affect females who do feel competent in male dominated activities, resulting in decreased performance in athletic ability (Chalabaev et al., 2008).

A systematic review of dropout in sport demonstrates a gender discrepancy, as 89% of participants were male (Crane & Temple, 2015). Historical research shows a dropout rate of 35% between the ages of twelve and fourteen in sport, with females accounting for 22% of that percentage (Patriksson, 1988). Participation in sport begins to decline in females during the same key period as identity formation, suggesting this may be a factor in the discrepancy of engagement. However, Eime (2015), carried out a longitudinal analysis of sporting trends in participation of sports and found the female 15-34 cohort increased in participation over a ten-year period with all older cohorts decreasing. This illustrates female participation is increasing even though gender standard roles are consistent. Children that are more involved in sport are more likely to be active in adulthood (Tammelin et al., 2003; Zimmermann-Sloutskis, 2010). Personal investment statistically predicts commitment to sport, this can either be by financial investment or investment of time (Alexandris et al., 2002). As personal investment increases so does commitment (Scanlan et al., 1993). Therefore, participating in sport at a young age will continue to benefit females throughout their adulthood. Those that do not invest in sport at a young age are less likely to commence participation after young adulthood (Zimmermann-Sloutskis et al., 2010), risking the substantial physiological and psychological benefits.

### **The Present Study**

Females are largely underrepresented in sport and in physical activity research. A systematic review showed that only two studies, conducted between 2007-2010, had 'female only' participants (Kriemler, 2011). This is despite findings that there are no significant gender differences in motivation (Guérin et al., 2012). The gender discrepancy in PA is undeniable (Colley et al., 2011), suggesting there are other factors influencing the decision to engage in sport for females specifically. Imitation from role models may be a key factor in participation of

sport as previous studies found 70% of girls that had a role model, chose a female role model and that if they chose a sports person as their role model, they were more likely to be physically active themselves (Young et al., 2015). Commonwealth of Australia (2009) found the lack of female role models in sport is a key barrier to female engagement. An increase of female role models in sport may combat this issue (Duncan, 1990). The current study aims to build on this research by utilising SDT through the lens of observational learning theory. The gaps found in the literature illustrating the lack of female role models in sport and the disadvantages concerning motivation for young females to engage in sporting activities will be tackled in this study. The low ecological validity of word scramble tests used to impact sport investment from previous literature will also be addressed with generalisable stimuli used instead. The current study is one of the first studies to use video stimuli in a priming and sporting research context. According to the researcher's knowledge, this is also the first study to use readily available media to initiate intrinsic priming in a young female sample. This study is important to guide future policy and intervention development.

The main aim of this study is to investigate whether motivation can be primed in a generalisable way and if this predicts higher investment towards sport in the female population. The present research targets the females as they are continuously underrepresented in sport and under researched. The sample age of 18-24 was selected due to the rapid drop off rate of sport and PA in females in early adolescents (Dumith et al., 2011), and the low engagement in sport after young adulthood (Zimmermann-Sloutskis et al., 2010). The current study proposes the following hypothesis.

## PRIMED MOTIVATION AND FUTURE SPORT INVESTMENT

Hypothesis (1); young adult females exposed to a female prime of intrinsic motivation by visual and audio stimuli will have higher future sport investment scores than young adult females primed with non-tailored gender intrinsic motivation by visual and audio stimuli.

Hypothesis (2); There will be a difference in pre stimuli motivation scores and post stimuli motivation scores.

Hypothesis (3); There will be a relationship between frequency of sport participation before the age of eighteen and after the age of eighteen.

## Method

### Participants

Ninety-eight participants were recruited through either advertising the link to the study on social media platforms or by personal invitation through a virtual information meeting. The description of the study and consent leaflet was included in the link, sites where participation came from were Facebook, Instagram, WhatsApp, Survey Swap, and Reddit. Alternatively, the link was posted in the chat facility through Microsoft teams when inviting current students of Psychology in National College of Ireland, the student union of Dublin City University and Parnell's GAA club in Dublin to participate in the study. A convenience snowball sampling technique was used as participants were asked to share the link with others, they thought might be eligible to participate in the study. As T-test analyses were conducted in this study, G\*power model 3.1.9.7 (Faul et al., 2007) was used to determine sample size with a large effect size required for statistically powerful analysis. The total sample size needed for a between groups t-test of equal size with a one tailed hypothesis, alpha set at 0.05 and Beta 0.8 is a total of 56 participants for the study, reducing the likelihood of a Type 1 error.

The final sample consisted of 59 females aged between 18-24 years old. This consisted of 28 in the experimental group and 31 in the control group. Data were excluded if a participant identified as not biologically female, under the age 18, over the age 24 or if they expressed suspicion of motivational priming from the stimuli. The information of suspicion was obtained through a funnel debriefing sheet after all data were completed.

### Measures/Materials

**Demographics.** Participants were asked to indicate their biological gender and provide their age range. Participants were also asked to indicate whether they had any membership in a

sports team under the age of eighteen. If participants had indicated previous membership, they were asked to indicate the frequency of play/training (monthly, every 2 weeks, 1-3 times per week, more than 3 times per week).

**Physical Self-Description Questionnaire – Short Version- Adapted (PSDQ-S).** The PSDQ-S (Marsh, Martin, & Jackson, 2010) is a 40-item self - report measure across six subscales used to define self- concept factors. In the current study, four relevant subscales were used (physical activity, endurance/fitness, sport competence and strength) a total of 12- items. The Participants read statements and used a 6-point Likert scale to rate them from 1 (false) to 6 (true). An example of an item for sport competence is as follows: *I am good at most sports* (Bowker, 2006). An example of an item of activity is as follows *I do physically active things (e.g., jog, dance, bicycle, aerobics, gym, swim) at least three times a week.* Higher scores reflect higher levels of physical activity including sport. The score ranged from a minimum of 12 to maximum of 72. The Cronbach alpha coefficient for each subscale was as follows; activity .88-.90, endurance .83-.90, sport competence .94, strength .91. The Cronbach alpha coefficient for the current sample was as follows; activity .88, endurance .73, sport competence .84 and strength .88.

**Behavioural Regulation in Exercise Questionnaire (BREQ-2).** (D'Abundo et al., 2014) is a 19-item questionnaire used to assess exercise motivation through five subscales; amotivation, external regulation, introjected regulation, identified regulation and intrinsic regulation. Participants read a statement and rated them on a 5-point Likert from 1 (not true for me) to 5 (very true for me). An example of intrinsic regulation is as follows; *I exercise because it's fun.* Higher scores in each subscale indicate higher motivation within that category. The score ranged from a minimum 19 to a maximum 95, however a formula was used to determine

an autonomous or controlled motivation overall, this can be found in the data preparation section.

The Cronbach alpha coefficient for each subscale is as follows; amotivation .84, external regulation .75, introjected regulation .79, identified regulation .78 and intrinsic regulation .89.

The Cronbach alpha coefficient for the current sample was as follows amotivation .93, external regulation .90, introjected regulation .96, identified regulation .84 and intrinsic regulation .92.

**Sport Motivation Scale- II -Adapted (SMS-II).** The SMS is an 18-item measure with six subscales (Pelletier et al, 2013) used to measure motivation towards sport. This study used an intrinsic regulation subscale consisting of 3-items to measure intrinsic regulation towards sport. Five subscales were deemed unnecessary as BREQ-2 has previously measured motivation orientation in general and other motivation towards sport is outside the scope of the current study. Participants read three statements and rated them on a 5-point Likert scale from 0 (not true for me) to 4 (very true for me). An example of an item is as follows; *I take part in sport, because it gives me pleasure to learn more about my sport.* Higher scores indicate higher intrinsic motivation towards sport. The scored ranged from a minimum score of 0 to a maximum score of 15. The Cronbach alpha coefficient was greater or equal to .70. The Cronbach alpha for the current sample was .92.

**Sport Commitment Model Questionnaire -Adapted.** The sport commitment model (Scanlan et al., 1993) is a questionnaire to determine sport commitment across six categories. Three of these categories were deemed relevant to the current study (sport commitment, involvement opportunities and personal future investments) consisting of 13-items in total. The three categories that were not deemed relevant to the study were due to one being previously measured in the BREQ-2, and the other two measuring either social constraints or alternative activities which is outside the scope of the current study. Participants read a question and

answered them on a 5-point Likert scale from 1 (not at all) to 5 (very much). An example of an item from personal future investments category is as follows; *How much of your own money will you put into playing in you chosen sport like entrance fee or equipment?* Higher scores indicate higher level of commitment to sport. The scores ranged from 13 to 65. The Cronbach alpha coefficient for each category is as follows; sport commitment .88, involvement opportunities .83 and personal future investments .77. In the current sample the Cronbach alpha coefficient for each scale is as follows sport commitment .95, involvement opportunities .94 and personal future investments .94.

**Experimental Materials.** The stimuli used for the experiment were six available advertisements containing images of individuals being active, three videos in each group. The experimental group had videos by Nike, Under Armor and Lidl. The Nike (2019) video was 60 seconds in duration and began with females participating in sport (tennis, basketball, football, boxing, and athletics) individuals expressing various emotions such as anger and sadness. This was described by the commentator as ‘crazy’. The video shows female tennis player Serena Williams being successful and continues to call her ‘crazy’. The video ends with the slogan ‘show them what crazy can do’. For full transcript see Appendix A. The Under Armor (2020) video is 30 seconds in duration. The imagery consists of females training with weights, doing sit ups in pairs or whipping marine ropes. The narration and words on the screen are ‘no quick fixes’ and the ‘only way is through’ for full transcript see Appendix B. The Lidl (2016) video is 59 seconds in duration and shows images of a female Gaelic football team playing in the rain winning and losing matches. Narration includes words ‘win, pride and support’. For transcripts see Appendix C.

The control group had videos produced by Nike, Under Armor and Elvery Intersports. The Nike (2013) video is 61 seconds in duration and features a teenage boy running; the narration describes the ability for everyone to be great and uses the word “greatness”. There are no background sound effects only the sound of the boys’ running steps. Words on the screen are ‘find your greatness’. For transcript see Appendix D. The Under Armor (2020) video is 53 seconds in duration. The words ‘the only way is through’ is both in the narration and shown on screen. The imagery consists of men training in the fog with hurdles, basketballs, footballs, and baseballs. For transcript see Appendix E. The Elvery Intersport (2015) video features a young boy sitting in the team stand not being chosen to play Gaelic football. The boy is in his house and watches a famous football player on the television being cheered on by fans narration uses the word ‘unstoppable’. The boy puts up posters in his room of the famous player and begins to train in his room. He does sit ups in his room and runs out in the rain. The next time he is in the team stand, he is chosen to play. For transcript see Appendix F. The main differences in the two groups of stimuli were that the experimental group’s stimuli feature female models, whereas the control group stimuli feature male models.

## **Design**

The present study used a quantitative single-blind experimental design with two conditions (experimental versus control). To investigate the hypothesis (1) and (2); a between-participant design was used. The independent variable was video and audio stimuli, and the dependent variable is the future sport investment scores and motivation scores respectfully. To investigate hypothesis (3) a correlational design was used. The criterion variable was indicated by self-report sport team membership with frequency of training while PSDQ and Sport commitment model were used as the predictor variables.

## Procedure

Data was generated through Google Forms. First two individuals piloted the two conditions to ensure both surveys were identical except for the stimuli and to determine the length of time it would take to complete the questions. Their data from the pilot study was excluded from the analysis. The average time of the study was 21 minutes. A participant information sheet was uploaded with a timer of 15- 25 minutes to allow for natural variation, and a reminder to check the junk folder as the reply from the researcher to complete the study was flagged to default there. The link was posted online and in the chat option of any virtual meetings. The link to Google Forms included Participant information sheet (see Appendix G) detailing the cover story of the study; claiming to investigate female attitudes towards girls in sport. Included also were the purpose, eligibility criteria, the researcher, the organisation, and supervisor with email details provided if anyone would like to make an inquiry about the study. If they did want to participate in the study, they were invited to give their email address and then two boxes must be ticked before submitting. The first to give informed consent and the second to give consent to be directly contacted with the study by email. Once the participant submitted the information an invitation was sent to the providing email to share the link with others. This was also to confirm an active email address was provided.

This Google form collected active email address and during this time participants were randomly assigned to either the experimental group or control group by tossing a coin, (heads = experimental group, tails = control group). Once the participant had been sent the study contact details were deleted and there was no further contact between researcher and participant. Participants were informed that their participation was voluntary, and if they choose to discontinue at any time, they can do so by closing the browser before submitting the data without

penalty. The participants were informed that once they had submitted the data, withdrawing was no longer possible as the study was anonymous from this stage onwards.

The study contained six sections, the first was a reminder of anonymity, voluntary participation, and detailed instructions for the study. The second section was demographics gender and age range (see Appendix H). The third section was the pre-test of the study, PSDQ (see Appendix I), BREQ-2 (see Appendix J), and subscale of SMS (see Appendix K), followed by the three short videos (priming stimuli). The fourth section was the post-test section and contained BREQ-2, and subscales of the commitment model questionnaire (see Appendix L). The fifth section was called debriefing; however, this was a funnel debriefing (see Appendix M) used to probe for knowledge of the true reason for the study and suspicion of priming. The participant was asked if they believed the videos influenced their answers, and to give a reason for why they believed this. Any participant that gave reasons that the videos did influence their responses was excluded from the analysis.

To keep with the cover story, enjoyment of the stimuli was asked and if they gave the study their full attention. The final section was the debriefing (see Appendix N) where the true study was fully explained, and each participant was thanked. The researcher's and supervisor's contact details were again provided for any questions. Though no obvious harm was expected helpline details were provided in the case that any participant experienced any distress caused by the study. This research study was approved by the National College of Ireland's Ethics Committee and is compliant with The Psychological Society of Ireland Code of Professional Ethics and the NCI Ethical Guidelines and Procedures for Research involving human participants.

### **Data Preparation**

To calculate the BREQ-2 Markland and Ingledew's (2007) RAI calculation formula was used  $(-3 \times \text{amotivation}) + (-2 \times \text{external regulation}) + (-1 \times \text{introjected regulation}) + (2 \times \text{identified regulation}) + (3 \times \text{intrinsic motivation})$ . Higher positive scores from this formula indicate more autonomous regulation whereas lower negative scores indicate controlled regulation. Score ranges from -7.00 -71.00. Linear transformation was used for post BREQ-2 scores and frequency of sport participation to avoid violation of homoscedasticity the formulation used was  $(4/3) * x - (1/3)$  and  $(6-1) * (x-1) / (5-1) + 1$  respectively (Lewis & Sauro, 2020). When converting linear scores by linear interpolation the mean and the standard deviation will change; however, this will not affect statistical procedures such as correlations, t-tests, linear regression, or analysis of variance (Lewis & Sauro, 2020).

## Results

### Descriptive Statistics

The sample consisted of 59 females all in the age range of 18-24. In this sample 5 participants (8.5%) were not a member of a sports team under the age eighteen and 54 participants (91.5%) were a member of a sports team under the age of eighteen. The participants indicated the frequency of training as either monthly (1.8%), every two weeks (7.3%), 1-3 times per week (63.6%), or more than 3 times per week (27.3%). Descriptive statistics for levels of motivation are presented in Table 1. The total of motivation BREQ-2 and descriptive statistics for all continuous variables are presented in Table 2.

**Table 1**

*Descriptive statistics for motivation-by-motivation category (n=59)*

Motivation Category	Mean [95% CI]	SD	Range
External regulation	1.30[.78, 1.83]	2.02	.00-6.50
Introjected regulation	6.84[5.98, 7.70]	3.29	.00-12.00
Identified regulation	11.22[10.22, 11.95]	2.82	5.50-16.00
Intrinsic regulation	8.96[8.11, 9.81]	3.27	.75-16.00
Amotivation	.87[.36, 1.38]	1.94	.00-2.28

**Table 2***Descriptive statistics of continuous variables (n =59)*

Variable	Mean [95% CI]	Std. Error Mean	Median	SD	Range
PSDQ	41.43[38.98,43.88]	1.22	39.25	9.40	24.67-63.50
BREQ-2	37.26[32.31,42.21]	2.47	38.00	19.00	-7.00-71.00
SMS	7.20[6.21,8.20]	.49	7.33	3.82	.00-15.00
Sport Commitment Model	45.16[42.68,47.64]	1.23	43.00	9.50	10.75-64.00
Personal Future Investments	9.92[9.30,10.53]	.30	9.33	2.34	2.33-15.00

## Inferential Statistics

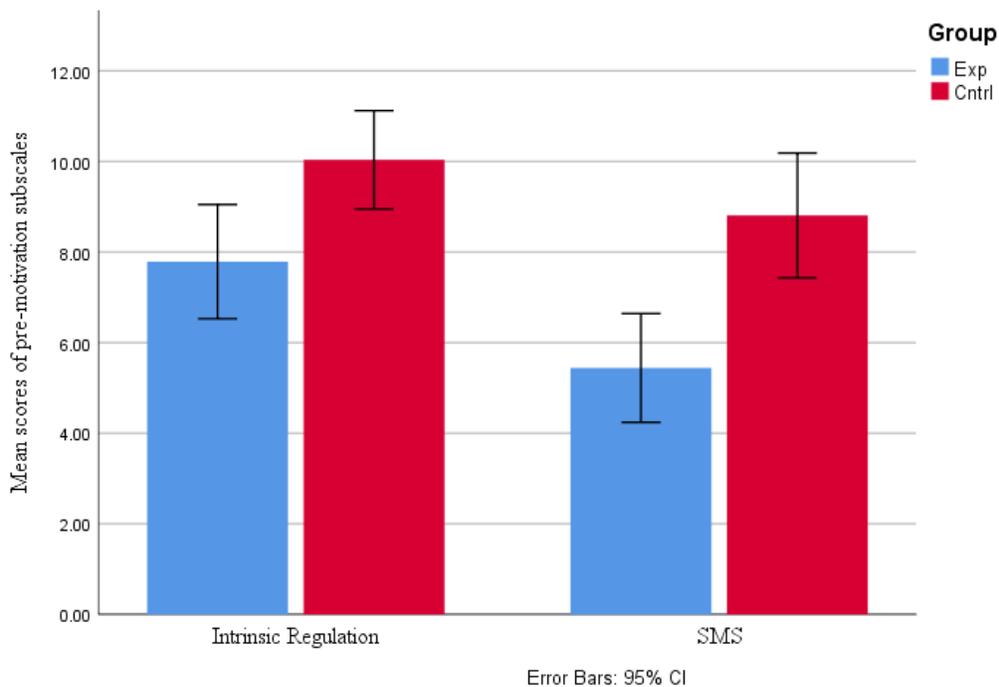
### Hypothesis 1

Two independent sample t-tests were conducted to compare, intrinsic regulation and SMS between an experimental group and a control group prior to stimuli exposure. Preliminary analyses were performed to ensure no violation of the assumptions of normality and homogeneity of variance. There was a statistically significant difference in both variables the control group had higher scores for intrinsic motivation ( $M = 10.03$ ,  $SD = 2.96$ ;  $t(57) = -2.77$ ,  $p = .007$ ) and SMS ( $M = 8.80$ ,  $SD = 3.75$ ;  $t(57) = -3.73$ ,  $p > .001$ ) than the experimental group ( $M = 7.78$ ,  $SD = 3.24$ ) and ( $M = 5.44$ ,  $SD = 3.09$ ) respectively. Both variables had a medium effect size intrinsic regulation (Cohen's  $d = .72$ ) and SMS and a large effect size (Cohen's  $d = .98$ ). This indicates that participants in the control group had higher intrinsic motivation towards sport than

participants in the experimental group. Visual representation of mean scores for both variables is presented in Figure 1.

**Figure 1**

*Subscales intrinsic regulation and SMS of motivation by group*



A Mann-Whitney U – test was conducted to compare levels of external regulation, introjected regulation, identified regulation, and amotivation between two groups (experimental and control) prior to stimuli exposure. This non-parametric statistical analysis was chosen as preliminary analyses as a Shapiro-Wilk test showed a violation of normality in all variables. The assumptions of homogeneity of variance were not violated, except for amotivation Levene’s test for equality variances  $p=.036$ . There was a statistically significant difference in the scores for identified regulation, with the control group ( $Md = 13.00$ ,  $n = 31$ ) scoring higher than the

experimental group ( $Md = 11.75, n = 28$ );  $U = 598.00, z = 2.50, p = .012$ . This is a small effect size  $r = .20$ . There was no significance found for external regulation  $p = .234$ , introjected regulation  $p = .200$ , and amotivation  $p = .290$ . Full results are presented in Table 4.

A Mann-Whitney U – test was conducted to compare levels of personal future investment to sport between an experimental group and a control group. This non-parametric statistical analysis was chosen as preliminary analyses of a Shapiro-Wilk test showed a violation of normality  $p = .001$ . The assumptions of homogeneity of variance were not violated, Levene's test for equality variances  $p = .958$ . There was a statistically significant difference in the scores, with the control group ( $Md = 11.00, n = 31$ ) scoring higher than the experimental group ( $Md = 9.33, n = 28$ );  $U = 649.00, z = 3.29, p = .001$ . This is a medium effect size  $r = 0.42$ .

**Table 4**

*Results of Mann-Whitney U test, for group differences in measures of external regulation, introjected regulation, identified regulation and amotivation*

	Experimental			Control			U	z	Std Error	p	r
	<i>Md</i>	<i>M</i>	<i>n</i>	<i>Md</i>	<i>M</i>	<i>n</i>					
External regulation	.00	1.00	28	.00	1.58	31	502.00	1.90	57.14	.234	0.17
Identified regulation	11.75	10.50	28	13.00	11.87	31	598.00	2.50	65.59	.012*	0.20
Introjected regulation	7.00	6.20	28	8.00	7.41	31	518.00	1.28	65.57	.200	0.14
Amotivation	.00	.55	28	.00	1.16	31	486.00	1.05	49.10	.290	0.13

R value using Cohen (1988)  $r = .1$  small,  $.3 =$  medium,  $.5 =$  large effect.  $z =$  Standardized Test statistic  $* = p > .05$

## Hypothesis 2

A paired samples t-test was conducted to evaluate motivation from pre-exposure to the stimuli and post exposure between two groups, (experimental group and control group). Preliminary analyses were performed to ensure no violation of the assumptions of normality and homogeneity of variance. There was a significant difference in the experimental group with higher motivational scores at post stimuli exposure ( $M = 43.19$ ,  $SD = 21.99$ ) compared to pre stimuli exposure ( $M = 34.49$ ,  $SD = 18.59$ );  $t(27) = -6.49$ ,  $p < .001$ ). The magnitude of the differences in the means (mean difference =  $-8.69$ , 95% CI =  $-11.44 - -5.94$ ) was large (Cohen's  $d = 1.39$ ). There was no significant difference in motivation scores in the control group, post stimuli exposure ( $M = 42.97$ ,  $SD = 13.53$ ) compared to pre stimuli exposure ( $M = 39.77$ ,  $SD = 19.31$ );  $t(-1.55) = -6.49$ ,  $p = .131$ ). This indicates the stimuli exposure significantly raised motivation scores in the experimental group but not in the control group.

A series of post hoc tests was conducted to evaluate all categories of motivation. A paired samples t-test was conducted to evaluate intrinsic regulation from pre-exposure (Time 1) to the stimuli and post exposure (Time 2) between two groups, (experimental group and control group). Preliminary analyses were performed to ensure no violation of the assumptions of normality and homogeneity of variance. There was a significant difference in both groups with higher intrinsic regulation scores at time 2 experimental group ( $M = 15.04$ ,  $SD = 3.53$ ), control group ( $M = 15.26$ ,  $SD = 2.38$ ), compared to time 1 experimental group ( $M = 7.78$ ,  $SD = 3.24$ );  $t(27) = -27.23$ ,  $p < .001$ ), control group ( $M = 10.03$ ,  $SD = 2.96$ );  $t(30) = -16.11$ ,  $p < .001$ ). The magnitude of the differences in the means for experimental group (mean difference =  $-7.26$ , 95% CI =  $-7.80 - -6.71$ ) was very large (Cohen's  $d = 5.26$ ) and control group (mean difference =  $-5.23$ , 95% CI =  $-5.90 - -4.57$ ) was also large (Cohen's  $d = 3.03$ ). The non-parametric alternative to a paired

samples t-test, Wilcoxon Signed Rank Test was chosen for all other variables of motivation (external regulation, introjected regulation, identified regulation and amotivation) as preliminary analyses of the Shapiro-Wilk test showed a violation of normality in all variables  $p > .05$ . There was a statistically significant difference for all variables with all variables  $p > .001$  all with large effect size ( $r = .64$ ). For full results see Table 5. For a bar chart showing all motivation categories at time 1 and time 2 see Figure 2.

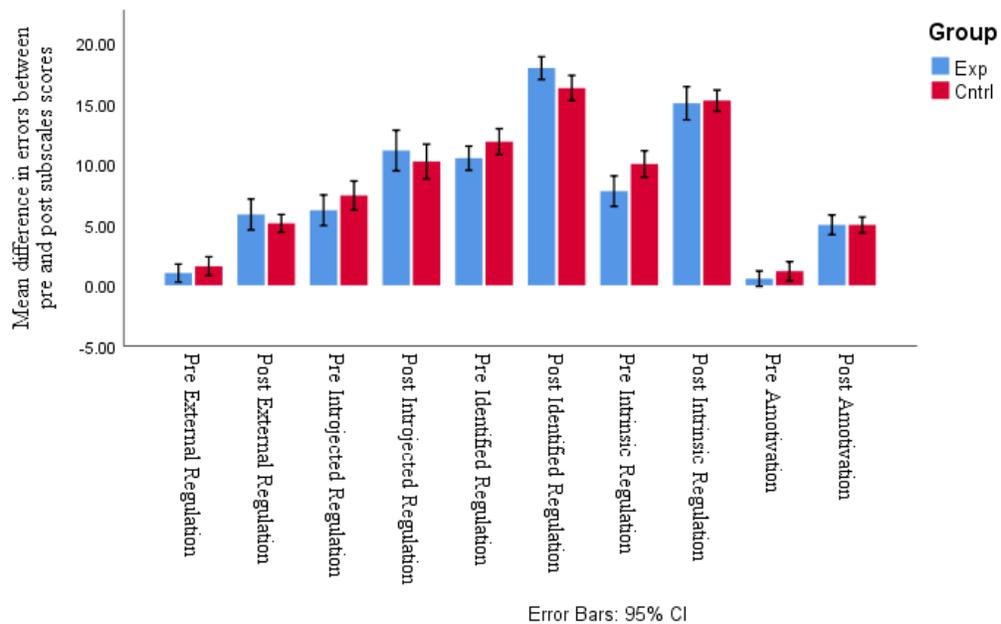
A Mann-Whitney U – test was conducted to compare the levels of external regulation, introjected regulation, identified regulation, intrinsic, and amotivation between two groups (experimental and control). This non-parametric statistical analysis was chosen as preliminary analyses as a Shapiro-Wilk test showed a violation of normality in all variables, except intrinsic. The assumptions of homogeneity of variance were not violated, except for external regulation Levene's test for equality variances  $p = .027$ . There was a statistically significant difference in the scores for identified regulation, with the experimental group ( $Md = 18.66, n = 28$ ) scoring higher than the control group ( $Md = 17.33, n = 31$ );  $U = 264.00, z = -2.62, p = .009$ . This is a small effect size  $r = .21$ . There was no significance found for external regulation  $p = .635$ , introjected regulation  $p = .262$ , intrinsic  $p = .804$  and amotivation  $p = .786$ . Full results are presented in Table 6.

**Table 5**

*Results of Wilcoxon Signed Rank Test, for time and group differences in measures of external regulation, introjected regulation, identified regulation and amotivation*

Variable	Group	<i>Md (T1, T2)</i>	<i>n</i>	<i>z</i>	Std Error	P	<i>r</i>
External regulation	Experimental	.00, 4.00	28	4.75	42.73	.000	0.63***
	Control	.00, 4.00	31	4.62	40.92	.000	0.58***
Introjected regulation	Experimental	7.00, 11.00	28	4.64	43.66	.000	0.59***
	Control	8.00, 11.00	31	4.56	43.88	.000	0.57***
Identified regulation	Experimental	11.75, 11.00	28	4.63	43.87	.000	0.61***
	Control	13.00, 11.00	31	4.86	50.98	.000	0.62***
Amotivation	Experimental	.00, 4.00	28	4.84	41.97	.000	0.64***
	Control	1.00, 6.67	31	5.02	49.36	.000	0.63***

Cohen (1988) effect size  $r^*$  = .1 small,  $** = .3$  medium,  $*** = .5$  large effect

**Figure 2***All categories of BREQ-2 motivation by group and time point*

**Table 6**

*Results of Mann-Whitney U test, for group differences in measures of external regulation, introjected, intrinsic and amotivation*

	Experimental		Control		U	z	Std Error	p	r
	M	n	M	n					
External regulation	30.91	28	29.18	31	408.50	-.47	53.65	.635	0.08
Introjected regulation	32.59	28	27.66	31	361.50	-1.12	64.63	.262	0.13
Intrinsic regulation	29.45	28	30.50	31	449.50	.24	62.39	.804	0.06
Amotivation	29.50	28	30.45	31	448.00	.27	51.52	.786	0.06

*Note.* U= Mann-Whitney U test; z =standardized test statistic; R value using Cohen (1988) .1 = small, .3 = medium, .5 = large effect.

### Hypothesis 3

The relationship between frequency of sport participation before the age eighteen and after the age eighteen was investigated using Spearman Rank Order Correlation as preliminary analyses were performed and found violation of assumptions. Normality violation indicated from a significant Shapiro-Wilk, and violation of linearity indicated from a scatterplot.

Homoscedasticity was rectified with a linear transformation. There was no significant correlation between the two variables ( $\rho = -.01$ ,  $n = 55$ ,  $p = .959$ ). Results indicate no association between participation of sport before the age of eighteen and after the age of eighteen.

## Discussion

The aim of the current study was to investigate whether intrinsic motivation can be primed to young females through observational learning, and whether this can increase their commitment to future investments in sport. Prior findings have shown that motivation can be automatically activated to increase effort (Scarapicchia et al., 2013), to maintain persistence in a new motor task (Radel, Sarrazin, & Pelletier, 2009), to induce positive emotional states for optimal sporting performance (Bishop, Karageorghis, & Loizou, 2007) and to increase future interest for task engagement (Ntoumanis et al., 2014). Through this research, three hypotheses were designed to address the objectives for this study.

It was hypothesized, (H1) that young adult females exposed to a female prime of intrinsic motivation by visual stimuli would have higher future sport investment scores than females primed with non-tailored gender intrinsic motivation. The results indicate significance for the non-tailored control group therefore, H1 is not supported. These unexpected findings gave cause to investigate all subscales of motivation. Results found statistically significant higher scores for three variables (identified regulation, intrinsic regulation, and intrinsic motivation towards sport) with a large effect size (Cohen's  $d = .98$ ). This indicated that the sample in the control group had significantly higher baseline scores than the experimental group. This is important for correct interpretation of the results as intrinsic and identified regulation predict behaviour. Both these motivational orientations positively correlate with sport engagement (Deci & Ryan, 2002). However, it remains unclear to which degree identified regulation and intrinsic regulation are attributed to future investments in sport.

Hypothesis (H2): there will be a difference in pre-test motivation scores and post-test motivation scores. H2 can be partly accepted, as a significant result was found for the

experimental group with very large effect size (Cohen's  $d = 1.39$ ). The control group had increased scores however the group failed to reach statistical significance. The results indicate that both stimuli did increase motivation; however, the experimental group influenced participants to a very high magnitude. Further investigation of the subscales found intrinsic regulation and identified regulation increased to a statistically significant level for the experimental group. The increase of intrinsic regulation is a promising finding and of particular interest because, although it was not significant compared to the control group, it increased by a larger magnitude in the experimental group. Prior to exposure of the stimuli, the control group was significantly higher in both intrinsic regulation and identified regulation, yet after exposure both obtained higher mean scores in the experimental group. This is an important finding in the understanding of the impact the stimuli had on the present sample. Identified regulation was also significantly higher in the experimental group compared to the control group, exemplifying that the stimuli had a high impact on this motivation. The results show that female role models do seem to impact motivation for females. These findings partly support that motivation can be primed and that observational learning theory may contribute to these findings. This is partly consistent with other studies that have shown that intrinsic motivation can be primed using video stimuli with positive outcomes (Loizou & Karageorghis, 2015; Loizou, Karageorghis, & Bishop, 2014; Ntoumanis et al., 2014).

The final hypothesis (H3); that there will be a relationship between frequency of sport participation before the age of eighteen and after the age of eighteen, was not supported. This finding contradicts previous studies (Tammelin et al., 2003; Zimmermann et al., 2010). This may be due to methodological differences whereby previous studies used a longitudinal design diminishing memory error when using self-report measures. A study conducted by Tammelin

and colleagues (2003) defined and separated different types of sport, their results found different types of sport played after school hours predicted PA in adulthood. The current sample also had a disproportionate amount of sport club members compared to non-sport club members making interpretation difficult. The findings of the current study are consistent with past research that suggest individuals are moving away from traditional sports-based clubs in adulthood, looking outside the constricting boundaries of a club and pursuing individual PA instead (Eime et al., 2013). An alternative perspective is that although interest in sport is present at a young age, the activity is not sought after until after adolescence. Negative teasing deters from participation and undermines the ability to be involved (Casey et al., 2009). A supporting study by Pope and Kirk (2014) found females that experienced negative peer attitudes towards sport and family expectations restricted sporting participation in childhood, but these individuals became involved in sporting activities later in life. This indicates that the want to fit in may take priority in childhood but later in life core values and interests may flourish. Based on the above findings hypothesis 1 and 3 are rejected and hypothesis 2 can be partly accepted.

Although the stimuli increased the motivation in the experimental group, the priming effect was not enough for active investments. As motivation was already high to begin with in the control group, it is difficult to determine what effect priming had for the control group and what the trigger for future investment was. Perhaps it is the accessibility of associated constructs that allow for retrieval in the control group and this facilitated such priming effects (Förster, Liberman, & Friedman, 2007). Objects in the environment can be associated with PA unconsciously; this can contribute to positive or negative associations (Custers, 2009). For example, a pair of football boots can be associated positively to friends and feelings of competence or they could be associated with feelings of inadequacy and teasing of one's body

image. In this study we speculate that cues of PA in the stimuli contributed to higher investment scores for the control group. These cues may also include a supporting male representative from previous experiences. Previous research suggests males play a key role introducing females into sporting activities acting as a mediator into a male dominated area (Farrell, Fink, & Fields, 2011). Perhaps integrated sporting activities could prove beneficial in tackling social acceptance instead of segregating teams by gender. When family support has a positive impact on sport engagement fathers are cited by females as being the most influential figure (Pope, & Kirk, 2014).

Modeling highlights norms of acceptable and expected behaviour (Smith & Petosa, 2016) worthy of imitation (MacCallum & Beltman, 2002). The gap in the literature relating to female role models in sport was addressed with the current study and found that motivation may be influenced by own gender bias (Adriaanse, & Crosswhite, 2008), but that this is insufficient for behavioral change. The current findings resonate with recent research by Lawler, Heary, & Nixon (2020), which suggest parents modelling fail to predict PA initiation, while peer modelling and support predict persistent PA participation. This study suggests that activities undertaken alongside peers may reinforce norms and conformity (Brechtwald, & Prinstein, 2011). Furthermore, females that chose role models are more likely to select models with similar backgrounds to themselves (Vescio, Wilde, & Crosswhite, 2005). The current study implicates the importance of community role models and interventions lead by peers to promote PA in females (Graham et al., 2014; Laird et al., 2016; Sebire et al., 2018). Perhaps additional focus should include positive effect to motivate others to invest time and effort into sporting activities (Haase, Poulin, & Heckhausen, 2012).

Cues may not always lead to positive outcomes (Elliot, 2006) as it is the interpretation of cues from previous experiences, habits, and associations (Bargh et al., 2001) that motivate behavior (Payne et al., 2003). In respect of the experimental group, it could be argued that this occurred, resulting in avoidance behaviors as demonstrated by the low investment scores and an increase in amotivation scores. Autonomous motivation is linked to personal enjoyment which can lead to greater investment indirectly through positive effect. This in turn allows for more adaptive problem solving in the face of challenges such as competency level which is more likely to be viewed as an opportunity rather than a threat. A study by Ntoumanis and colleagues (2014) found females are biased to appraising their environment as a threat potentially lowering their persistence. Negative experiences such as teasing diminishes the perception of competence (Lawler, Heary, & Nixon, 2020; Wetton et al., 2013) and is an underling factor to PA decline (Davison & Jago, 2009).

The ways in which sport is presented to females can influence engagement (Pope & Kirk, 2014) and whether this is contradictory to personal values. Regarding the perception of conflicting goals, if femininity is of high personal value and athleticism is viewed as incompatible with femininity then this may predict avoidance of activities associated with athleticism. This is consistent with studies finding athleticism a desirable trait in males (Bem, 1981); the issue is not that males are constantly associated with athleticism but that females are not associated with athleticism. Furthermore, internal conflicts and external pressures associated with motivation can be mentally draining (Moller, Deci, & Ryan, 2006) depleting the resources available resulting in habitual behaviour from associated cues. Therefore, despite high motivation as seen in the experimental group it is possible that conflicting values undermined investment for the future.

This indicates that females are at higher risk to view environmental cues as a threat rather than an opportunity. Therefore, greater care should be taken to ensure positive associations with sport are paired for females. The current study highlights the focus on intrinsic and identified motivation that underlie and energize behaviour (Elliot & Church, 1997; Pelletier et al., 2013); as when measuring overall motivation this can be overlooked. The current study is consistent with studies that show higher autonomous motivation predicts future goal pursuit (Smith, Ntoumanis, & Duda, 2007).

### **Limitations and Strengths**

As with all research, limitations must be acknowledged, and several have been identified in the current study. Firstly, the linear transformation to aid analysis of measures from different scales is appropriate to use with the current studies analysis (Lewis & Sauro, 2020) however, the change of mean and standard deviation scores distorts the true reflection of the recorded scores by lengthening the middle scores. The transformation of these scores impacts the interpretation of results therefore all results should be interpreted with caution. The PDSQ measures that were used did not have any reverse scoring and this may have facilitated a response bias of participants agreeing with each item. Future studies should ensure some items are reversed scored without reducing face validity. PA is well known to be beneficial for overall health and some participants may have felt expected to state that they are active or involved in some form of sport resulting in a self-selected bias. The study was conducted in Ireland and one of the stimuli demonstrated a national sport, as ethnicity was not included in the demographics it is unknown what impact this had on results. Future studies could gather more demographic information including culture and ethnicity for cross-sectional analysis.

Within an experimental design experimental control is a crucial criteria and great care was given to match both conditions as much as possible however as the stimuli was representative of real-life priming some variation other than the independent variable was unavoidable. In the case of the Nike videos in both conditions they did not match each other perfectly but they did consist of similar context; finding success through perseverance. In the case of the Under Armour videos, these were matched as close as possible with commentary and words on the screen but again had more differences than just the independent variable. For example, different sports and equipment were shown in the stimuli. The development of standardized autonomous priming measure is vital as research expands. This would also allow for meta-analysis to be conducted in the future to investigate effect sizes. To ensure the effectiveness of manipulation, checks were carried out in the funnel debriefing, when participants were asked if they enjoyed the media. Subjective standardized scales and objective measures such as heart monitors should be utilized in the future to combat the limitation of effectiveness. Standardisation of procedures was quite difficult to control, as the experiment was being conducted remotely. Therefore, it was impossible to have consistency across participants' engagement. Every effort was made to ask participants to engage with the study in a private area without distraction, but it is uncertain if participants did follow the instructions exclusively.

A key strength to the current study is the novelty of using an ecological measure to manipulate motivation. The practical implications and intervention development using video are vast. Physical education programs within schools could benefit dramatically from such interventions. The department of education recently introduced physical education in Ireland as an optional subject for leaving certificate examination, which is helpful in promoting sport to young girls before the age of decline, this may reduce a steep drop off from sport. Increasing

engagement indirectly by increasing positive effect using videos could be a valued recourse for educators in the educational system. Integration of mixed gender teams within mixed gender schools could also propel further investigation regarding feminine norms, acceptance, and identity. The use of female only participants can also be identified as a strength, this contributes to the literature by building on the lack of research solely using a female sample in sport and exercise research. This study highlights the unique factors that media portrayal may impact engagement, this also has practical implications for policy development within sports coverage and female representation. Raidió Teilifís Éireann (RTÉ) as the leading national broadcaster can initiate minimum allocation times for sporting events and the inclusion of female sports presenters, perhaps a strategy or government legislation could increase commitments from RTÉ.

The Health Service Executive (HSE) could benefit from developing rehabilitation maintenance protocols using priming and observational learning. This may increase adherence to rehabilitation programs by raising motivation in the face of challenges. The current study is superior to previous study designs that used word scramble test (Hodgins, Yacko, & Gottlieb, 2006) or subliminal priming (Loizou & Karageorghis, 2015; Radel, Sarrazin, & Pelletier, 2009). The use of a video instead of a confederate is also a strength as consistency is guaranteed with every participant with widespread use in real life settings. Additional strengths of the study include random assignment of conditions by coin toss (Howitt & Cramer, 2017) the single blind experimental design and the use of standardised measures.

## **Conclusion**

Overall, the current study highlights the importance of understanding different motivational regulation for manipulation and prediction of future investments in sport. In the face of challenges, intrinsic regulation may not be enough to predict behavioural change whereas

identified regulation may predict behaviour as it is closely aligned with personal values. Role models had the greatest impact on autonomous motivation suggesting motivation can be manipulated with positive outcomes through observational learning. The results also indicate that not being a member of a sports team as a child does not predict a sedentary lifestyle. Additional studies should use longitudinal design to research the possibility of behavioral change. This would be of great benefit to policy makers and development of interventions. Experimental research should continue in this field to clearly investigate the impact different motivational orientation has on behavioural outcomes. The development of a standardised priming video would aid this body of research correcting methodological difference between studies in the future. Preventive measures implemented by large governing bodies such as the department of education, the HSE and RTÉ have the potential to increase well-being and decrease many future health issues in the female population.

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## Appendix A

### Transcript experimental group

Nike ad duration 60 seconds

If we show emotion, we're called dramatic  
If we dream of equal opportunity, we are delusional  
When we are too good, there is something wrong with us  
And if we get angry, we're hysterical, irrational or just being crazy  
But a woman running a marathon was crazy  
(background, officials tried to pull her off the course)  
A woman boxing was crazy, a woman dunking,  
coaching a NBA team, landing the impossible  
Or winning 23 grand slams, having a baby and then coming back for more  
Crazy, crazy, crazy, crazy and crazy  
So if they want to call you crazy  
Fine  
Show them what crazy can do  
Words on screen #just do it

**Appendix B****Under armour duration 30 seconds**

Listen

There are no shortcuts (in the background, “get a drink and right back at it, lets go”)

No quick fixes

It takes work (in the background “go heavier”)

Hard work (in background “get it, there you are”)

Work that hurts

*Words on the screen* NO QUICK FIXES

Work that defines you (in background “come on lets go”)

*Words on screen* NO SHORTCUTS

Its that fire that burns inside you

This year be you

Words on screen “the only way is through”

## Appendix C

### Lidl .59 seconds

In background (go ahead)

It's the same rain that soaks

And winds that bite

A win is a win

And a loss is like nothing else

The same bruises show (background, "come on girl")

But the pride shows too

We're no different

All we need is what every player needs (background "come on, come on")

Support (in background "go ahead")

*Words on screen* Lidl, proudly supporting ladies gaelic football

## Appendix D

### Transcripts Control group

Nike Ad, Duration 61 seconds

Greatness

Its just something we made up

Some how we have come to believe greatness is a gift

Reserved for only a chosen few

For prodigies and superstars

And the rest of us can only stand by watching

Well you can forget that

Greatness is not some rare DNA strand

Its not some precious thing

Greatness is no more unique to us than breathing

We're all capable of it

All of us

Greatness is nothing more than a belief system

Do you believe

*words on screen*, find your greatness

## Appendix E

### Under armour duration 53 seconds

There's a fog out there (background, "dust it off")

And its calling you by name

It wants to wrap its whole self around you

Make you forget who you are

Make you forget the work

But you won't forget

You've got to find your way through the fog

Through the unknown (background, "this is your time")

There's only one way

*words on screen* The only way is through

**Appendix F****Elverys intersport 76 seconds**

Boy watching football player score a goal on the t.v, commentary says “unstoppable”

Child trains in room and out in the rain

Is called to the pitch to participate in the match

Child scores goal “Yes”

“Give them the gift to dream this Christmas at elverys intersport”

## Appendix G

### Participation Information Sheet and Consent

You are being invited to take part in a research study. Before deciding whether to take part, please take the time to read this document, which explains why the research is being done and what it would involve for you. If you have any questions about the information provided, please do not hesitate to contact me using the details at the end of this sheet.

What is the study about?

I am a final year student in the BA in Psychology programme at National College of Ireland. As part of my degree I must carry out an independent research project. For my project, I aim to investigate female attitudes towards girls in sport. This project is being supervised by Dr Conor Nolan and the study has been approved the Ethics Committee of the National College of Ireland.

What will the study entail?

Once you have indicated interest and given consent, you will be contacted through an email address with instructions. You will be able to complete the study at a time convenient to you. You will be required to answer questions on a questionnaire followed by a two and half minute video of 3 different advertisements. This will be followed by a questionnaire and finally you will be debriefed and given an opportunity to ask any questions. Your participation will take approximately 15-25 minutes. Will need access to a device that can show a video with sound and has internet connection.

\*\*\*Don't forget to keep an eye on your JUNK/SPAM inbox\*\*\*.

Who can take part?

The current study has mostly had male participants with very little study done with females. The study therefore aims to recruit females between the age of 18 to 24 in full physical and mental health.

You may only take part if, you are 18-24 years old

If your biological sex is female

If you have access to internet connection & device to show media content

If you are fluent in English.

You are **NOT** eligible for inclusion in the study if you have a clinical diagnosis of a mental health illness or are currently seeking medical intervention.

Do I have to take part?

Participation in this research is voluntary; you do not have to take part, and a decision not to take part will have no consequences for you. If you do decide to take part, you can withdraw from participation at any time during the study by exiting the browser window. Your data will be fully anonymised and therefore can only be withdrawn until the point that your participation in the study has ended.

What are the possible risks and benefits of taking part?

## Appendix G1

### Benefits

There are no direct benefits to you for taking part in this research. However, the information gathered will contribute to research that helps to understand how advertising may effect human behaviour. There is an extremely small risk that some aspects of the study may cause minor distress for some participants, If you experience this, you are free to discontinue participation and exit the study. Contact information for relevant support services are also provided at the end of the study.

Will taking part be confidential and what will happen to my data?

Participation in the study will be fully confidential and your data will be fully anonymised. This means that the researcher will not gather any identifying information from you, and therefore your scores on the study can never be attributed to you. The study data will be stored as a list of anonymous scores on a password protected excel file.

Only the researcher and academic supervisor will have access to the data collected. The data will be stored for no more than 5 years.

What will happen to the results of the study?

The results will be published for my final dissertation submitted to the National College of Ireland. The results may also be presented at a conference for the Psychological Society of Ireland and be published in a peer reviewed journal. The data will not be used for any other purpose.

If you are interested in participating in this study, please give email address below.

If you would like more information about the study, please contact me by email: [sarahpsych11@gmail.com](mailto:sarahpsych11@gmail.com) or my Supervisor Dr. Conor Nolan [Conornolan@ncirl.ie](mailto:Conornolan@ncirl.ie)

Email Address

Please indicate your consent by ticking the box below

- I am giving my consent and understand I may withdraw at any time.
- I give permission to be contacted by the researcher by email.

**Note: an invitation to share the link and conformation shows afterwards submission**

## Appendix H

### Study instructions

Thank you for agreeing to participate in this study "Females and advertising in sport".

The study is divided into 6 sections and takes approx 15-20 mins to complete. Welcome to section 1 study instructions.

You are required to answer all sections before continuing to the subsequent sections. Please be aware sound and internet access will be required at the end of section 3.

Please ensure you are in a suitable environment to give the study your full attention, (eg., quiet private space or have earphones available for use).

You can stop the study at any time without penalty by exiting the browser. If you exit the browser before submitting at the end of section 6 your data will not be saved.

All data is anonymous at this stage, no contact details are linked in any way to your participation.

By continuing to the following sections, you are giving your informed consent to participate.

Section 2 personal details. Section 3 questionnaires about sport and 3 links to watch 3 short media videos clips. Section 4 is a short questionnaire for future events. Section 5 is the debriefing of the study and finally contact details of researcher and submitting page.

### Demographics

01. Is your biological sex female?

- Yes
- No

02. Please choose your age range

- 17 or under
- 18-24
- 25 and over

03. Where you a member of a sport team under the age of 18

- Yes
- No

04. If yes, how frequently did you play/train?

- Monthly
- Every 2 weeks
- 1-3 times per week
- More than 3 times per week

### Appendix I

#### Physical Self-Description Questionnaire Short version -Adapted

Below is a series of statements concerning perceived personal activity, endurance, sport, and strength. Please indicate the degree to which you believe each statement to be false or true using the following scale: 1=False, 2=Mostly False 3=More False than true, 4= More True than false, 5 = Mostly True, 6= True.

01. I can run a long way without stopping.
02. I often do exercise or activities that make me breathe hard.
03. I am good at most sports.
04. I have a lot of power in my body.
05. I do physically active things (eg. jog, dance, bicycle, aerobics, gym, swim) at least three times a week.
06. I have good sports skills.
07. I do lots of sports, dance, gym, or other physical activities.
08. I could do well in a test of strength.
09. I can be physically active for a long period of time without getting tired.
10. I do sports, exercise, dance or other physical activities almost every day.
11. I play sports well.
12. I am good at endurance activities like distance running, aerobics, bicycling, swimming, or cross-country, skiing.

## Appendix J

### Behavioural Regulation in Exercise Questionnaire

Please indicate the degree to which you believe to be not true or true for you with each statement using the following scale: 0= Not true for me, 1= Rarely true for me, 2= Sometimes true for me, 3= Mostly true for me, 4= Very true for me.

01. I exercise because other people say I should.
02. I feel guilty when I don't exercise.
03. I value the benefits of exercise.
04. I exercise because it's fun.
05. I don't see why I should have to exercise.
06. I take part in exercise because my friends/family/partner say I should.
07. I feel ashamed when I miss an exercise session.
08. It's important to me to exercise regularly.
09. I can't see why I should bother exercising.
10. I enjoy my exercise sessions.
11. I exercise because others will not be pleased with me if I don't.
12. I don't see the point in exercising.
13. I feel like a failure when I haven't exercised in a while.
14. I think it is important to make the effort to exercise regularly.
15. I find exercise a pleasurable activity.
16. I feel under pressure from my friends/family to exercise.
17. I get restless if I don't exercise regularly.
18. I get pleasure and satisfaction from participating in exercise.
19. I think exercising is a waste of time.

## Appendix K

### Sport Motivation Scale-11 Adapted

Please indicate the degree to which you believe to be not true or true for you with each statement using the following scale: 0= Not true for me, 1= Rarely true for me, 2= Sometimes true for me, 3= Mostly true for me, 4= Very true for me.

I take part in sport:

01.because it gives me pleasure to learn more about my sport.

02.because it is very interesting to learn how I can improve.

03.because I find it enjoyable to discover new performance strategies.

## Appendix L

### The Sport Commitment Model Questionnaire

Please respond to the questions below using the following scale: 0= Not at all, 1=Not much, 2= Neutral, 3= Mostly, 4= Very much.

- 01.How proud are you to tell other people that you play in you chosen sport?
- 02.Do you want to keep playing in you chosen sport?
- 03.How dedicated are you in playing in your chosen sport?
- 04.What would you be willing to do to keep playing in you chosen sport?
- 05.How hard would it be for you to quit?
06. How determined are you to keep playing in your chosen sport?
- 07.Would you miss the good times you have had playing in you chosen sport if you left?
- 08.Would you miss your friends in your chosen sport if you left?
- 09.Would you miss your head coach if you left your chosen sport?
- 10.Would you miss being a sport player if you left?
- 11.How much of your time will you put into a chosen sport?
- 12.How much effort will you put into playing your chosen sport?
- 13.How much of your own money will you put into playing in you chosen sport like entrance fee or equipment?

## Appendix M

### Funnel Debriefing

Please answer the questions below.

01. Did you do the full study in a private area?

- Yes
- No

02. Did you enjoy the advertisements?

- Yes
- No

03. Do you think the advertisement influenced your answers of the last questionnaire?

- Yes
- No

If, Yes please give a short description of why you think this?

## Appendix N

### Debriefing Sheet

Dear participant,

Many thanks for participating in this study. You were informed the aim was to investigate female attitudes towards girls in sport, this is not true. The aim of the study was to investigate whether females primed by a tailored motivational video would increase future investments in sport. The reason you were misconceived is because motivation is partially a subconscious process and part of the project is to investigate if a goal can be set in the future subconsciously by motivational videos. You were randomly assigned to one of two groups when you gave consent and gave your contact details: either an experimental group shown videos containing females participating in sport or a control group shown videos of males participating in sports.

You completed a motivation orientation questionnaire, a sports motivation scale and commitment to sport questionnaire. The reason for asking you to complete this task is because the project is investigating if motivation can be influenced by real world advertisements and can female tailored videos influence motivation more than other non-tailored videos. I will take the data and see if I can 'predict' higher motivation and higher future sport commitment in the experimental group compared to the control group.

Once you have submitted this study the results will not be retrievable, and you may no longer withdraw from the study. When you press submit your data will be anonymous and no personal information can be linked with your email address. You may still withdraw at this time by closing the browser window, no information has been saved at this point.

If you would like to know what I discover, you can email me on [Sarahpsych11@gmail.com](mailto:Sarahpsych11@gmail.com). If you feel any distress from this study, please use the helpline below or contact me on the details below.

Aware: [supportmail@aware.ie](mailto:supportmail@aware.ie).

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## Appendix O

### Evidence of Data

groups breq.spv [Document1] - IBM SPSS Statistics Viewer

Output: /ORDER=ANALYSIS.

Frequencies

[DataSet2] C:\Users\ROCK STONE\Downloads\FYP\merged.set.full.sav

Statistics

Group	T_PRE_MOT_EXP	T_POST_MO_T_EXP
Exp	N Valid	28
	Missing	0
	Mean	34.4940
	Median	35.1667
	Std. Deviation	18.59605
	Minimum	-6.17
Cntrl	N Valid	31
	Missing	0
	Mean	39.7742
	Median	43.0000
	Std. Deviation	19.31443
	Minimum	-7.00

Frequency Table

T\_PRE\_MOT\_EXP

Experimental Group

File Home Insert Page Layout Formulas Data Review View Help

	A	B	C	D	E	F	G	H	I
1	Timestamp	Is your biological sex fem	Please Choose your age	Where you a member of self	If Yes, how frequently did	I can run a long way with	I often do exercise or act	I am good at most sports	I have a lot of powe
2	12/8/2020 17:09:39	Yes	18-24	Yes	3 or more per week	More False than True	More False than True	More True than False	Mostly True
3	12/8/2020 22:29:52	Yes	18-24	No		Mostly False	FALSE	FALSE	More True than Fal
4	12/10/2020 13:32:35	Yes	18-24	Yes	Every 2 weeks	More True than False	TRUE	More False than True	Mostly True
5	12/14/2020 20:51:36	Yes	18-24	Yes	1-3 times per week	FALSE	More True than False	FALSE	FALSE
6	1/4/2021 14:25:50	Yes	18-24	Yes	1-3 times per week	Mostly False	Mostly True	FALSE	Mostly False
7	1/4/2021 18:29:26	Yes	18-24	Yes	3 or more per week	More False than True	TRUE	More True than False	TRUE
8	1/5/2021 22:02:32	Yes	18-24	No	3 or more per week	FALSE	Mostly True	Mostly False	More True than Fal
9	1/11/2021 13:23:21	Yes	18-24	Yes	Every 2 weeks	More True than False	TRUE	More False than True	Mostly True
10	1/22/2021 14:25:32	Yes	18-24	No		Mostly False	More False than True	More False than True	More False than Tr
11	1/22/2021 15:08:29	Yes	18-24	Yes	3 or more per week	More False than True	More False than True	Mostly True	Mostly True
12	1/22/2021 16:26:47	Yes	18-24	Yes	3 or more per week	More False than True	Mostly True	More True than False	More True than Fal
13	1/22/2021 16:49:50	Yes	18-24	Yes	1-3 times per week	More False than True	Mostly True	More True than False	More True than Fal
14	1/22/2021 16:55:37	Yes	18-24	Yes	3 or more per week	More True than False	More True than False	More True than False	More True than Fal
15	1/22/2021 17:05:03	Yes	18-24	Yes	1-3 times per week	More False than True	More False than True	More False than True	More False than Tr
16	1/22/2021 17:15:18	Yes	18-24	Yes	1-3 times per week	Mostly True	Mostly True	Mostly True	Mostly True
17	1/22/2021 17:21:44	Yes	18-24	Yes	1-3 times per week	More False than True	More True than False	More False than True	More False than Tr
18	1/22/2021 17:26:20	Yes	18-24	Yes	1-3 times per week	More True than False	More True than False	More True than False	More True than Fal
19	1/22/2021 17:58:13	Yes	18-24	Yes	Every 2 weeks	Mostly False	Mostly False	Mostly False	Mostly False
20	1/22/2021 18:01:08	Yes	18-24	Yes	1-3 times per week	More True than False	More True than False	More True than False	More True than Fal
21	1/22/2021 18:06:11	Yes	18-24	Yes	1-3 times per week	More True than False	More True than False	More True than False	More True than Fal
22	1/22/2021 18:06:47	Yes	18-24	Yes	Every 2 weeks	More False than True	More False than True	More False than True	More False than Tr

Form Responses 1