CRANFIELD UNIVERSITY

DENNIS THORSTEN ESCH

THE SOCIAL GROUP AND ITS IMPACT ON SUBJECTIVE WELL-BEING, PERFORMANCE AND THE RESEARCH PROCESS

SCHOOL OF MANAGEMENT
PhD in Leadership and Management

Doctor of Philosophy (PhD)
Academic Year 2018 - 2019

Supervisor: Professor Yacine Belghitar
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Abstract

Humans are social beings and throughout their life they self-categorise as members of many social groups, be it a member of the community they live in, the company they work for, or the sports club they root for. Across three papers, this thesis examines the impact of the performance of such social groups on individuals' subjective well-being and performance as well as the research process.

The first paper investigates the effects of the performance of social groups on individuals' subjective well-being. An analysis of five quantitative studies shows that a victory (defeat) of a social group positively (negatively) affects individuals' subjective well-being. The strength of this effect varies depending on individuals' attachment to the group and the importance of the event in question. Changes in individuals' self-esteem and self-efficacy are identified as the underlying mechanisms driving the detected changes in individuals' subjective well-being.

The second paper examines the influence of social group performance on individuals' performance in an unrelated task, contingent on their psychological resilience. Evidence from two natural field experiments indicates that high-resilience supporters of the losing group outperform their counterparts supporting the winning group. For low-resilience individuals this effect switches, with victors performing significantly better than losers.

The third paper provides evidence that randomised laboratory experiments as a stand-alone method are unsuitable to assess effects around the performance of social groups. Results from a natural experiment and two randomised laboratory experiments suggest that it is important for researchers to consider the ecological validity of their experiments during the research design phase to ensure the real-world applicability of their findings.

Overall, the findings of this thesis have wider implications for the management of organisations in general, and for marketing and communications managers in particular, on how to positively leverage work- and brand-related social identities.

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Debbie Bramwell has been there for me along the entire journey with her cheerful and compassionate manner, helping me navigate rules and regulations and truly bringing a human touch to the administration of the PhD programme. I would also like to thank my fellow PhD students Dr Giorgio Caselli, Dr Farah Arkadan, and Dr Valentina Battista for many lunches and breaks that provided useful stimulation, perspective, and – most importantly – respite from the solitary nature of many research endeavours.

Carrying out research is not possible without access to the vast repository of knowledge and insight that has been generated over the centuries and I would therefore also like to express my gratitude to two institutions in particular: The British Library has provided me access to virtually all publications known to man. The Saarland University and State Library offered the most generous lending policy I have ever encountered. Furthermore, I would like to thank all individuals fighting for free and universal access to publicly funded research.

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Lastly, a journey is just so much better if there is someone you can share it with. My biggest thank you therefore goes to my soulmate Linda. Thanks to you, this journey was as linear as it could be, and – against all odds – as enjoyable as it turned out to be. I will be forever grateful, not only for your constructive feedback and patience as I worked through a seemingly endless number of drafts, but more importantly for keeping me sane and for the way you bring sunshine into my life.

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List of Abbreviations

CI	Confidence Interval
CMB	Common Method Bias
DRM	Day Reconstruction Method
EMA	Ecological Momentary Assessment
ESM	Experience Sampling Method
FA	Football Association
FACS	Facial Action Coding System
FIFA	Fédération Internationale de Football Association
GSS	General Social Survey
HOG	Harley Owners Group
IPIP	International Personality Item Pool
M	Mean
MLB	Major League Baseball
NEO-PI-R	Revised NEO Personality Inventory
NFL	National Football Association
SD	Standard Deviation
SWB	Subjective Well-Being

No man is an island, entire of itself.
– John Donne

A. Introduction

A.1 Problem Setting

Imagining life without social groups, conceptualised as the psychological groups that individuals self-categorise into (Hogg & Turner, 1985), is a nigh impossible endeavour. Whether people regard themselves as a member of their gender, nation, or neighbourhood, as a book lover, a fan of a sports team, a supporter of a political party, a member of the company they work for, an enthusiastic follower of a brand, or a proponent of and devotee to the charitable causes they support – the part of people's self-concept that they derive from their membership of such groups (i.e. their social identity; Tajfel & Turner, 1979) is an important force in life. While there are differences between individuals in terms of how much importance they attribute to their social identities (Cheek & Briggs, 1982), social identities are crucial aspects of how individuals see themselves. Data from the 1996 General Social Survey (GSS) in the United States corroborate this point: For 46% of Americans, "being an American" (i.e. a social identity) is "the most important thing in their life". Given the current climate of increasing polarisation across the political divide and the resurgence of identity politics worldwide (Ehret, Van Boven, & Sherman, 2018; Iyengar, Sood, & Lelkes, 2012; Maher, Igou, & van Tilburg, 2018; Pew Research Center, 2014; Westfall, Van Boven, Chambers, & Judd, 2015), examining the impact of social groups on individuals seems a particularly topical enterprise.

There are many reasons why individuals self-categorise into social groups, the most important of which is that self-categorisation satisfies the fundamental human need to belong (Baumeister & Leary, 1995). To belong to a social group means to feel understood and accepted. Such social groups thus provide individuals the opportunity to build affiliation with others (Holt, 1995) and thereby gain access to a network of social support (Cohen & Wills, 1985).

The group membership that follows from self-categorisation also brings with it predictable patterns of behaviour, both towards other members of one's group (e.g. in-group favouritism; Brewer, 1979; Brewer & Kramer, 1986; Perdue, Dovidio, Gurtman, & Tyler, 1990) and to members of other groups (e.g. out-group derogation; Dovidio, Gaertner, Isen, & Lowrance, 1995; Fein & Spencer, 1997; Shah, Kruglanski, & Thompson, 1998). Such behaviour is in line with what Henri Tajfel (one of the founders of the social identity approach) regarded as the key motivator for why individuals self-categorise into certain groups and not others in the first place: their need to establish and promote a positive self-image (Tajfel, 1981). As not only individuals' personal identity but also their social identities affect this self-image, individuals are prone to self-categorise into groups that will positively boost their own self-image. Put differently, individuals are more likely to join high status groups (Tyler, Kramer, & John, 1999).

A.2 Research Gap

While researchers have examined many strategies that individuals engage in to psychologically maintain the high status of their social groups (e.g. Doosje, Spears, & Ellemers, 2002; Spears, Doosje, & Ellemers, 1997; Turner, Hogg, Turner, & Smith, 1984), one of the fundamental assumptions of existing research is that a group's status is predominantly stable, rather than dynamic. This, however, does not necessarily reflect reality in every context: Sports teams get defeated in competitions, political parties lose in general elections, organisations suffer through years of losses or might even go bankrupt, and brands can disappear. Likewise, sports teams are victorious in important knock-out competitions or beat their local rivals, political parties might win elections and form the government, organisations reach long-held strategic or operational goals (e.g. Avis "We try harder"), and brands succeed (e.g. Apple vs. Samsung in the battle for patents). One would expect that such outcomes influence the individuals self-categorising into these social groups.

Yet, few researchers have examined the impact of the performance of social groups on individuals self-categorising into these groups. And like most of the first 100 years of psychological research (Myers, 2000), the few studies examining the impact of the performance of social groups have predominantly focussed on negative outcomes and maladjusted behaviour. Researchers have, for example, investigated the impact of sports outcomes on the prevalence of heart attacks (Berthier & Boulay, 2003; Carroll, Ebrahim, Tilling, Macleod, & Smith, 2002; Witte, Bots, Hoes, & Grobbee, 2000) or the frequency of assault-related visits to hospital emergency rooms (Miller, McDonald, McKenzie, O'Brien, & Staiger, 2013; Sivarajasingam, Moore, & Shepherd, 2005).

In fact, existing studies have been decidedly narrow in their focus in three respects. First, they have almost exclusively focussed on social identities related to one context (sports) at the expense of other contexts, thus questioning the wider generalisability of the findings. Second, the extreme effects that have been examined only apply to a small part of the population. Lastly, the focus on negative outcomes leaves those trying to get a more rounded picture of human existence wanting.

Hence, there is a clear need for research examining the impact of social group performance on wider parts of the population across different social identities. In addition, research is required that not merely focusses on negative outcomes, but – in line with a positive psychology (Gable & Haidt, 2005; Seligman & Csikszentmihalyi, 2000; Sheldon & King, 2001) approach – also takes into consideration positive outcomes, such as well-being and general optimal human functioning. This thesis contributes to the existing literature by addressing these research gaps.

A.3 Research Aim and Objectives

This thesis aims to advance our understanding of how the performance of social groups, specifically their performance in settings with binary outcomes (i.e. victory/defeat, success/failure), can impact individuals' subjective well-being and

performance, as well as the methods used to examine such relationships. To achieve this overall research aim, three key research objectives have been set:

1) to examine whether and how victories and defeats of social groups can affect the subjective well-being of individuals self-categorising into these groups,
2) to establish for which individuals the performance of social groups affects their performance on cognitive tasks,
3) to investigate whether typical research procedures used in the behavioural sciences are appropriate to study effects relating to the performance of social groups.

A.4 Structure of the Thesis

This thesis comprises three empirical papers. The first two papers focus on substantive issues relating to the influence of the performance of social groups on individuals, while the final paper takes a methodological perspective on the research designs behavioural scientists predominantly adopt to find answers to such substantive issues in social science.

Chapter B presents the paper "We Won, Therefore I Won: How the Performance of Social Groups Affects Individuals' Subjective Well-Being". The goal of this paper is to address research objective 1 by examining (a) whether the subjective well-being of individuals is impacted by the performance of social groups into which these individuals self-categorise, and if so, (b) through which process, and (c) whether this impact is contingent on individual and contextual differences. To this end, empirical evidence in the form of experimental, archival, and longitudinal data with 3,470 unique respondents from four European countries (United Kingdom, Germany, Greece, Portugal) covering social identities based on three distinct contexts (sports, gender, politics) is collected and analysed.

Chapter C introduces the paper "The Effects of Vicarious Victories and Defeats on the Task Performance of Low- and High-Resilience Individuals". This paper serves to tackle research objective 2 by establishing whether the experience of victories and defeats of one's social group can positively or negatively impact individuals'

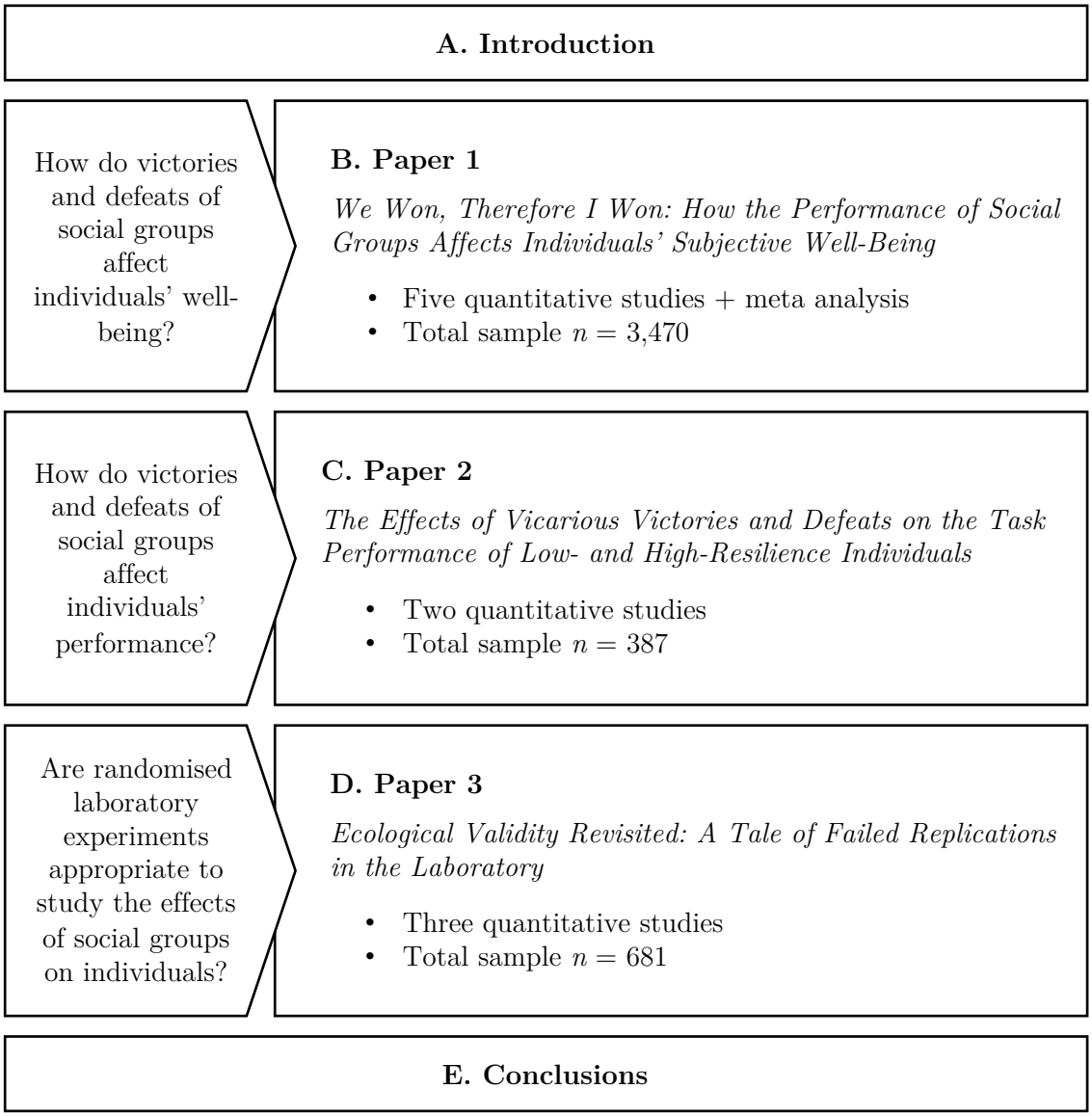
cognitive task performance in an unrelated setting, and if so for which individuals this relationship holds true. To examine these relationships, I draw on two longitudinal studies carried out contemporaneously to important events in two contexts (sports, politics) with 387 unique UK residents.

Chapter D comprises the paper "Ecological Validity Revisited: A Tale of Failed Replications in the Laboratory". The purpose of this paper is to fulfil research objective 3 by comparing the effects established through natural experiments (conducted in ecological settings) and randomised experiments (conducted in the laboratory), in the context of self-categorisation. Consequently, I use one of the longitudinal studies in the form of a natural experiment from the first paper (see chapter B) and contrast the results with those from two randomised laboratory experiments in the same context (sports). Overall, this paper presents evidence from 681 unique UK residents.

Chapter E provides a discussion of the overarching contributions to theory and their implications for practice across the entire programme of research covered in this thesis.

Figure A-1 gives an overview of the structure of the thesis.

Figure A-1. Overview of the structure of the thesis



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B. We Won, Therefore I Won: How the Performance of Social Groups Affects Individuals' Subjective Well-Being

Abstract

This research posits that minor life events can have a marked influence on individuals' subjective well-being if these life events relate to the performance of social groups individuals self-categorise into. In a series of five correlational, longitudinal and experimental studies in three different contexts (sports, gender, politics), I demonstrate that the victory (defeat) of a group individuals self-categorise into has a positive (negative) impact on their subjective well-being. This temporary effect is moderated by the strength of attachment to the group the individual self-categorises into, with those individuals high in attachment showing higher susceptibility to the event outcome. Moreover, I show that the effect is contingent on the importance of the performance in question – important events yield a large influence, while more ordinary events have no impact. Furthermore, I pinpoint changes in self-esteem and self-efficacy as the key drivers of the observed changes in subjective well-being. A meta-analysis of my studies provides evidence for the robustness of the influence of the performance of social groups individuals self-categorise into on these individuals' subjective well-being. Given the prevalence of such minor life events in our everyday lives, my findings have important implications for the subjective well-being of a large proportion of the population.

Keywords: subjective well-being, self-categorisation, attachment, minor life events, core self-evaluations

B.1 Introduction

It is a feeling each sports fan is familiar with: the dizzying feeling of euphoria when one's team scores a victory versus the bitter taste of defeat when one's team is beaten. Sports fandom is an ubiquitous phenomenon around the world (Hirt, Zillmann, Erickson, & Kennedy, 1992): Some 1.12 billion viewers followed the Fédération Internationale de Football Association (FIFA) World Cup final between France and Croatia in July 2018 (FIFA, 2018). The annual National Football Association (NFL) Super Bowl, the most-watched single sports event in the US, is regularly followed by more than 100 million people worldwide (Statista, 2019b). But beyond such blockbuster one-off events, fans can witness their teams being victorious or defeated on an almost weekly basis throughout the season. Germany's top-tier football league Bundesliga matches draw an average of 44,646 spectators to each stadium each weekend (Statista, 2019a), while Major League Baseball (MLB) matches in the US attract an average of 28,794 spectators to each stadium (ESPN, 2019), notwithstanding the millions of people following at home, in bars or on the road. Spectators of such events – whether in the stadium or elsewhere – typically go through an emotional rollercoaster that ends in either feelings of elation or disappointment.

Prior research examining the impact of important sporting event outcomes on fans has primarily focussed on the negative consequences for fans of the competing teams. Two types of consequences are particularly well-researched: (a) physiological reactions such as changes in testosterone levels (Bernhardt, Dabbs, Fielden, & Lutter, 1998; van der Meij et al., 2012) and an increase in the prevalence of heart attacks (Berthier & Boulay, 2003; Carroll, Ebrahim, Tilling, Macleod, & Smith, 2002; Witte, Bots, Hoes, & Grobbee, 2000), and (b) behavioural outcomes such as an increase in the frequency of fatal traffic accidents (Redelmeier & Stewart, 2003; S. Wood, McInnes, & Norton, 2011) and of assault-related visits to hospital emergency rooms (P. Miller, McDonald, McKenzie, O'Brien, & Staiger, 2013; Sivarajasingam, Moore, & Shepherd, 2005). While these works have provided a glimpse at negative implications of self-proclaimed followership in the aftermath of

professional sporting events, an analysis of possible positive psychological effects has been notably absent. Moreover, the majority of work has been conducted in the context of sports fandom as one source of social identity, thus neglecting other social identities.

I address these gaps in the literature by investigating what impact events involving the social group individuals self-categorise into have on individuals' level of subjective well-being in the context of the social group's performance yielding binary – positive (victory) or negative (defeat) – outcomes. I provide evidence across different life contexts (sports, gender, politics) that individuals' subjective well-being is influenced by the performance of their associated social group, with such vicarious victories having a positive effect and vicarious defeats having a negative effect. I further examine whether these effects differ across individuals and situations, identifying the strength of attachment to the social group as a key catalyst of the effect and the importance of the performance as a boundary condition. Moreover, I unveil the psychological mechanisms underlying the link between the social group's performance and individuals' subjective well-being. The experience of a victory heightens individuals' feelings of self-esteem and beliefs in their self-efficacy. These improved self-evaluations, in turn, have a positive impact on subjective well-being.

B.2 Theoretical Background

B.2.1 Subjective Well-Being: Its Components

Subjective well-being (SWB), or happiness in lay people's terms, covers how individuals feel and think about their lives (Diener, 1984). While some have used the term psychological well-being interchangeably with subjective well-being (e.g. Steptoe, Deaton, & Stone, 2015; Stone, Schwartz, Broderick, & Deaton, 2010), it is important to differentiate the two as the former represents a much broader concept. *Psychological well-being* has been conceptualised in different ways (e.g. Boehm & Kubzansky, 2012; Ryff & Keyes, 1995; Schmitt, Branscombe, Postmes, & Garcia, 2014), but these conceptualisations generally cover positive indicators such as life

satisfaction, self-esteem, self-control, purpose and meaning in life, as well as negative indicators such as depression, anxiety, and negative affect. In contrast, *subjective well-being* is made up of two main components: affective appraisals and cognitive judgments (Diener, Oishi, & Lucas, 2009; Kesebir & Diener, 2008; Luhmann, Hofmann, Eid, & Lucas, 2012). Some have hypothesised that affective appraisals might influence the cognitive judgments in subjective well-being (e.g. Diener, 1984), and Schimmack et al. (2002) established that individuals use affective memory when making life satisfaction judgments. While there might be some influence of the affective components on the cognitive components, the underlying constructs have been shown to be distinct (Lucas, Diener, & Suh, 1996).

Traditionally, the affective component of subjective well-being is divided into positive and negative affect. Positive affect "represents the extent to which a person avows a zest for life… [while] negative affect is the extent to which a person reports feeling upset or unpleasantly aroused" (Watson & Tellegen, 1985, p. 221). According to Bradburn (1969), people often make global judgments on the affective component by comparing their levels of positive affect with their levels of negative affect. Meanwhile, the cognitive component of subjective well-being is made up of judgments of life satisfaction (Andrews & Withey, 1976). Life satisfaction is regarded as a "global assessment of a person's quality of life according to his [/her] chosen criteria" (Shin & Johnson, 1978, p. 478). More recently, Diener and colleagues (Diener, 2000; Diener, Scollon, & Lucas, 2004) have proposed dividing the cognitive component of subjective well-being into evaluations of life satisfaction and domain satisfaction (e.g. satisfaction with job, satisfaction with relationship). Overall, such affective and cognitive assessments of one's life have been shown to be pervasive (Andrews & Withey, 1976). Put differently, virtually every individual makes them at least once in their life.

B.2.2 Subjective Well-Being: Its Stability, Reactivity, and Adaptation

Prior research has established that objective factors, such as objective health (Okun & George, 1984), years of education (Diener, 1984), income (Diener, Sandvik, Seidlitz, & Diener, 1993), physical attractiveness (Diener, Wolsic, & Fujita, 1995)

or demographic variables (Campbell, Converse, & Rodgers, 1976; Diener, 1984), generally account for little variation in subjective well-being. In fact, Argyle (1999) calculated that only roughly 15% of the variance in subjective well-being can be attributed to such extraneous circumstances. A large proportion of variance in subjective well-being can be attributed to genes (Lykken & Tellegen, 1996; Tellegen et al., 1988). Although estimates of the hereditary portion of subjective well-being vary across studies (e.g. Baker, Cesa, Gatz, & Mellins, 1992; Bartels & Boomsma, 2009; Gatz, Pedersen, Plomin, Nesselroade, & McClearn, 1992; McGue & Christensen, 1997; Stubbe, Posthuma, Boomsma, & De Geus, 2005), a recent meta-analysis (Bartels, 2015) has shown that 30-40% of the variance in subjective well-being can be explained by heritability. Most of the studies conducted so far, however, have focussed on Western samples (see Diener, Suh, Lucas, & Smith, 1999), thus calling into question whether similar effects would be observed in other parts of the world. Other research has shown that stable personality traits are one of the strongest and most important predictors of subjective well-being (e.g. Costa & McCrae, 1980, 1984; Costa, McCrae, & Zonderman, 1987; Diener, Sandvik, Pavot, & Fujita, 1992; Diener et al., 1999) and account for some of the stability in subjective well-being assessments.

This stability, however, does not mean that other factors, such as life events, do not have an impact on subjective well-being. Extensive research on the impact of life events has shown that these affect levels of subjective well-being (e.g. L. H. Cohen, Burt, & Bjorck, 1987; Headey, Holmström, & Wearing, 1984). Among the major life events that have been examined are (a) health-related ones such as the impact of disabilities (Lucas, 2007; Pagán-Rodríguez, 2012; D. M. Smith, Langa, Kabeto, & Ubel, 2005) or paralysis (Brickman, Coates, & Janoff-Bulman, 1978), (b) family-related ones such as marriage, divorce, and bereavement (Lucas, 2005; Lucas, Clark, Georgellis, & Diener, 2003; Specht, Egloff, & Schmukle, 2011), or the birth of a child (Dyrdal & Lucas, 2013; Galatzer-Levy, Mazursky, Mancini, & Bonanno, 2011), and (c) work-related ones such as unemployment (Lucas, Clark, Georgellis, & Diener, 2004; Luhmann & Eid, 2009; Winkelmann, 2009) or

retirement (Bonsang & Klein, 2012; Pinquart & Schindler, 2007). Overall, existing evidence suggests that the effect of life events on subjective well-being is time-limited and that individuals tend to return to their baseline (Luhmann et al., 2012). While this is in line with many researchers that have hypothesised an adaptation process under varying labels (Brickman et al., 1978; Fujita & Diener, 2005; Headey & Wearing, 1989; Wilson & Gilbert, 2008), more recent research suggests that the picture is not as clear-cut, with levels of subjective well-being sometimes changing without returning to their supposed baseline (Headey, Muffels, & Wagner, 2010).

Diener et al. (2006) have therefore put forth five major revisions to these theories. First, set points or baselines are not necessarily hedonically neutral, that is, they can be positive or negative. In fact, research has shown that most people tend to be happy (Diener & Diener, 1996). Second, set points differ across individuals. This is due in part to the impact of genes (e.g. Tellegen et al., 1988) and personality traits (e.g. Diener & Lucas, 1999) alluded to earlier, but also down to cultural differences (e.g. Diener & Diener, 1995; Diener, Diener, & Diener, 1995; Myers & Diener, 1995). Third, the individual components of subjective well-being have varying set points and respond differently to life events (Luhmann et al., 2012). Fourth, subjective well-being set points can change under some circumstances (Fujita & Diener, 2005; Headey et al., 2010; Kushlev et al., 2017; Lyubomirsky & Layous, 2013). Finally, individuals differ in how they adapt to events; some individuals' set points change, other individuals' set points do not. This is consistent with research showing that there is a difference in the way individuals react to (Rusting & Larsen, 1997) and remember the same events (Barrett, 1997) based on their personality traits.

Overall, subjective well-being is regarded as having both state and trait properties (Diener, 1984; Diener et al., 1999). Recent research (Anusic & Schimmack, 2016; Lucas & Donnellan, 2007, 2012) has established that roughly one third of variance in subjective well-being is trait variance, one third can be attributed to state variance and one third is down to autoregressive trait variance.

B.2.3 Minor Life Events, Self-Categorisation, and Their Relation to Subjective Well-Being

While the majority of research has focussed on major life events, only few (e.g. Suh, Diener, & Fujita, 1996) have examined the effect of more mundane events – or minor life events, as Kanner et al. (1981) termed them. This is surprising given that minor life events occur more frequently. As those aspects of people's lives that are most important to them tend to have the biggest impact on subjective well-being (Andrews & Withey, 1976; Campbell et al., 1976), I hypothesise that minor life events can have effects on subjective well-being that resemble those of major life events if they relate to aspects of life that individuals care about. More specifically, I suggest that if these minor life events relate to one of individuals' multiple social identities, they can impact subjective well-being.

The distinction between personal identity and social identities as separate parts of an individual's self-concept is one of the key contributions of self-categorisation theory[1] (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). Importantly, such a conceptualisation of the self-concept is more reflective of how the self is construed across different cultures (Markus & Kitayama, 1991; Triandis, 1989). Across the world, individuals categorise others (social categorisation) and themselves (self-categorisation) into different social groups (Simon, 1999). From a psychological perspective, such social groups are not based on some objective criteria, that is, they are not membership groups (Turner, 1991), but instead are reference groups for the individual who categorises herself into these groups. That means, "they are cognitive structures which people use to define themselves" (Turner & Reynolds, 2004, p. 263).

While self-categorisations vary in their level of inclusiveness (Brewer & Pickett, 1999; Turner & Onorato, 1999), how individuals feel, think, and behave can differ

[1] Self-categorisation theory describes the process through which individuals transition in their self-perception and self-conception from "defining [themselves] as an individual person to defining [themselves] in terms of a social identity" (Turner & Reynolds, 2004, p. 261), for example as a male, a European, and a Londoner (Turner et al., 1987).

markedly (Simon, 1999) based on their self-construal (Singelis, 1994; Trafimow, Triandis, & Goto, 1991). Similarly, individuals' feelings, thoughts, and behaviour are shaped by what aspect of their self-concept is salient at the time (Markus & Kunda, 1986; Sherman, Judd, & Park, 1989; Turner & Onorato, 1999), and thus builds the foundation for self-evaluation (Brewer, 1991; Brewer & Gardner, 1996). In some situations, social identity is even "able to function to the relative exclusion of personal identity" (Turner, 1984, p. 527). The social self thus "represents an extension of the self-concept to something more inclusive than the individual person" (Brewer & Pickett, 1999). I therefore hypothesise that the performance of social groups can influence the subjective well-being of individuals self-categorising into these groups, because this extension of the self-concept will lead individuals to regard social group victories and defeats as own victories and defeats.

B.2.4 Self-Expansion, Attachment, and Their Relation to Subjective Well-Being

Similarly, self-expansion theory (Aron et al., 2005) postulates that individuals have a strong urge to include others in their self-concept. This self-expansion has an influence on how individuals react to others and how information about others is subsequently processed (Aron, Aron, Tudor, & Nelson, 1991; Mashek, Aron, & Boncimino, 2003). Several researchers have linked this need for self-expansion to individuals' identification with social groups (E. R. Smith & Henry, 1996; Tropp & Wright, 2001). Depending on the degree to which others are subsumed into the self (Aron, Aron, & Smollan, 1992), this can even lead to confusion when making judgments (Aron & Fraley, 1999). In general, advancing self-expansion is related to positive affect (Aron, Norman, Aron, McKenna, & Heyman, 2000; Reissman, Aron, & Bergen, 1993). As an entity (i.e. a person or another object) is increasingly subsumed into an individual's self-concept, an attachment between the individual and the entity develops. Attachment refers to a cognitive and affective connection between individual and attachment object, with emotion playing a particularly important role besides an accessible network of associated memories (Escalas, 2004; Mikulincer & Shaver, 2007). Such social and emotional attachments form over time

(Baldwin, Keelan, Fehr, Enns, & Koh-Rangarajoo, 1996; Mikulincer & Shaver, 2003) and in relation to various attachment objects (Adams-Price & Greene, 1990; Bowlby, 1979; Kleine, Kleine, & Allen, 1995; Rubinstein & Parmelee, 1992; Sable, 1995; Schouten & McAlexander, 1995; Wallendorf & Arnould, 1988). This ultimately results in higher commitment and investment towards the attachment object (Hazan & Shaver, 1994; R. S. Miller, 1997). Attachments vary in strength and individuals tend to develop few strong attachments outside of their interpersonal relationships (Ball & Tasaki, 1992). Strong attachment usually represents a strong connection between individual and attachment object (Mikulincer, Hirschberger, Nachmias, & Gillath, 2001). Like self-categorisation and self-expansion, stronger attachment positively serves to satisfy the fundamental human need to belong (Baumeister & Leary, 1995). Moreover, strong attachment increases the salience of positive memories (Collins, 1996; Mikulincer, 1998). High levels of attachment generally go hand in hand with stronger emotions (cf. Aron & Westbay, 1996; Bowlby, 1979; Collins & Read, 1990; Fehr & Russell, 1991; Sternberg, 1987), sometimes to the degree that the attachment object plays an increasingly important role in regulating the individual's emotions (Collins & Read, 1994). Positive emotionality has also been shown to impact subjective well-being (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009).

As a result, I suggest that the impact of the performance of social groups on individuals' subjective well-being will be contingent on their attachment to the group, with those higher in attachment reacting more strongly to the outcome. Crucially, I distinguish between attachment to the attachment object (e.g. a sports team one is a fan of, a political party one supports) and identification (Leach et al., 2008) with other members of the corresponding group (e.g. fellow fans or party supporters). I focus on the former concept.

B.2.5 Self-Esteem, Self-Efficacy, and Their Relation to Subjective Well-Being

When Myers and Diener (1995) identified traits that distinguish people high in subjective well-being from their lower subjective well-being counterparts, two traits

featured prominently: self-esteem and self-efficacy. Similarly, these two variables have been identified as being among the core self-evaluations (Judge, Locke, Durham, & Kluger, 1998; Judge, Thoresen, Pucik, & Welbourne, 1999), which are highly related (Judge & Bono, 2001; Judge, Erez, Bono, & Thoresen, 2002) yet distinct constructs (e.g. Chen, Gully, & Eden, 2001, 2004).

Self-esteem refers to people's evaluations of their own self-worth (Baumeister, Campbell, Krueger, & Vohs, 2003; Fleming & Watts, 1980; Leary & Baumeister, 2000; Sowislo & Orth, 2013). It is a subjective judgment (Robins, Hendin, & Trzesniewski, 2001) and while it has affective and cognitive components (Pelham & Swann, 1989), there is widespread agreement that it is predominantly affect-laden (J. D. Brown, 1993). Researchers differentiate between global self-esteem, which is regarded as a global evaluation across one's life (Baumeister, Smart, & Boden, 1996), and domain-specific self-esteem, which refers to one's satisfaction with oneself in distinct life domains (Gentile et al., 2009). Global self-esteem, in particular, is regarded as being largely emotion-driven and more strongly linked to well-being (Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995). While some (e.g. Crocker & Wolfe, 2001) have suggested that domain-specific self-esteem is a better predictor of feelings and behaviour in the corresponding life domain, Swann et al. (2007) argued that whether global or domain-specific self-esteem are preferable depends on the level of specificity of the outcome – as long as outcome and type of self-esteem (global vs. domain-specific) match (i.e. global self-esteem predicting global outcomes, domain-specific self-esteem predicting outcomes in the corresponding domain), self-esteem tends to be a good predictor (e.g. Marsh, Trautwein, Lüdtke, Köller, & Baumert, 2006; Trzesniewski et al., 2006).

Given that the outcomes I examine in this paper relate to the global construct of subjective well-being and that most studies to date have used global self-esteem measures (see Orth, Robins, & Roberts, 2008), I also focus on global self-esteem[2].

[2] The term self-esteem will be used throughout the remainder of this paper to represent global self-esteem.

Finally, prior research has shown high correlations between self-esteem and subjective well-being (Campbell, 1981; Cheng & Furnham, 2003; Lucas et al., 1996; Lyubomirsky, Tkach, & DiMatteo, 2006; Shackelford, 2001). Furthermore, Hirt et al. (1992) detected changes in fans' self-esteem following victories and defeats of their sports team.

Self-efficacy is defined as an individual's "beliefs in one's capabilities to mobilise the motivation, cognitive resources, and courses of action needed to meet given situational demands" (R. Wood & Bandura, 1989, p. 408). Self-efficacy beliefs differ in their generality (Bandura, 1977), that is, the extent to which they apply across different situations. Most research to date has focussed on task-specific self-efficacy (e.g. Caprara, Alessandri, & Eisenberg, 2012; Lee & Bobko, 1994), probably because perceived task-specific self-efficacy is regarded as more useful in predicting behaviour relative to general self-efficacy (e.g. Bandura, 1997). General self-efficacy (Bandura, Adams, & Beyer, 1977; Shelton, 1990; Sherer et al., 1982; Tipton & Worthington, 1984) refers to "individuals' perception of their ability to perform across a variety of situations" (Judge, Erez, & Bono, 1998, p. 170), that is, an assessment of what they can achieve and accomplish regardless of context. Experiences have been shown to shape one's self-efficacy beliefs, whether they relate to personal experiences (e.g. performance accomplishments) or vicarious experiences (i.e. the observation of others' behaviour and the corresponding outcomes; Bandura, 1977), with the latter yielding less influence on self-efficacy beliefs than the former (Bandura, 1997).

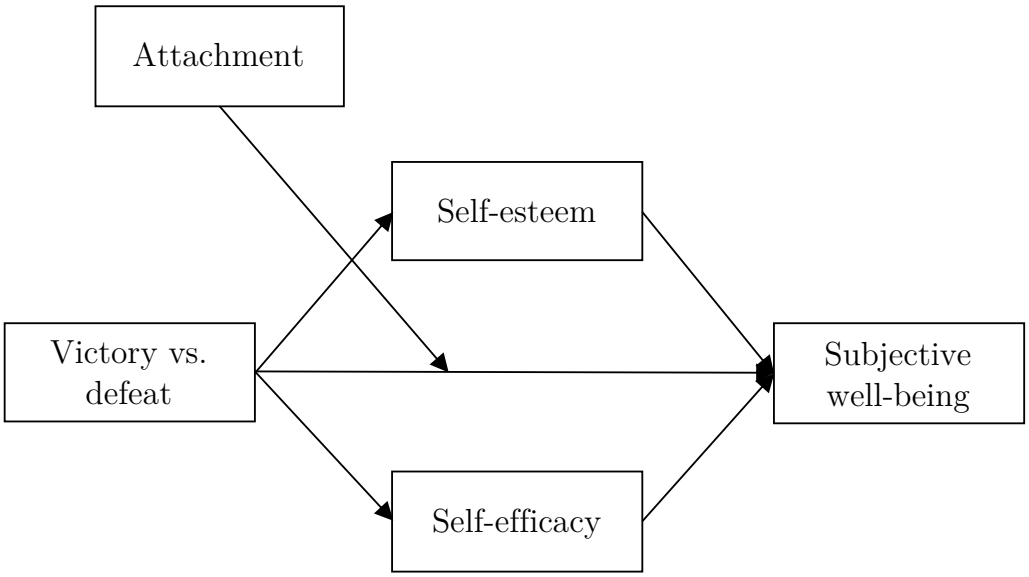
For similar reasons as outlined before on global self-esteem, I focus on general self-efficacy[3] in this study. In a study examining perceived personal and team efficacy of hockey players following victories and defeats, Feltz and Lirgg (1998) found victories (defeats) to increase (decrease) team efficacy, but not player efficacy. Assessments of self-efficacy are often related to subjective well-being (e.g. Bortner

[3] The term self-efficacy will be used throughout the remainder of this paper to represent general self-efficacy.

& Hultsch, 1970; Campbell et al., 1976), with some regarding it as a source of subjective well-being (Maddux, 2009; Reich & Zautra, 1983). Based on this, many have theorised a link between self-efficacy and subjective well-being (e.g. Elliot, Sheldon, & Church, 1997; Emmons, 1986; Lent, 2004), but few have actually tested the impact of general self-efficacy on subjective well-being (e.g. Strobel, Tumasjan, & Spörrle, 2011), rather than the link between task-specific self-efficacy and subjective well-being (e.g. Karademas, 2006).

Because self-esteem and self-efficacy are regarded as indicators of a common core construct (Judge et al., 2002), researchers have suggested examining them in tandem to improve predictions (e.g. Baumeister et al., 2003). Building on existing findings and following the suggestions by Judge, Baumeister, and colleagues, I posit that self-esteem and self-efficacy mediate the impact of the performance of social groups on individuals' subjective well-being, with victories (defeats) increasing (decreasing) individuals' self-esteem and perceived self-efficacy. Self-esteem and self-efficacy are assumed to be positively related to subjective well-being. For an overview of all hypotheses, please refer to the conceptual model in figure B-1.

Figure B-1. Conceptual model



B.3 Overview of the Present Research

I investigate whether the performance of social groups has an impact on individuals who self-categorise into those groups, and if so, by which mechanisms. I provide evidence from experiments, longitudinal studies, and large-scale archival data to test my hypothesis that victories (defeats) of a social group have a positive (negative) effect on individuals' subjective well-being. I identify key drivers of this change in subjective well-being and factors influencing the strength of the effect.

I first conducted an experiment in a sports context (study 1) to test my key hypothesis that victories versus defeats of a social group an individual self-categorises into have an impact on that individual's subjective well-being, with victories increasing and defeats decreasing subjective well-being. This was followed by another experiment tapping into gender as a social identity in the context of career outlooks (study 2) to replicate the main effect of outcome (victory vs. defeat) on subjective well-being. I then used large-scale archival data (study 3) to replicate the main effect using another class of evidence and in a different context – politics. Furthermore, I tested whether strength of attachment to the social group moderates the established main effect as hypothesised. Next, I conducted a longitudinal study (study 4) around a main sports event to further replicate the main effect and its moderation with another class of evidence. Beyond this, I assessed whether my proposed mediators, self-esteem and self-efficacy, can indeed account for the mechanism by which the outcome of the performance of social groups impacts individuals' subjective well-being. Another longitudinal study (study 5) – identical in setup to study 4 except for the importance of the event in question – was carried out in order to contrast the findings of the two studies, and to show that the effects observed in studies 1-4 are not universal, but contingent on the importance of the performance in question. Table B-1 gives an overview of the studies.

Table B-1. Overview of studies

	Study 1	**Study 2**	**Study 3**	**Study 4**	**Study 5**
Main purpose	Establish main effect	Replicate main effect with different social group	Establish moderator	Replicate moderator and establish mediators	Assess boundary condition
Social group	Sports team	Gender	Political party	Sports team	Sports team
Type of evidence	Experiment	Experiment	Archival data	Longitudinal study	Longitudinal study
Sample size	$n = 420$	$n = 105$	$n = 2{,}408$	$n = 377$	$n = 160$

Finally, I ran a meta-analysis of the results from studies 1-4 to appraise the overall strength of the main effect I consistently observed.

B.4 Study 1: Remembering a Football Game

In order to test the hypothesis that the victory or defeat of one's group affects the subjective well-being of individuals associated with the group, I conducted the first experiment using a single-factorial (victory vs. defeat) design in a sports context. In the experiment, participants were asked to remember either an important match that their team had won (victory condition) or one that they had lost (defeat condition). Prior research has established that the higher the emotionality of an event, the stronger and more vivid the memories associated with the event (Heuer & Reisberg, 1990; Reisberg, Heuer, McLean, & O'Shaughnessy, 1988). Given that I relied on the vividness of the memories to get participants to relive the emotional state associated with the event, I focussed my manipulation on important matches as I anticipated that such events originally elicited higher affective responses than regular matches. It is important to note that while participants were asked to

remember an event in this study[4], they were not asked to recall how they felt at the time of the event as prior research has called into question the accuracy of recall of affective and hedonic experiences (Kent, 1985; Levine, 1997; Rachman & Eyrl, 1989; Thomas & Diener, 1990).

B.4.1 Method

B.4.1.1 Participants

Five hundred and seventy UK residents were recruited via Prolific (Palan & Schitter, 2018; Peer, Brandimarte, Samat, & Acquisti, 2017) to participate in this study via a web-based interface. Unbeknownst to the participants, they were prescreened on the platform. A requirement for participation was that the participants had to be a fan of a professional football team. Of the 570 participants that met this requirement and then completed the study, 118 participants failed checks included to identify careless or insufficient effort responding, four participants did not follow instructions, two participants answered the questions focussing on an American football (rather than a football) team and 26 participants specified the important game they remembered as a friendly game which was deemed unimportant. These respondents were excluded, and analysis hence continued with 420 participants (M_{Age} = 33.7 years, SD_{Age} = 10.78 years; 48.3% female). Overall, participants identified as fans of 60 different teams (56 British teams, 3 Spanish teams, 1 Portuguese team), four of which accounted for more than 50% of participants (Manchester United F.C. – 18.3%, Liverpool F.C. – 16.0%, Arsenal F.C. – 10.5%, Chelsea F.C. – 6.0%; all English Premier League clubs).

I used G*Power (Erdfelder, Faul, & Buchner, 1996; Faul, Erdfelder, Buchner, & Lang, 2009; Faul, Erdfelder, Lang, & Buchner, 2007) to determine the minimum required sample size. The anticipated small-to-medium effect size of $d = .3$ (as a conservative measure) meant that I required a sample of at least 352 respondents in order to achieve sufficient statistical power ($> .80$) to detect a significant effect

[4] Recall exercises have been widely used in subjective well-being research (e.g. Diener et al., 1991, 1993; Sandvik et al., 1993; Seidlitz & Diener, 1993, 1998).

($p < .05$). As the effect size was only an estimate, I oversampled to ensure the minimum required sample size even after accounting for low-quality submissions.

B.4.1.2 Procedure

For this and all subsequent studies, participants had to provide informed consent before taking part in the study. Upon agreeing to participate, participants specified whether they were a fan of a professional football team and, if so, which one. This was done to control for consistency between answers to the study and answers previously made to prescreening questions on the Prolific platform.

I then randomly assigned participants to one of two conditions: victory or defeat. Participants in the victory (defeat) condition were asked to remember an important game that their team had won (lost). In order to increase the vividness of memories associated with the past game, participants were asked a number of questions pertaining to the game they were remembering as a memory crutch (cf. Bohn & Berntsen, 2007): (a) type of game (e.g. cup game, league game), (b) opponent, (c) year, (d) location, (e) final score, and (f) an open-ended question regarding anything else they found memorable. I recorded the time spent responding to these match questions as a proxy for speed of recall. Participants then answered questions regarding their subjective well-being (SWB; three items adopted from Schwarz & Clore, 1983) on 11-point bipolar scales[5]. The study concluded with questions on basic demographics (gender, age, country of residence). Participants were debriefed at the end of the study.

Throughout the study, measures were employed to check for careless and insufficient effort responding (Curran, 2016; Huang, Liu, & Bowling, 2015; J. A. Johnson, 2005; Maniaci & Rogge, 2014; Oppenheimer, Meyvis, & Davidenko, 2009). Following Meade and Craig (2012), these measures were constructed so as not to stand out in the context in which they appeared.

[5] For all items used throughout all studies, please refer to appendix B-I.

B.4.2 Results

I averaged participants' responses to the three items measuring subjective well-being ($\alpha = .88$) to create a composite index (cf. Arthaud-Day, Rode, Mooney, & Near, 2005; Diener, 2000; Diener, Diener, et al., 1995; Emmons & Colby, 1995) for analysis. Participants' memory score regarding the match was coded as a continuous variable from 0 to 4 based on whether participants remembered who the opponent was, where the match took place, what the final score was, and when it happened. Condition (0 = defeat, 1 = victory) and gender (0 = female, 1 = male) were dummy-coded and the continuous predictors (age, memory score) were mean-centred (J. Cohen, Cohen, West, & Aiken, 2003).

The gender split was similar across conditions, as was how much information regarding the game participants were able to remember, and how long it took them to remember the information. Participants in the victory condition, however, were slightly older (please refer to table B-2 for full information).

Table B-2. Study 1: Sample descriptive statistics

	Condition		
Parameters	Victory	Defeat	*p*
n	212	208	
Gender split	47.6% female	49.0% female	.775
M_{Age} *(SD)*	35.1 years (11.8)	32.3 years (9.5)	.008
M_{Memory} *(SD)*	3.48 (0.78)	3.55 (0.71)	.325
$M_{\text{Recall Time}}$ *(SD)*	194.4 s (140.6)	175.3 s (107.7)	.121

As I assumed that the teams that respondents were a fan of represented a sample of all football teams and because I was not interested in team-specific effects, I used linear mixed models to analyse the data for this study (Gałecki & Burzykowski, 2013).

B.4.2.1 Main Effect

I fit a linear mixed model to predict changes in subjective well-being from the fixed effect of condition (victory vs. defeat) and the random effect of team supported. As predicted, participants in the victory condition scored significantly higher on the subjective well-being index ($M_{\text{Victory}} = 6.67$, $SD_{\text{Victory}} = 2.07$) than those in the defeat condition ($M_{\text{Defeat}} = 6.23$, $SD_{\text{Defeat}} = 2.10$), $t(415.88) = 2.15$, $b = .444$, $p = .032$, $d = 0.21$[6], 95% confidence interval (CI) = [0.04, 0.85]).

B.4.2.2 Controls

The above results hold when controlling for gender, age and how much they remembered about the game, see table B-3. Gender was included to account for established differences in subjective well-being between men and women, with women generally reporting higher levels of subjective well-being (W. Wood, Rhodes, & Whelan, 1989). Similarly, age was included as levels of subjective well-being slightly increase with older age (Carstensen, Pasupathi, Mayr, & Nesselroade, 2000) and because the vividness of episodic memories as rated by individuals declines with increasing age (G. Cohen & Faulkner, 1989). Age and gender are used throughout the paper as control variables for these reasons.

[6] Cohen's d for mean differences (J. Cohen, 1962) is calculated using pooled standard deviation (Cumming, 2014) throughout the paper.

Table B-3. Study 1: Linear mixed model results for subjective well-being

	b	*SE*	*t*	*p*	95% CI
Model 1					
Fixed Effects Parameter Estimates					
Intercept	6.232	0.152	40.88	<.001	[5.93, 6.54]
Condition	0.436	0.204	2.14	.033	[0.04, 0.84]
Random Effects Covariance Parameter Estimates					
Team	–0.009	0.078		.911	[–0.16, 0.14]
Model 2					
Fixed Effects Parameter Estimates					
Intercept	6.431	0.186	34.56	<.001	[6.06, 6.80]
Condition	0.485	0.204	2.38	.018	[0.08, 0.89]
Gender	–0.433	0.212	–2.05	.041	[–0.85, –0.02]
Age^{+}	–0.004	0.010	–0.41	.682	[–0.02, 0.01]
Memory^{+}	0.446	0.142	3.15	.002	[0.17, 0.72]
Random Effects Covariance Parameter Estimates					
Team	–0.009	0.079		.914	[–0.16, 0.15]

Note. CI = confidence intervals; $^{+}$ mean-centred.

B.4.2.3 Follow-Up Analysis on Gender Covariate

Unravelling the gender effect revealed that for women the effect of victory vs. defeat on subjective well-being was more pronounced ($M_{\text{Victory}} = 6.91$, $SD_{\text{Victory}} = 1.99$, $M_{\text{Defeat}} = 6.24$, $SD_{\text{Defeat}} = 2.08$, $t(201) = 2.36$, $b = .672$, $p = .019$, $d = 0.33$, 95% CI = [0.11, 1.24]) than for men ($M_{\text{Victory}} = 6.44$, $SD_{\text{Victory}} = 2.13$, $M_{\text{Defeat}} = 6.22$, $SD_{\text{Defeat}} = 2.13$, $t(215) = 0.78$, $b = .224$, $p = .438$, $d = 0.11$, 95% CI = [–0.34, 0.79]), a difference I did not anticipate. In fact, the strength of the effect for women was in line with my initial effect size estimate, while the effect size for men was markedly lower.

B.4.3 Discussion

Experiment 1 provided initial support for my hypothesis that a victory (vs. defeat) of a group an individual self-categorises into has a positive (negative) impact on that individual's subjective well-being. While prior research has established that

recall of past events tends to improve if the event and the attempt to remember it occur in similar circumstances, for example, context (Bouton, Nelson, & Rosas, 1999) or mood (Eich, 1995), I showed that the affect associated with emotion-laden life domains such as sports fandom can be reignited in rather sterile settings with a simple text-based experimental manipulation. One surprising finding of this first experiment was that the observed effects were more pronounced for women, while I found no statistically significant differences for men between conditions. This might be down to the fact that women generally tend to experience higher emotional intensity (Diener, Sandvik, & Larsen, 1985) and that women are more accurate in their recall of affective experience (Seidlitz & Diener, 1998), which might help with the recall of associative memory (Bower, 1981). The findings from this study imply that these effects may be exacerbated in recall exercises.

Furthermore, while prior research has established that positive events are generally recalled more quickly than negative events (Diener & Diener, 1996), I find no evidence for a difference in speed of recall between the two conditions. This might be because prior studies (e.g. Seidlitz & Diener, 1993) have focussed on getting participants to list as many positive or negative events as they could remember, while the current study focussed on the recall of details of one either important positive (victory) or important negative event (defeat) rather than the emotions attached to the event per se.

B.5 Study 2: Reading About the Leadership Glass Ceiling

The primary goal of study 2 was to provide a conceptual replication of the positive effect of victory (versus defeat) of one's social group on participants' subjective well-being in a different life domain by tapping into a different social identity. Gender was established as one of the social identities (Tajfel & Turner, 1979, 1986) that are applicable to the entire population. The main challenge was to find a situation that would have equivalency to the sports setting covered in study 1. Given that gender equality in the workplace has been a perennial discussion topic for decades now (Auster, 1989; Blau & Kahn, 2007; Meyerson & Fletcher, 2000;

O'Brien, Fitzsimmons, Crane, & Head, 2017; Ridgeway, 1997), I anticipated that it would be (a) very prevalent in people's minds and (b) able to elicit emotional reactions strong enough to be picked up after a simple manipulation. As the glass ceiling in leadership positions has been a particular focus of public discussion (Barreto, Ryan, & Schmitt, 2009; Davidson & Cooper, 1992), I built my manipulation around the development of the percentage of women in leadership positions over a set time period. As no situation was identified that could equally apply to men, this study focussed exclusively on women.

B.5.1 Method

B.5.1.1 Participants

One hundred and thirty-five female university students were recruited at a large German university and took part in the study in exchange for the opportunity to enter a raffle for Amazon vouchers. The cover story for the study was that I was investigating the impact of personality traits on performance in assessment tests. Thirty participants failed checks included to identify careless or insufficient effort responding and analysis hence continued with 105 participants ($M_{\text{Age}} = 23.2$ years, $SD_{\text{Age}} = 2.86$ years).

Based on the effect size detected in the prior study (Cohen's $d = .33$ for women), using G*Power (Erdfelder et al., 1996; Faul et al., 2009, 2007) I determined that a minimum of 292 usable responses was needed to achieve sufficient power ($> .80$) to detect significant effects ($p < .05$). As data were collected in the context of lectures at an institution I was not affiliated with, I was limited in the number of times I could run the study. Ultimately, I did not reach the required sample size.

B.5.1.2 Procedure

Upon agreeing to participate, participants answered questions on basic demographics (gender[7], age, nationality) as well as the importance they attach to achieving a leadership position in their career. The leadership question was included

[7] Gender was measured following guidance by Döring (2013) and therefore was not binary. However, all participants identified as part of the more traditional binary gender spectrum.

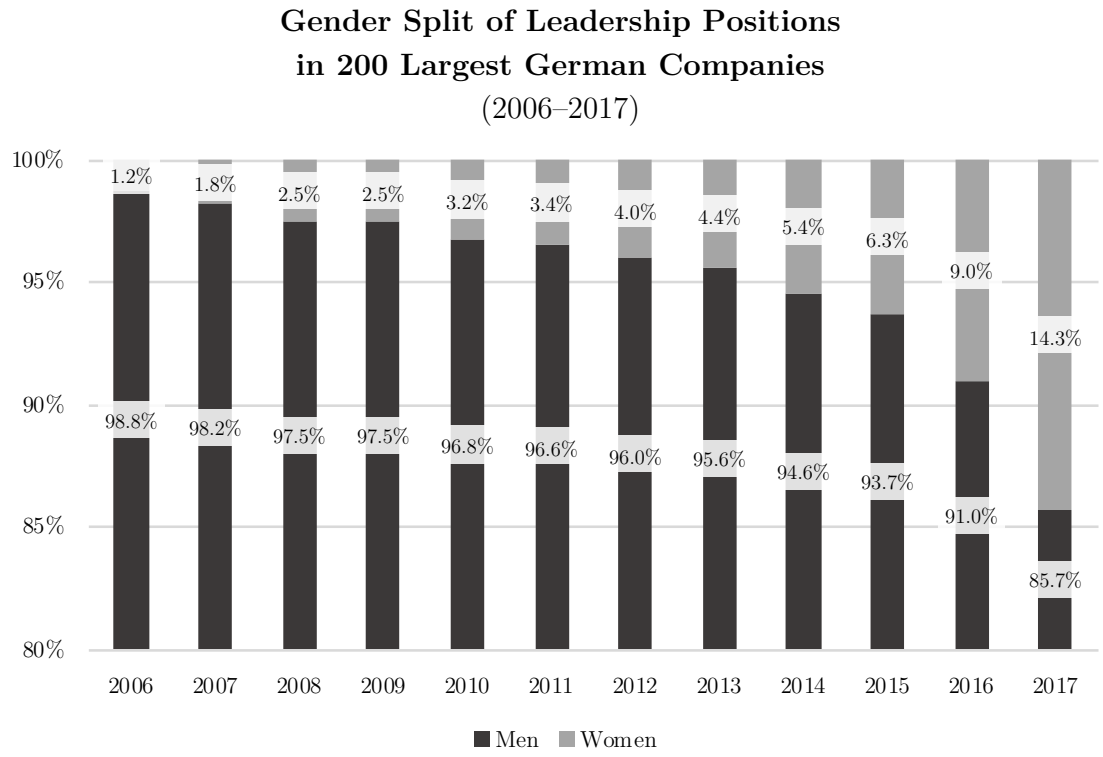
so that I could control for the personal relevance of the manipulation to the participants. I then randomly assigned participants to one of two conditions: in one condition, participants were made to believe that the percentage of women in leadership positions is higher than it really is (victory condition); in the other condition, participants were made to believe that the percentage of women in leadership positions is lower than it really is (defeat condition). Participants in both conditions were asked to answer questions based on a fictional development of the percentage of men and women in leadership positions in German companies over a 12-year period. In the victory condition, participants were shown a graph that showed a consistently positive trend (the percentage of women in leadership positions increased year-on-year throughout the entire period under consideration), while the graph in the defeat condition presented a trend back to fewer women in leadership positions over the most recent years covered (see figure B-2). In line with the cover story and in order to increase the impact of the graphs and the information they contained, participants had to read information off the graphs in order to answer four questions. In the victory condition, the information required to answer the questions was consistently positive (referring to positive trends and developments), while in the defeat condition, the required information was consistently negative (referring to negative trends and developments).

Participants then answered the same subjective well-being questions as in study 1. In order to examine the effectiveness of my victory versus defeat manipulation, I included four manipulation check items for all participants. Two of these were focussed on victory versus defeat on a group level (‘Prospects for women are continually deteriorating.’, ‘Are women generally successful?’), while the other two assessed victory versus defeat perceptions on an individual level (‘My prospects are continually deteriorating.’, ‘Are you a successful person?’). The negatively phrased items were reverse-coded and all manipulation check items were measured on 11-point bipolar scales anchored at ‘not at all’ (0) and ‘completely’(10). Higher scores on the manipulation checks thus indicate that the participants regarded themselves and their social group (in this case their gender) as more successful. At the end of

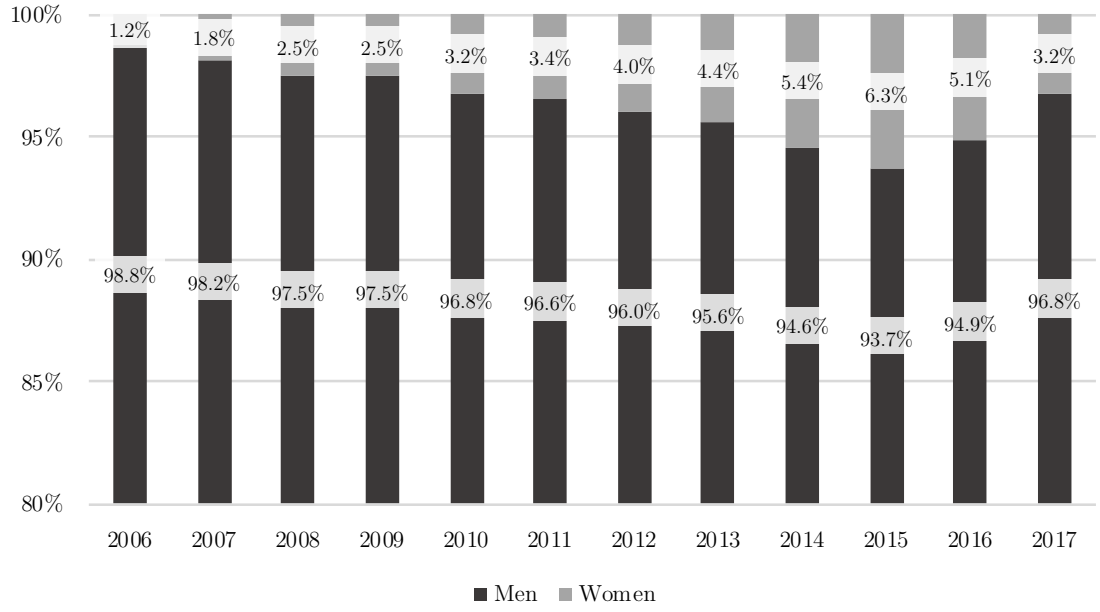
the study, participants were debriefed. Similar to study 1, measures were again employed to check for careless and insufficient effort responding throughout the study.

Figure B-2. Study 2: Graphs used in manipulation

Victory condition



Defeat condition



B.5.2 Results

As in study 1, I first created the subjective well-being composite index ($\alpha = .83$). Following study 1, condition was dummy-coded (0 = defeat, 1 = victory) and the continuous predictors (age, importance of achieving leadership position) were mean-centred. As the dependent variable (subjective well-being) was normally distributed, I followed Cohen (1968) and therefore carried out all analyses using multiple regression throughout the remainder of this paper unless otherwise stated. Across conditions, participants did not differ in terms of age or their desire to achieve a leadership position in their career, see table B-4.

Table B-4. Study 2: Sample descriptive statistics

	Condition		
Parameters	Victory	Defeat	p
n	49	56	
M_{Age} (SD)	23.1 years (2.7)	23.2 years (3.0)	.846
$M_{\text{Leadership Position}}$ (SD)	6.47 (2.26)	6.64 (1.99)	.677

B.5.2.1 Manipulation Checks

As expected, those participants in the victory condition regarded themselves and their gender as significantly more successful ($M_{\text{Victory}} = 7.53$, $SD_{\text{Victory}} = 1.43$) than those participants in the defeat condition ($M_{\text{Defeat}} = 6.82$, $SD_{\text{Defeat}} = 1.35$), $t(103) = 2.61$, $b = .709$, $p = .010$, $d = 0.51$, 95% CI = [.17, 1.25]. This confirms the effectiveness of the victory vs. defeat manipulation.

B.5.2.2 Main Effect

As predicted, participants in the victory condition scored significantly higher on the subjective well-being index ($M_{\text{Victory}} = 6.99$, $SD_{\text{Victory}} = 1.56$) than those in the defeat condition ($M_{\text{Defeat}} = 6.21$, $SD_{\text{Defeat}} = 2.03$), $t(103) = 2.18$, $b = .778$, $p = .032$, $d = 0.43$, 95% CI = [.07, 1.49].

B.5.2.3 Controls

The above results hold when controlling for age and how important it is for participants to achieve a leadership position in their career, see table B-5.

Table B-5. Study 2: Model results for subjective well-being

Predictors	*b*	*SE*	*t*	*p*	95% CI
Model 1					
Intercept	6.208	0.244	25.41	<.001	[5.72, 6.69]
Condition	0.778	0.358	2.18	.032	[0.07, 1.49]
Model 2					
Intercept	6.205	0.245	25.29	<.001	[5.72, 6.70]
Condition	0.785	0.359	2.18	.031	[0.07, 1.50]
Age^{+}	–0.043	0.063	–0.68	.499	[–0.17, 0.08]
Leadership Position^{+}	0.069	0.086	0.80	.425	[–0.10, 0.24]

Note. CI = confidence intervals; $^{+}$ mean-centred.

B.5.3 Discussion

Study 2 replicated the findings from the first experiment that the performance of a group one self-categorises into has a marked impact on that individual's subjective well-being in a different context (gender). Moving away from a sports context in which definitions of victory and defeat are clear-cut, I expanded work on the impact of perceived discrimination on mental and physical health (Pascoe & Richman, 2009) to show that even the mere mention of gender inequality in the workplace can already impact subjective well-being (Platt, Prins, Bates, & Keyes, 2016), possibly due to the activation of associative memory (Bower, 1981).

B.6 Study 3: European Elections

Study 3 pursued three main objectives. The first objective was a conceptual replication of the main effect established in sports (study 1) and gender (study 2) contexts in another context – politics. The second objective was the introduction and examination of the hypothesised moderator, the strength of attachment to

one's social group. The third objective was to corroborate my prior findings from the experimental studies with a different class of evidence (following Lyubomirsky, King, & Diener, 2005) – correlational data. To this end, I drew on the Eurobarometer series[8], a series of public opinion surveys conducted in the countries of the European Union (and its predecessor organisations) since 1974. The Eurobarometer series was chosen because a question on life satisfaction ('On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the life you lead?') is a standard component of most survey iterations, while a question on happiness ('Taking all things together, how would you say things are these days – would you say you're very happy, fairly happy, or not too happy these days?') has also been included occasionally, thus covering the key components of the subjective well-being composite index used in the two experiments detailed above.

Such single-item measures of life satisfaction and happiness have been frequently used in large-scale survey series and experimental research (Bradburn, 1969; Fujita & Diener, 2005; Gurin, Veroff, & Feld, 1960; Headey et al., 2010; Lucas et al., 2003; Mehl, Vazire, Holleran, & Clark, 2010) and have been shown to be both valid and reliable (F. Cheung & Lucas, 2014; Lucas & Donnellan, 2012). Moreover, such single-item self-report subjective well-being measures have been shown to correlate with other indicators of subjective well-being (F. Cheung & Lucas, 2014). In addition, vote intention has been a regular feature of the Eurobarometer survey iterations, and a party attachment measure has been included on several occasions. I used the vote intention measure in combination with the party attachment measure as a proxy for self-categorisation as member of a social group, in this case as a supporter of one of the two major parties. These measures combined allowed the testing of the first two hypotheses. It also allowed me to examine the impact

[8] For further information on the Eurobarometer series, please refer to European Commission (2018).

of the time passed between event and measurement of impact on subjective well-being from an objective perspective.

B.6.1 Method

B.6.1.1 Data Selection

At first, it was established which member countries of the European Union (and its predecessor institutions) have or had a two-party political system at some point of their membership in the European Union. Two-party systems were sought as these provide a close comparator to the two-team and two-gender contexts of the previous studies. A two-party political system was operationalised as a political system in which two parties stand a chance of winning an overall majority of seats in the country's parliament. This analysis showed that the United Kingdom, Greece, and Portugal have or used to have a de facto two-party system at some point since joining the European Union respective its predecessor institutions (Gordon & Segura, 1997; Lane & Ersson, 2007; Meguid, 2005). This was followed by an identification of all elections held in the three countries since they joined the European Union (please refer to appendix B-II for an overview of all elections).

After this, all Eurobarometer surveys since 1974 that followed elections in the three countries (i.e. the data collection started within six months of election day) were checked in order to establish whether these iterations included the necessary variables for the research project (notably life satisfaction, vote intention and party attachment, and possibly happiness). This analysis yielded six different datasets corresponding to two elections in each of the three countries: United Kingdom 1987 & 1992; Greece 1985[9] & 1993; Portugal 1987 & 1991.

B.6.1.2 Data Preparation and Participants

In the next step, all respondents were eliminated from the datasets who did not support the two main political parties or who answered 'don't know' or 'not

[9] In the 1985 iteration of the Eurobarometer survey, both dependent variables (happiness and life satisfaction) were measured. In all remaining iterations, only life satisfaction was measured.

applicable' (or did not answer at all) to any of the three (out of the four) key measures mentioned above (life satisfaction, strength of attachment, vote intention). This resulted in a final sample size of 2,408 (62.2% supported the winning parties) across all elections and countries (50.2% female, $M_{\text{Age}} = 46.9$ years, $SD_{\text{Age}} = 17.15$ years). For further descriptives across countries and election years, please refer to table B-6.

Vote intention was used as a proxy for which party an individual supported. As the validity of my analysis relied on the consistency of political voting preferences (Krosnick, 1991) between T_0 (election day) and T_1 (Eurobarometer interview day)[10], wherever possible I used further variables in the datasets to ensure consistency in preferences (for a full list of which variables were available and therefore used in each Eurobarometer iteration, please refer to appendix B-III). While these extra measures were taken to identify and eliminate potential swing voters (Kayser & Wlezien, 2011; Paldam, 1981), it affected only a small number of respondents, thereby confirming the relative stability of party preferences (Zuckerman, Kotler-Berkowitz, & Swaine, 1998).

While the time frame in which the Eurobarometer interviews were carried out in each country were specified in the corresponding documentation, the datasets did not contain individual-level interview dates. In order to operationalise the measure of the time passed between interview and election day, I therefore calculated the distance between election day and the middle of the interview time frame per country (in full days). This resulted in time frames that differed markedly between the datasets (see table B-6), but led to identical time frames for participants within any one dataset (i.e. per election in each country).

[10] If a voter changed allegiance after the election, it would not seem safe to assume that the result would affect her in the same way as it would someone who had stuck with their initial choice.

Table B-6. Study 3: Descriptive statistics across countries and election years

	United Kingdom		Greece		Portugal	
Parameters	1987	1992	1985	1993	1987	1991
n	409	411	347	482	367	392
M_{Age} (years)	46.0	47.5	45.7	46.1	46.0	50.0
Gender (Female)	49.6%	50.4%	50.1%	49.2%	50.1%	51.8%
$M_{\text{Life Satisfaction}}$	3.23	3.15	2.74	2.48	2.88	2.78
Support winner	61.1%	51.6%	65.1%	60.8%	67.8%	64.0%
$M_{\text{Attachment}}$	1.94	1.96	1.61	1.68	1.26	1.32
Days since election	135	175	148	14	113	19

B.6.2 Results

Following studies 1 and 2, condition (victory vs. defeat) was dummy-coded (0 = defeat, 1 = victory) and the continuous predictors (age, days passed between election day and interview day) were mean-centred. Crucially, participants did not differ in terms of their level of attachment to the party they support, but participants in the victory condition, on average, were slightly older and more likely to be female, see table B-7.

Table B-7. Study 3: Sample descriptive statistics for (a) Greece 1985 and (b) all countries and years

	Condition		
Parameters	Victory	Defeat	p
	(a) Greece, 1985		
n	224	119	
M_{Age} (SD)	44.5 years (16.8)	48.3 years (17.1)	.045
Gender split	54.5% female	42.9% female	.041
$M_{\text{Attachment}}$ (SD)	1.63 (0.78)	1.55 (0.71)	.356
	(b) All countries and years		
n	1,481	927	
M_{Age} (SD)	47.8 years (17.3)	45.4 years (16.9)	<.001
Gender split	52.1% female	47.0% female	.015
$M_{\text{Attachment}}$ (SD)	1.63 (0.74)	1.65 (0.73)	.468

B.6.2.1 Subjective Well-Being

The analysis focussing on subjective well-being was carried out on the data from the 1985 election in Greece as that dataset was the only one that contained both required variables, life satisfaction and happiness. In order to create a composite index from these two variables to mirror the dependent variable in prior studies, I had to normalise the data for both variables as the scales did not have the same number of response options. I normalized the data using min-max normalization (x' = (x – min(x))/(max(x) – min(x))) to yield scores between 0 (low subjective well-being) and 1 (high subjective well-being). The resulting scale had a Cronbach's α of .70. The analysis included four fewer responses than are reported in table B-6 as four respondents did not specify their level of happiness but did provide answers to all other required variables. For a description of the subsample used, please refer to table B-7a.

As predicted, participants who supported the winning party reported higher subjective well-being ($M_{\text{Victory}} = 0.53$, $SD_{\text{Victory}} = 0.25$) than those that supported the losing party ($M_{\text{Defeat}} = 0.40$, $SD_{\text{Defeat}} = 0.25$), $t(341) = 4.73$, $b = .134$, $p < .001$,

$d = 0.53$, 95% CI = [0.08, 0.19]. Regressing subjective well-being on whether a participant supported the winning or losing party, the strength of their attachment to the party ($M_{\text{Victory}} = 1.63$, $SD_{\text{Victory}} = 0.78$; $M_{\text{Defeat}} = 1.55$, $SD_{\text{Defeat}} = 0.71$; $p = .356$), and the interaction between these revealed that the effect of the outcome of the election on participants' subjective well-being was significantly moderated by the strength of their attachment to the party ($t(339) = 2.98$, $b = .114$, $p = .003$, $\eta_{\text{P}}^2 = .026$, 95% CI = [0.04, 0.19]). This is in line with my hypothesis that attachment acts as a moderator of the victory/defeat – subjective well-being relationship.

The above results hold when weighting responses to balance the uneven group sizes (interaction: $t(339) = 3.18$, $b = .114$, $p = .002$, $\eta_{\text{P}}^2 = .029$, 95% CI = [0.04, 0.19]) and when controlling for gender and age (see table B-8). According to Hull et al. (1992), merely including the covariates in the model introduces bias when examining the interaction between two independent variables. To control for the mentioned variables without bias, I included interactions of each individual covariate with condition (victory vs. defeat) following guidance by Yzerbyt et al. (2004); see model 4 in table B-8.

Table B-8. Study 3: Model results for subjective well-being in Greece 1985

Predictors	*b*	*SE*	*t*	*p*	95% CI
Model 1					
Intercept	0.397	0.023	17.30	<.001	[0.35, 0.44]
Condition	0.134	0.028	4.73	<.001	[0.08, 0.19]
Model 2					
Intercept	0.394	0.023	17.36	<.001	[0.35, 0.44]
Condition	0.135	0.028	4.82	<.001	[0.08, 0.19]
Attachment	–0.054	0.032	–1.68	.093	[–0.12, 0.01]
Condition × Attachment^{+}	0.114	0.038	2.98	.003	[0.04, 0.19]
Model 3					
Intercept	0.412	0.028	14.89	<.001	[0.36, 0.47]
Condition	0.132	0.028	4.63	<.001	[0.08, 0.19]
Attachment^{+}	–0.051	0.032	–1.58	.115	[–0.11, 0.01]
Condition × Attachment^{+}	0.115	0.038	2.98	.003	[0.04, 0.19]
Gender	–0.032	0.027	–1.16	.246	[–0.09, 0.02]
Age^{+}	0.0001	0.001	0.16	.875	[–0.001, 0.002]
Model 4					
Intercept	0.464	0.035	13.28	<.001	[0.40, 0.53]
Condition	0.059	0.041	1.42	.155	[–0.02, 0.14]
Attachment^{+}	–0.043	0.032	–1.33	.184	[–0.11, 0.02]
Condition × Attachment^{+}	0.102	0.039	2.64	.009	[0.03, 0.18]
Gender	–0.121	0.046	–2.63	.009	[–0.21, –0.03]
Condition × Gender	0.137	0.057	2.40	.017	[0.02, 0.25]
Age^{+}	0.0001	0.001	0.06	.954	[–0.003, 0.003]
Condition × Age^{+}	0.0001	0.002	0.09	.932	[–0.003, 0.003]

Note. CI = confidence intervals; $^{+}$ mean-centred.

Simple-slopes analyses revealed that the strength of attachment was a significant predictor of subjective well-being for supporters of the winning party ($t(222)$ =

2.85, $b = .061$, $p = .005$, 95% CI = [0.02, 0.10]), but not for supporters of the losing party ($t(117) = –1.69$, $b = –.054$, $p = .094$, 95% CI = [–0.12, 0.01]).

B.6.2.2 Life Satisfaction

The following analysis was carried out on all six elections across the three countries (see table B-7b for descriptives). I fit a linear mixed model to predict changes in life satisfaction from the fixed effect of condition (victory vs. defeat) and the random effects of country and year. As predicted, participants that supported the winning party reported higher life satisfaction ($M_{\text{Victory}} = 2.93$, $SD_{\text{Victory}} = 0.77$) than those that supported the losing party ($M_{\text{Defeat}} = 2.78$, $SD_{\text{Defeat}} = 0.79$), $t(2403) = 5.53$, $b = .171$, $p < .001$, $d = 0.19$, 95% CI = [0.08, 0.21]).

I then fit a linear mixed model to predict changes in life satisfaction from the fixed effects of condition (victory vs. defeat), strength of attachment to the party and their interaction, including country and year as random effects. This analysis revealed that the effect of the outcome of the election on participants' life satisfaction was significantly moderated by the strength of their attachment to the team ($t(2400.5) = 2.78$, $b = .116$, $p = .006$, 95% CI = [0.03, 0.20]), which is in line with my hypothesis. Simple-slopes analyses revealed that the strength of attachment was a significant predictor of life satisfaction for supporters of the winning party ($t(1475.2) = 3.08$, $b = .080$, $p = .002$, 95% CI = [0.03, 0.13]), but not for supporters of the losing party ($t(912.24) = –0.52$, $b = –.020$, $p = .602$, 95% CI = [–0.09, 0.05]).

The results hold when weighting responses to balance the uneven group sizes (interaction: $t(2401.2) = 2.90$, $b = .119$, $p = .004$, 95% CI = [0.04, 0.20]) and when controlling for gender, age, and the time passed between election day and interview day (see table B-9, model 3).

Table B-9. Study 3: Linear mixed model results for life satisfaction across countries and election years

	b	*SE*	*t*	*p*	95% CI
Model 1					
Fixed Effects Parameter Estimates					
Intercept	2.761	0.172	16.08	.003	[2.08, 3.44]
Condition	0.171	0.031	5.53	<.001	[0.11, 0.23]
Random Effects Covariance Parameter Estimates					
Country	0.080	0.084		.344	[–0.09, 0.25]
Year	0.011	0.010		.275	[–0.01, 0.03]
Model 2					
Fixed Effects Parameter Estimates					
Intercept	2.763	0.165	16.72	.002	[2.11, 3.41]
Condition	0.169	0.031	5.49	<.001	[0.11, 0.23]
Attachment^{+}	–0.023	0.034	–0.69	.489	[–0.09, 0.04]
Condition × Attachment^{+}	0.116	0.042	2.78	.006	[0.03, 0.20]
Random Effects Covariance Parameter Estimates					
Country	0.073	0.078		.349	[–0.08, 0.23]
Year	0.011	0.010		.276	[–0.01, 0.03]
Model 3					
Fixed Effects Parameter Estimates					
Intercept	2.662	0.163	16.37	<.001	[2.15, 3.18]
Condition	0.170	0.031	5.50	<.001	[0.11, 0.23]
Attachment^{+}	–0.023	0.034	–0.69	.490	[–0.09, 0.04]
Condition × Attachment^{+}	0.117	0.042	2.81	.005	[0.04, 0.20]
Gender	–0.011	0.030	–0.37	.711	[–0.07, 0.05]
Age^{+}	–0.0004	0.001	–0.43	.667	[–0.002, 0.001]
Days since election^{+}	0.001	0.001	2.19	.164	[–0.001, 0.004]
Random Effects Covariance Parameter Estimates					
Country	0.060	0.062		.340	[–0.06, 0.18]
Year	0.004	0.006		.498	[–0.01, 0.02]

Note. CI = confidence intervals; $^{+}$ mean-centred.

B.6.3 Discussion

The Eurobarometer series replicated findings from my two experiments in a different context with large-scale archival data. Given the de facto two-party nature of the elections in the countries in the observed years, victory and defeat were again clear-cut (as in study 1), with the winning party taking a majority of seats in the country's legislature. These effects were observed over different time periods, with the impact of the election outcome on subjective well-being still detectable almost six months after the election, thereby confirming the upper boundary posited by Suh et al. (1996) that "typical life events lose their effects on SWB after three to six months" (p. 1100).

Building on my prior findings, I showed that the strength of attachment to the party individuals support moderates the effect of the election outcome (victory vs. defeat of the party) on individuals' subjective well-being, with the magnitude of the effect increasing as strength of attachment increases. Follow-up analyses revealed that the strength of attachment had an influence on the subjective well-being of supporters of the winning party, but not to those of the losing party. This asymmetry, which I had not hypothesised, suggests that greater attachment to the party one supports intensifies the positive consequences of the victory of one's political party, but does not amplify the negative effect of a defeat of one's political party.

B.7 Study 4: FA Cup Final

Study 4 pursued three main objectives. The first objective was a replication of the interaction effect established in study 3 (politics) in another context – sports. The second objective was the introduction and examination of two hypothesised mediators, self-esteem and self-efficacy. The third objective was to corroborate my prior findings from experimental and large-scale archival studies with a different class of evidence (following Lyubomirsky, King, et al., 2005), in this case longitudinal data, and in a more ecological setting (Wirtz, Kruger, Scollon, & Diener, 2003).

To this end, I conducted a prospective longitudinal study around the 2017 final of the Football Association (FA) Cup, a yearly English knock-out football competition, with two points of measurement: the first round was conducted one day prior to the 2017 FA Cup final (Friday), and the second round was conducted on the Sunday following the finals match which was played on Saturday, in line with recommendations by Luhmann et al. (2012). The FA Cup final was chosen because it is (a) the last match of the knock-out competition, thus yielding a clear winner and loser, and (b) a very popular professional sporting event. This paired with the fact that roughly half of UK residents consider themselves fans of association football (MORI, 2003) made it possible to recruit a sufficiently large number of people for the study that identified as fans of one of the two competing teams.

B.7.1 Method

B.7.1.1 Participants

Five hundred and seventy UK residents were recruited via Prolific (Palan & Schitter, 2018; Peer et al., 2017) to participate in round 1 of this study on the day prior to the 2017 FA Cup final. Study participants had to be fans of one of the two competing teams (Arsenal F.C. and Chelsea F.C.) in order to take part. Of these 570 respondents, 70 specified that they were not a fan of any of the two teams competing in the 2017 FA Cup final. Nine further respondents did not provide a (valid) Prolific ID and therefore could not be invited to the second round. Overall, 491 respondents were invited to the second round, which was conducted on the day after the 2017 FA Cup final. Four hundred and forty-eight respondents (91.2% of the round 1 participants) took part in round 2 of the study. Of these 448 respondents, 41 failed checks included to identify careless or insufficient effort responding, 18 respondents changed their team allegiance or claimed to be fan of none of the two teams and 12 respondents did not know the result of the 2017 FA Cup final. Analysis hence proceeded with 377 participants (52.7% female). Of these 377 participants, 199 were Arsenal fans (victory condition) and 178 were Chelsea fans (defeat condition).

Sample size considerations for the study were driven by two main considerations: Firstly, based on the effect size (Cohen's $f^2 = .078$ for the key interaction effect between condition and strength of attachment) obtained in a pilot study, I calculated using G*Power (Erdfelder et al., 1996; Faul et al., 2009, 2007) that a minimum sample of 103 usable participants was required for adequate power ($> .80$) to detect a significant effect ($p < .05$). Secondly, I estimated mediation paths of small-to-medium strength and according to Fritz and MacKinnon (2007), a minimum sample size of 159 is required to detect the mediated effect with power $> .80$ in such scenarios (please refer to table 3 on p. 237 in Fritz and MacKinnon (2007), estimation for HH paths). As the strength of the beta coefficients in the mediation calculations was only an estimate, I oversampled to ensure the minimum required sample size even after accounting for low-quality submissions.

B.7.1.2 Procedure

Round 1. After a short introduction, participants first answered the same questions regarding their subjective well-being used in studies 1 and 2. This was followed by questions on self-esteem (following Rosenberg, 1965) and self-efficacy (following Chen et al., 2001). Participants then indicated whether they were a fan of one of the two teams competing in the 2017 FA Cup final and, if so, which one. This was followed by questions on the strength of their attachment to that team using Park, MacInnis, Priester, Eisingerich, and Iacobucci's (2010) four-item scale ($\alpha = .91$; 11-point scales). Round 1 concluded with questions on basic demographics (gender, age, country of residence) and participants' Prolific ID, which was used to invite them to complete round 2 and to match responses from the two rounds. Participants were informed about the second round upon completion of the first one.

Round 2. The procedure used for round 2 was very similar to that of round 1. Participants first answered the same subjective well-being, self-esteem, and self-efficacy questions as in round 1. They were then asked whether they were a fan of either of the two teams that competed in the 2017 FA Cup final, and if so, which one. This was followed by questions on whether they had watched the 2017 FA

Cup final, whether they remembered which team won and, if so, which team they thought won. I included these questions to make sure that participants were aware of the event outcome and because prior research has shown that the emotional impact of events is more pronounced if people pay heed to them (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004; Pessoa, Kastner, & Ungerleider, 2002). Finally, participants provided their Prolific ID and were debriefed.

B.7.2 Results

In preparation for data analysis, I first created the subjective well-being composite index for both rounds as in studies 1 and 2. As I focus on mean-level changes in subjective well-being (Luhmann et al., 2012) in this study, I then calculated the difference between the pre- and post-event measures for subjective well-being (i.e. round 2 – round 1). A positive (negative) score indicated that the participant reported higher (lower) subjective well-being after the event than before, and a score of 0 indicated no change between the two points of measurement. Analysis then proceeded with these difference (Δ) measures. In line with the prior studies, condition (0 = defeat, 1 = victory) and gender (0 = female, 1 = male) were dummy-coded and the continuous predictors (age, attachment) were mean-centred. Neither the pre-event measures nor age or gender differed between conditions (see table B-10).

Table B-10. Study 4: Sample descriptive statistics

	Condition		
Parameters	Victory	Defeat	p
n	199	178	
M_{Age} (SD)	37.0 years (12.3)	34.9 years (11.9)	.101
Gender split	53.3% female	52.2% female	.843
$M_{\text{SWB(PRE)}}$ (SD)	6.83 (2.01)	7.06 (1.90)	.244
$M_{\text{Self-Esteem(PRE)}}$ (SD)	6.50 (2.08)	6.82 (1.94)	.125
$M_{\text{Self-Efficacy(PRE)}}$ (SD)	6.70 (1.76)	6.99 (1.85)	.131
$M_{\text{Attachment}}$ (SD)	6.18 (2.08)	6.53 (1.79)	.081

B.7.2.1 Main Effect

As predicted, fans of the winning team reported higher subjective well-being after the match relative to baseline levels ($M_{\text{Victory}} = 0.73$, $SD_{\text{Victory}} = 1.54$) than fans of the losing team ($M_{\text{Defeat}} = –0.43$, $SD_{\text{Defeat}} = 1.37$), $t(375) = 7.71$, $b = 1.161$, $p < .001$, $d = 0.80$, 95% CI = [0.86, 1.46]). Using difference-in-differences analysis (Abadie, 2005), I calculated that a victory relative to a defeat increased a participant's subjective well-being by 1.16 points on an 11-point scale (see table B-11).

Table B-11. Study 4: Difference-in-differences analysis for subjective well-being

	Victory	Defeat	Difference (Δ)
Before match	6.83	7.06	0.23
After match	7.56	6.63	–0.93
Change	0.73	–0.43	1.16

B.7.2.2 Moderation

Regressing Δ subjective well-being on whether a participant supported the winning or losing team, the strength of their attachment to the team, and the interaction between these revealed that, as I had hypothesised, the effect of the outcome of the election on participants' subjective well-being was significantly moderated by the strength of their attachment to the team ($t(373) = 3.99$, $b = .309$, $p < .001$, $\eta_P^2 = .041$, 95% CI = [.16, .46]). For full results please refer to table B-12.

Table B-12. Study 4: Model results for subjective well-being

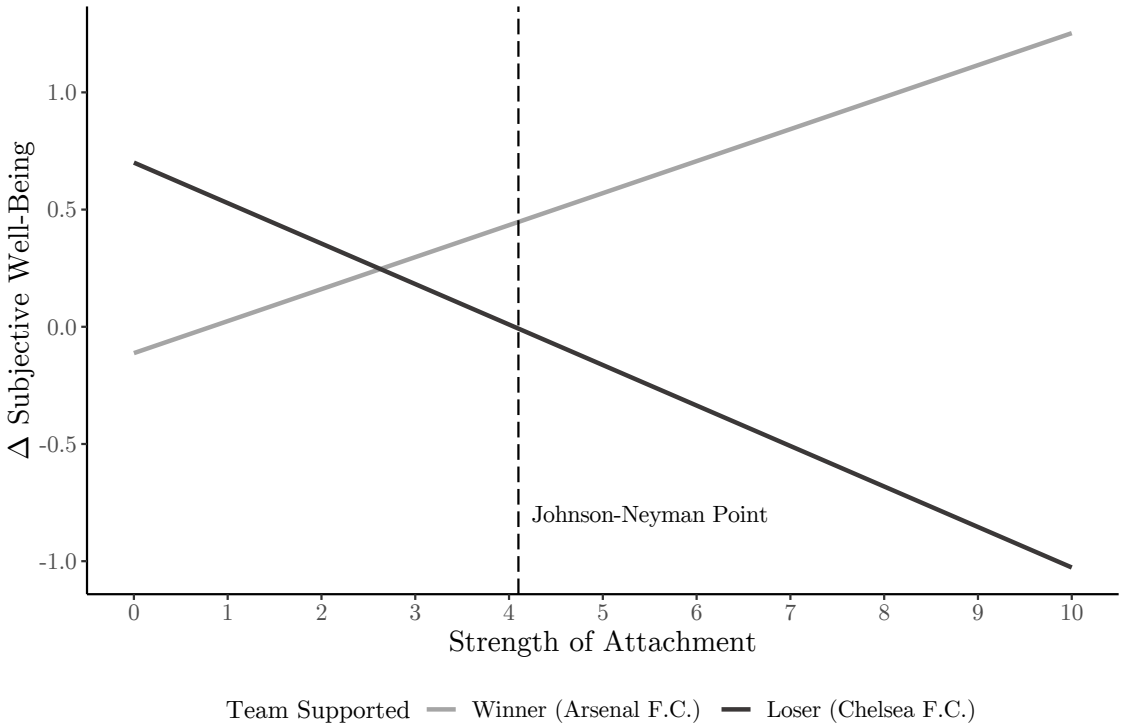
Predictors	*b*	*SE*	*t*	*p*	95% CI
Model 1					
Intercept	–0.429	0.109	–3.92	<.001	[–0.64, –0.21]
Condition	1.161	0.151	7.71	<.001	[0.86, 1.46]
Model 2					
Intercept	–0.397	0.108	–3.67	<.001	[–0.61, –0.18]
Condition	1.151	0.149	7.75	<.001	[0.86, 1.44]
Attachment^{+}	–0.173	0.060	–2.88	.004	[–0.29, –0.05]
Condition × Attachment^{+}	0.309	0.077	3.99	<.001	[0.16, 0.46]
Model 3					
Intercept	–0.401	0.129	–3.11	.002	[–0.65, –0.15]
Condition	1.151	0.149	7.70	<.001	[0.86, 1.44]
Attachment^{+}	–0.173	0.061	–2.86	.005	[–0.29, –0.05]
Condition × Attachment^{+}	0.309	0.078	3.98	<.001	[0.16, 0.46]
Gender	0.009	0.150	0.06	.954	[–0.29, 0.30]
Age^{+}	0.0002	0.006	0.03	.974	[–0.01, 0.01]
Model 4					
Intercept	–0.305	0.149	–2.04	.042	[–0.60, –0.01]
Condition	0.957	0.206	4.64	<.001	[0.55, 1.36]
Attachment^{+}	–0.165	0.061	–2.70	.007	[–0.28, –0.04]
Condition × Attachment^{+}	0.298	0.078	3.81	<.001	[0.14, 0.45]
Gender	–0.202	0.218	–0.93	.355	[–0.63, 0.23]
Condition × Gender	0.412	0.301	1.37	.172	[–0.18, 1.00]
Age^{+}	–0.003	0.009	–0.33	.744	[–0.02, 0.01]
Condition × Age^{+}	0.007	0.012	0.58	.565	[–0.02, 0.03]

Note. CI = confidence intervals; $^{+}$ mean-centred.

To examine this interaction effect more closely, I performed a floodlight analysis (Aiken & West, 1991; Rogosa, 1980; Spiller, Fitzsimons, Lynch, & McClelland,

2013) to determine for what range of attachment strength the simple effect of which team a participant supported (positive for supporters of the winning team and negative for supporters of the losing team) was statistically significant. This analysis revealed a Johnson-Neyman point (P. O. Johnson & Fay, 1950; P. O. Johnson & Neyman, 1936) of 4.10 (on an 11-point scale with endpoints 0 and 10), indicating that the effect of the game's outcome on Δ subjective well-being of fans of the two competing teams differed significantly (at $p < .05$) for individuals whose strength of attachment to their team exceeded 4.10, which is slightly below the scale midpoint. This finding is visualized in figure B-3. Thus, the victory or defeat of their team had a dramatic impact on the subjective well-being of die-hard fans, but not on the subjective well-being of fair-weather fans.

Figure B-3. Study 4: Δ Subjective well-being as a function of condition and strength of attachment to the team



Simple-slopes analyses revealed that the strength of team attachment was a significant predictor of Δ subjective well-being for fans of the winning (Arsenal: $t(197) = 2.64$, $b = .136$, $p = .009$, $\eta_P^2 = .034$, 95% CI = [0.03, 0.24]) and losing

teams (Chelsea: $t(176) = -3.09$, $b = -.173$, $p = .002$, $\eta_P^2 = .051$, 95% CI = [–0.28, –0.06]).

B.7.2.3 Mediation

In order to unravel the process of why the outcome of the event had such a pronounced effect on the subjective well-being of fans, I hypothesised that a victory (defeat) of one's team would result in an increase (drop) in both self-esteem and self-efficacy, which would then have a positive (negative) effect on individuals' subjective well-being.

In order to test these hypotheses, mediation analyses following Muller, Judd and Yzerbyt (2005) were carried out using the joint significance approach (Biesanz, Falk, & Savalei, 2010; MacKinnon, Fairchild, & Fritz, 2007; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). Research has shown that the choice of method to test for indirect effects matters (Hayes & Scharkow, 2013). The joint significance approach was chosen over widely used bootstrapping methods (Preacher & Hayes, 2004, 2008) because it achieves similar power, but not at the cost of inflated type I error rates (M. W.-L. Cheung, 2009; Fritz & MacKinnon, 2007; Fritz, Taylor, & MacKinnon, 2012; MacKinnon, Lockwood, & Williams, 2004; Yzerbyt, Muller, Batailler, & Judd, 2018). In fact, the joint significance approach is the only test that does not suffer from such type I error inflation problems (Judd, Yzerbyt, & Muller, 2014; Yzerbyt et al., 2018) and therefore has been recommended by multiple research teams (Biesanz et al., 2010; A. B. Taylor, MacKinnon, & Tein, 2007; Yzerbyt et al., 2018). Moreover, recent advice stresses the importance of testing individual parameter estimates in the model rather than just the index approach that computes and tests the indirect effect in one model (Fritz et al., 2012; Yzerbyt et al., 2018).

Self-esteem. In the first step (table B-13, model 1a), Δ self-esteem was regressed on whether a participant supported the winning or losing team. As expected, the main effect of condition was statistically significant, $t(375) = 3.29$, $b = .327$, $p = .001$, 95% CI = [0.13, 0.52]. Self-esteem increased (decreased) for fans of the winning

(losing) team after the match relative to baseline levels. In the second step (table B-13, model 2a), Δ subjective well-being was regressed on whether a fan supported the winning or losing team and Δ self-esteem. In this second regression, there were statistically significant effects of condition ($t(374) = 7.01$, $b = 1.039$, $p < .001$, 95% CI = [0.72, 1.31]) as well as Δ self-esteem ($t(374) = 4.92$, $b = .373$, $p < .001$, 95% CI = [0.22, 0.52]), thereby confirming the mediation hypothesis.

Self-efficacy. In step 1 (table B-13, model 1b), Δ self-efficacy was regressed on whether a participant supported the winning or losing team. As expected, the main effect of the condition was statistically significant, $t(375) = 3.91$, $b = .415$, $p < .001$, 95% CI = [0.21, 0.62]. Self-efficacy increased (decreased) for fans of the winning (losing) team after the match relative to baseline levels. In the second step (table B-13, model 2b), Δ subjective well-being was regressed on whether a fan supported the winning or losing team and Δ self-efficacy. In this second regression, there were statistically significant effects of condition ($t(374) = 6.80$, $b = 1.013$, $p < .001$, 95% CI = [0.72, 1.31]) as well as Δ self-efficacy ($t(374) = 5.00$, $b = .356$, $p < .001$, 95% CI = [.22, .50]), thereby confirming the mediation hypothesis.

Parallel mediation. Testing for parallel mediation showed that both Δ self-esteem ($t(373) = 2.70$, $b = .240$, $p = .007$, 95% CI = [0.07, 0.41]) and Δ self-efficacy ($t(373) = 2.83$, $b = .236$, $p = .005$, 95% CI = [0.07, 0.40]) were still important predictors of Δ subjective well-being when considered concurrently (see model 3 in table B-13).

Table B-13. Study 4: Results for mediation tests and full model

Predictors	*b*	*SE*	*t*	*p*	95% CI
Model 1a (DV: Δ Self-esteem$^+$)					
Intercept	–0.172	0.072	–2.39	.018	[–0.31, –0.03]
Condition	0.327	0.100	3.29	.001	[0.13, 0.52]
Model 1b (DV: Δ Self-efficacy$^+$)					
Intercept	–0.219	0.077	–2.84	.005	[–0.37, –0.07]
Condition	0.415	0.106	3.91	<.001	[0.21, 0.62]
Model 2a (DV: Δ Subjective well-being)					
Intercept	–0.364	0.107	–3.41	<.001	[–0.57, –0.15]
Condition	1.039	0.148	7.01	<.001	[0.75, 1.33]
Δ Self-esteem$^+$	0.373	0.076	4.92	<.001	[0.22, 0.52]
Model 2b (DV: Δ Subjective well-being)					
Intercept	–0.351	0.107	–3.27	.001	[–0.56, –0.14]
Condition	1.013	0.149	6.80	<.001	[0.72, 1.31]
Δ Self-efficacy$^+$	0.356	0.071	5.00	<.001	[0.22, 0.50]
Model 3 (DV: Δ Subjective well-being)					
Intercept	–0.336	0.106	–3.15	.002	[–0.54, –0.12]
Condition	0.985	0.148	6.65	<.001	[0.69, 1.28]
Δ Self-esteem$^+$	0.240	0.089	2.70	.007	[0.07, 0.41]
Δ Self-efficacy$^+$	0.236	0.083	2.83	.005	[0.07, 0.40]
Model 4 (DV: Δ Subjective well-being)					
Intercept	–0.305	0.105	–2.91	.004	[–0.51, –0.10]
Condition	0.978	0.145	6.73	<.001	[0.69, 1.26]
Attachment+	–0.153	0.058	–2.66	.008	[–0.27, –0.04]
Condition × Attachment+	0.312	0.074	4.21	<.001	[0.17, 0.46]
Δ Self-esteem+	0.229	0.087	2.64	.009	[0.06, 0.40]
Δ Self-efficacy+	0.254	0.082	3.10	.002	[0.09, 0.42]

(continued)

Table B-13. (continued)

Predictors	*b*	*SE*	*t*	*p*	95% CI
Model 5 (DV: Δ Subjective well-being)					
Intercept	–0.248	0.144	–1.73	.085	[–0.53, 0.03]
Condition	0.835	0.199	4.19	<.001	[0.44, 1.23]
Attachment^{+}	–0.149	0.058	–2.54	.012	[–0.26, –0.03]
Condition × Attachment^{+}	0.305	0.075	4.06	<.001	[0.16, 0.45]
Δ Self-esteem^{+}	0.224	0.088	2.55	.011	[0.05, 0.40]
Δ Self-efficacy^{+}	0.256	0.083	3.10	.002	[0.09, 0.42]
Gender	–0.134	0.210	–0.64	.524	[–0.55, 0.28]
Condition × Gender	0.311	0.289	1.08	.282	[–0.26, 0.88]
Age^{+}	–0.005	0.009	–0.59	.553	[–0.02, 0.01]
Condition × Age^{+}	0.009	0.012	0.78	.437	[–0.01, 0.03]

Note. CI = confidence intervals; $^{+}$ mean-centred.

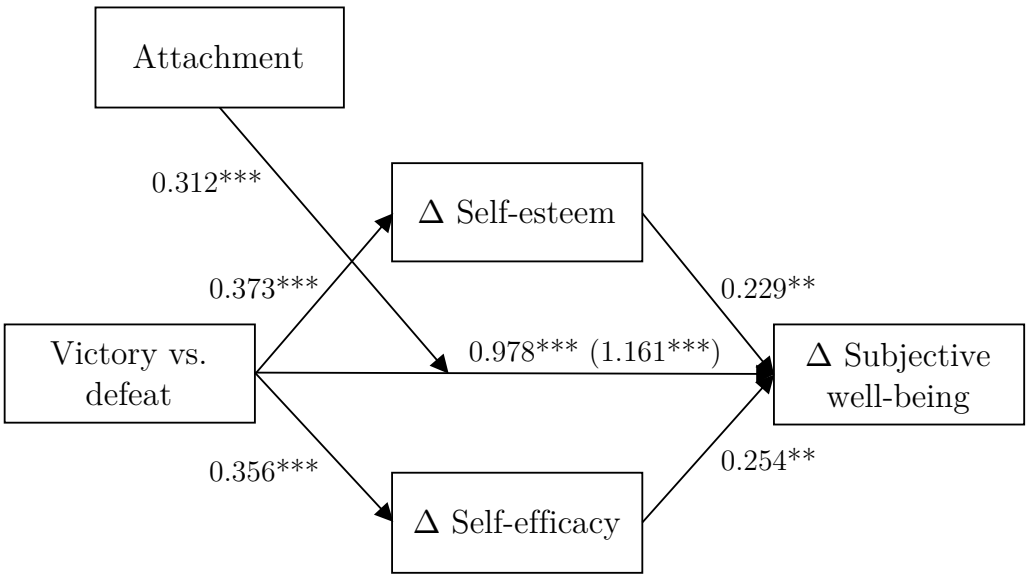
B.7.2.4 Mediated Moderation

While I did not hypothesise a mediated moderation (Muller et al., 2005), I checked nonetheless whether the established moderation of the impact of condition on changes in subjective well-being by strength of attachment was mediated by changes in self-esteem and/or self-efficacy (see appendix B-IV). This analysis showed that there was no mediated moderation: that is, the attachment moderation and the mediational paths via self-esteem and self-efficacy operate independently of one another as hypothesised.

B.7.2.5 Full Model

Figure B-4 shows the full model and the strength of the included paths. For details regarding the individual regressions, please refer to table B-13, models 1a, 1b and 4.

Figure B-4. Study 4: Full model



*** $p < .001$, ** $p < .01$

B.7.2.6 Controls

The results for the full model hold when controlling for age and gender, see table B-13, model 5.

B.7.3 Discussion

The results from this longitudinal study confirm and extend the findings from the previous three studies.

First, I strengthened the finding that the performance of a group one self-categorises into has a marked impact on individuals' subjective well-being by using two points of measurement around the focal performance of the group. In contrast to prior research which has generally found negative events to have a stronger and more long-lasting effect than positive events (e.g. Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Fredrickson & Losada, 2005), I found that the impact of victories versus defeats is comparable in magnitude.

Second, I replicated the moderation effect of attachment on the impact of event outcomes on individuals' subjective well-being in a different context and with a less crude measure of attachment. As in study 3, the magnitude of the effect increases

as strength of attachment increases. In contrast to study 3, follow-up analyses did not reveal an asymmetry of the effect. The strength of attachment to the team had an influence on the subjective well-being of supporters of the winning and losing teams. In order to further investigate this inconsistency in the asymmetry of the attachment effect, I normalised the attachment scores for the Greece 1985 elections and the FA Cup 2017 datasets in order to compare strength of attachment across the two contexts. The analysis showed that the average strength of attachment for the two teams that competed in the 2017 FA Cup final ($M_{\text{Sports}} = 0.64$, $SD_{\text{Sports}} = 0.20$) was more than double that of the strength of attachment for supporters of the two main parties that competed in the 1985 Greek elections ($M_{\text{Politics}} = 0.30$, $SD_{\text{Politics}} = 0.38$), $t(718) = 14.98$, $b = .332$, $p < .001$, $d = 1.12$, 95% CI = [0.29, 0.38]. As sports games tend to be more emotionally charged than elections, this difference in overall strength of attachment seems intuitive and might, together with the difference in measures used, account for the inconsistencies in the asymmetry.

Lastly, I showed that, in line with my hypotheses, changes in self-esteem and self-efficacy mediate the impact of important event outcomes of a group one supports on changes in supporters' well-being. For fans of the winning (losing) team, their self-esteem after the match went up (down) relative to baseline levels, which then resulted in an increase (decrease) in subjective well-being after the match relative to baseline levels. This finding is in line with previous studies that have looked at the correlations between self-esteem and different aspects of subjective well-being (Diener & Diener, 1995; Lyubomirsky et al., 2006). Similarly, for fans of the winning (losing) team, their self-efficacy after the match went up (down) relative to baseline levels, which then resulted in an increase (decrease) in subjective well-being after the match relative to baseline levels. This extends findings that self-efficacy does not just mediate the impact of personality traits such as openness and conscientiousness on subjective well-being (Strobel et al., 2011), but also the impact of the performance of social identity relevant groups on individuals' subjective well-being.

B.8 Study 5: First Day of the English Premier League Season

All the previous studies focussed on events or performances that can be regarded as very important in their respective contexts. I hypothesised the strength of the effects I observed to be a function of the importance of the event in question to study participants, with less important or unimportant events yielding no influence on participants. In order to establish whether less or unimportant events would indeed have a null effect on participants, I first had to identify what particular groups regarded as less or unimportant events. To allow a direct comparison to the results from study 4, I therefore ran a study with 100 football fans resident in the United Kingdom (51% female, $M_{\text{Age}} = 35.1$ years, $SD_{\text{Age}} = 10.6$ years) to determine how important they perceived different events in different football contests to be.

A mixed model analysis with the fixed effect of event and the random effect of participant showed that the first day of the English Premier League[11] season was regarded as significantly less important ($M_{\text{PL}} = 5.64$[12], $SD_{\text{PL}} = 2.37$) than the FA Cup final ($M_{\text{FA}} = 8.56$, $SD_{\text{FA}} = 1.52$) which was the focal event in study 4, $t(99) = 10.42$, $b = 2.92$, $p < .001$, 95% CI = [2.36, 3.48]. To assess whether the importance of the event influences my prior findings, I hence conducted a longitudinal study around the start of the 2017-2018 English Premier League season, again with two points of measurement. The exact timing of each round varied depending on team (first matches were played Friday-Sunday), but for every team the first round was conducted one day prior to the team's first match, and the second round was conducted on the day following the team's first match. The first day of the English Premier League season was chosen as all teams still have everything to play for whatever the result and it is therefore the least consequential match of the season, thus representing the antipode of the win-or-lose event examined in study 4.

[11] Top tier of English football

[12] Measured on an 11-point bipolar scale with endpoints 0 = not important, 10 = very important

B.8.1 Method

B.8.1.1 Participants

Four hundred and seventy-five UK residents were recruited via Prolific (Palan & Schitter, 2018; Peer et al., 2017) to participate in round 1 of this study on the day prior to their team's first match of the new English Premier League season. Study participants had to be a fan of any of the twenty English Premier League teams in order to take part. Participation was limited to 30 participants per team in order not to introduce a particular team bias. Of these 475 respondents, 128 specified that they were not a fan of an English Premier League team. Eighty-one respondents failed checks included to identify careless or insufficient effort responding. Of the remaining 266 respondents, 216 were fans of the 16 teams that either won or lost[13] and were therefore invited to take part in round 2. One hundred and ninety-seven respondents (91.2% of round 1 participants) completed the second round, which was conducted on the day after their team's first match of the 2017-2018 English Premier League season. Of these 197 respondents, 15 failed checks included to identify careless or insufficient effort responding, two respondents changed their team allegiance and 20 respondents neither watched their team's first match of the new English Premier League season nor knew the result of the match, and one respondent incorrectly specified the winner of her team's match. Analysis hence proceeded with 160 participants (66.9% female). Of these, 98 participants supported a team that won while 62 supported a team that lost their first match of the new English Premier League season. For a split across teams, please refer to table B-19 in appendix B-V.

As the setup for studies 4 and 5 was very similar, I used the effect size from study 4 (Cohen's $d = .80$) to calculate the required sample size to detect significant effects ($p < .05$) with sufficient power ($> .80$). This analysis using G*Power (Erdfelder et al., 1996; Faul et al., 2009, 2007) resulted in a minimum of 52 usable responses. I significantly oversampled for three reasons: First, due to the longitudinal nature of

[13] Two matches resulted in a draw and therefore did not yield a winner or loser.

the study, it was hard to estimate how many respondents from round 1 would also take part in round 2. Second, as I anticipated a significantly weaker impact of the event relative to study 4 (in fact, I hypothesised a null effect), I wanted to make sure that the sample was large enough to detect weaker effects. Third, I wanted to ensure that I reached the minimum required sample size even after accounting for low-quality submissions.

B.8.1.2 Procedure

Rounds 1 & 2. The procedure for both rounds was identical to that of study 4.

B.8.2 Results

In line with the prior studies, condition (0 = defeat, 1 = victory) and gender (0 = female, 1 = male) were dummy-coded and the continuous predictors (age, attachment) were mean-centred. Preparation for data analysis was identical to the procedures followed in study 4. In contrast to study 4, analysis proceeded on a winner/loser level rather than team level (a) in order to allow for sufficient group sizes and (b) because I was not interested in team effects, but the overall effect of victory versus defeat. For a full description of the final sample, please refer to table B-14. Surprisingly, the strength of attachment to their team prior to the match was significantly lower for fans of the losing teams than for fans of the winning teams.

I again analysed the data using linear mixed models for the reasons laid out in section B.4.2.

Table B-14. Study 5: Sample descriptive statistics

	Condition		
Parameters	Victory	Defeat	*p*
n	98	62	
M_{Age} (*SD*)	35.2 years (10.5)	37.1 years (11.1)	.258
Gender split	64.3% female	71.0% female	.382
$M_{\text{SWB(PRE)}}$ (*SD*)	6.23 (2.13)	6.61 (2.01)	.261
$M_{\text{Self-Esteem(PRE)}}$ (*SD*)	6.08 (2.16)	6.38 (2.21)	.393
$M_{\text{Self-Efficacy(PRE)}}$ (*SD*)	6.78 (1.73)	6.86 (1.83)	.796
$M_{\text{Attachment}}$ (*SD*)	6.07 (2.71)	4.74 (2.42)	.002

B.8.2.1 Main Effects

I fit linear mixed models to predict changes in subjective well-being (model 1), self-esteem (model 2) and self-efficacy (model 3) from the fixed effect of condition (victory vs. defeat) and the random effect of team supported. As anticipated, winning or losing the first match of the new Premier League season did not have a significant influence on participants' subjective well-being ($t(12.36) = 0.36$, $b = .073$, $p = .724$, 95% CI = [–.37, .51]), self-esteem ($t(8.81) = 0.28$, $b = .051$, $p = .786$, 95% CI = [–.37, .47]) or self-efficacy ($t(13.35) = 0.92$, $b = .119$, $p = .372$, 95% CI = [–.16, .40]) after the match relative to baseline levels.

B.8.2.2 Attachment Interaction

I also fit a linear mixed model to predict changes in subjective well-being from the fixed effects of condition, strength of attachment to the team and their interaction, including team supported as a random effect (model 4). As predicted, there was no significant interaction (t(156.00) = 1.01, b = .082, p = .315, 95% CI = [–.08, .24]). For full results for all models, please refer to table B-15.

Table B-15. Study 5: Linear mixed model results

	b	*SE*	*t*	*p*	95% CI
Model 1 (DV: Δ Subjective well-being)					
Fixed Effects Parameter Estimates					
Intercept	0.250	0.158	1.58	.130	[–0.08, 0.58]
Condition	0.073	0.202	0.36	.724	[–0.37, 0.51]
Random Effects Covariance Parameter Estimates					
Team	–0.008	0.038		.837	[–0.08, 0.07]
Model 2 (DV: Δ Self-esteem)					
Fixed Effects Parameter Estimates					
Intercept	0.212	0.138	1.53	.150	[–0.09, 0.51]
Condition	0.026	0.184	0.28	.786	[–0.37, 0.47]
Random Effects Covariance Parameter Estimates					
Team	0.025	0.043		.563	[–0.06, 0.11]
Model 3 (DV: Δ Self-efficacy)					
Fixed Effects Parameter Estimates					
Intercept	–0.013	0.106	–0.12	.905	[–0.23, 0.20]
Condition	0.119	0.128	0.92	.372	[–0.16, 0.40]
Random Effects Covariance Parameter Estimates					
Team	–0.026	0.012		.026	[–0.05, –0.003]
Model 4 (DV: Δ Subjective well-being)					
Fixed Effects Parameter Estimates					
Intercept	0.231	0.161	1.44	.165	[–0.10, 0.57]
Condition	0.077	0.206	0.37	.717	[–0.37, 0.52]
Attachment^{+}	–0.035	0.066	–0.52	.602	[–0.17, 0.10]
Condition × Attachment^{+}	0.082	0.082	1.01	.315	[–0.08, 0.24]
Random Effects Covariance Parameter Estimates					
Team	–0.013	0.036		.725	[–0.08, 0.06]

Note. CI = confidence interval; $^{+}$ mean-centred.

B.8.3 Discussion

As anticipated, the outcome of one's team's first match of the new season neither had an impact on subjective well-being, nor on self-esteem or self-efficacy. This

indicates that the importance of the event and group performance in question is a relevant factor when assessing its effects on individuals, with less important events yielding no influence while important events have a very strong impact. A behavioural indicator of the relative importance of the event is the proportion of respondents that followed the match live: 93.4% of respondents watched the 2017 final of the FA Cup (study 4), while only 55.6% of respondents followed their team's first match of the 2017-2018 English Premier League season (study 5).

B.9 Meta-Analysis

Given the range of contexts I examined in the previous studies, I wanted to get a better estimate of the average effect size across contexts (Riley, Higgins, & Deeks, 2011). In order to establish this, I ran a random-effects meta-analysis using the *metafor* package (Viechtbauer, 2010) in R (R Core Team, 2018) with restricted maximum likelihood estimation (REML; Corbeil & Searle, 1976; Harville, 1977; Patterson & Thompson, 1971).

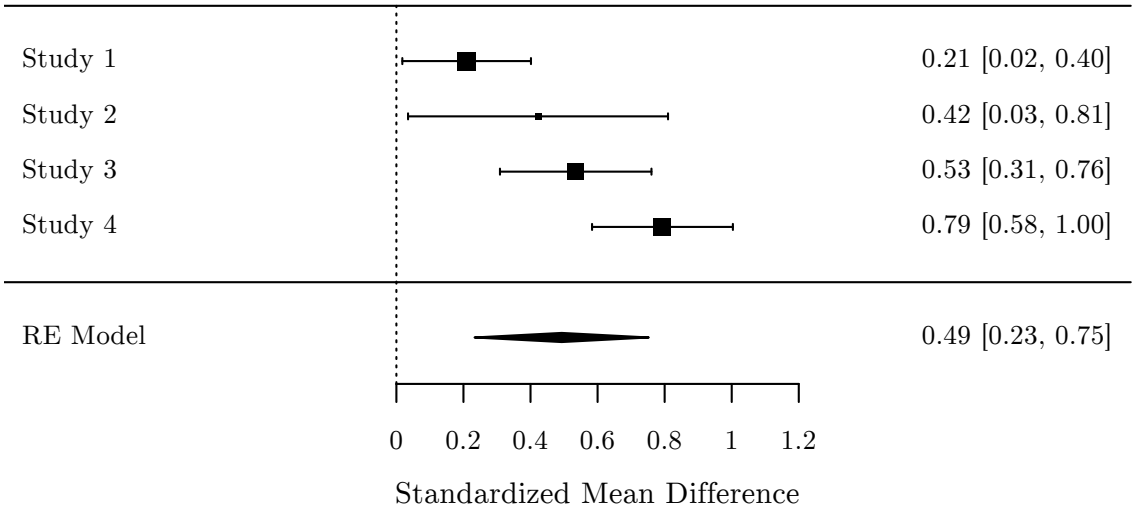
This meta-analysis of my studies showed an effect of victory versus defeat of the group one self-categorises into on the subjective well-being of individuals, with an average standardized mean difference of 0.493 ($SE = 0.133$, 95% CI = [0.233, 0.753], $z = 3.72$, $p < .001$). This represents an effect of medium magnitude (J. Cohen, 1988, 1992; Hedges & Olkin, 1985). However, given the small number of studies included, the estimate should only be regarded as approximate (Hedges & Vevea, 1998).

To put this in context, this average standardised mean difference across the studies in this paper compares favourably to prior meta-analyses of effect sizes across psychology (e.g. Anderson, Lindsay, & Bushman, 1999; Cafri, Kromrey, & Brannick, 2010; Lipsey & Wilson, 1993; Richard, Bond, & Stokes-Zoota, 2003) and to researchers' average expected effect sizes across various research settings (Bakker, Hartgerink, Wicherts, & van der Maas, 2016). However, Rosenthal (1990) as well as Prentice and Miller (1992) have cautioned against interpreting effect sizes merely on their magnitude. It is therefore important to evaluate an effect in context.

Diener, for example, stated more than three decades ago that "it seems likely that subjective well-being will not be accounted for by a handful of potent variables, because of the immense number of factors that can influence it" (1984, p. 561). Extensive research since then (for a review, see e.g. Diener et al., 1999) has provided support for this notion. In light of the evidence that many factors have an influence on individuals' subjective well-being, the effect of victory versus defeat of the group one self-categorises into on the subjective well-being of individuals that was established in this paper can be regarded as substantial and important.

For the forest plot, please refer to figure B-5[14].

Figure B-5. Forest plot for the meta-analysis



B.10 General Discussion

The present research set out to understand the impact of events that involve a social group individuals self-categorise into on individuals' subjective well-being. In

[14] Estimates of the effect size for two of the studies (2 and 4) diverge marginally from the ones reported in the results sections for the individual studies. That is because the *metafor* package calculates Hedge's g (Hedges, 1981), while Cohen's d (J. Cohen, 1962) has been reported throughout the remainder of this paper. The difference is due to the nature of the underlying calculations for Cohen's d and Hedge's g (McGrath & Meyer, 2006), but becomes negligible for sample sizes > 20 (Hedges & Olkin, 1985).

a series of correlational, longitudinal, and experimental studies, I provided converging evidence that the event performance (victory vs. defeat) of the social group individuals self-categorise into impacts individuals' subjective well-being, with victories raising their subjective well-being and defeats lowering their subjective well-being (studies 1-4). I established that the magnitude of the effect on subjective well-being is contingent on the strength of attachment individuals have formed with the social group (studies 3 and 4). As hypothesised, the impact of event outcomes on subjective well-being was very pronounced for individuals high in attachment, while neither victory nor defeat had an impact on low-attachment individuals' subjective well-being. Moreover, I identified changes in self-esteem and self-efficacy as the underlying psychological mechanism for the effect on subjective well-being (study 4). Victories (defeats) of their social groups improved (diminished) individuals' sense of self-esteem and beliefs in their self-efficacy, which then heightened (lowered) their subjective well-being. Finally, I demonstrated that the importance of the performance plays a key role when assessing the impact on subjective well-being. Importantly, the social group's performance at consequential events yields a larger influence on individuals, while performance at ordinary events has no bearing on individuals' subjective well-being (studies 4 and 5). I tested my hypotheses across multiple life domains important to individuals' different social identities: sports (studies 1, 4, 5), gender (study 2), and politics (study 3). A meta-analysis of my studies provided support for the robustness of the effect of the performance of social groups on subjective well-being levels.

B.10.1 Theoretical Contributions

My research bridges social identity and subjective well-being research by providing evidence for the role of self-categorisation into social groups in event-based changes in subjective well-being. The present research contributes to subjective well-being research by demonstrating that individuals' subjective well-being is not only influenced by major life events, but also by minor life events – an area not yet fully explored. I also advance knowledge in the field by examining the explanatory roles

of attachment, self-esteem, and self-efficacy in this process and providing evidence that the observed effects are transferable to different life domains relating to different social identities. Finally, my findings show that the much-hailed negativity bias in the experience and consequences of events is not universal.

There has been sustained social and scientific interest in the determinants of subjective well-being. Prior research has identified a variety of determinants of subjective well-being, such as health (Okun & George, 1984; Verbrugge, Reoma, & Gruber-Baldini, 1994), marital status (Myers, 2000), employment situation (Haring, Okun, & Stock, 1984; Lucas et al., 2003), sufficient wealth (Diener & Biswas-Diener, 2002; Diener et al., 1993), goals (Sheldon & Houser-Marko, 2001), extraversion and neuroticism (Costa & McCrae, 1980), hope (Snyder et al., 1991), optimism (Scheier & Carver, 1992), meaning in life (Reker, Peacock, & Wong, 1987), forgiveness (McCullough & Worthington, Jr., 1999), gratitude (Tkach & Lyubomirsky, 2006), social relationships (Diener & Oishi, 2005; Diener & Seligman, 2002) and social activities (Lyubomirsky, Sheldon, & Schkade, 2005), physical activities (Netz, Wu, Becker, & Tenenbaum, 2005), as well as the practice of meditation and mindfulness (K. W. Brown & Ryan, 2003). My research contributes to this literature by demonstrating that subjective well-being is also affected by the performance of groups individuals self-categorise into. This effect is more direct than other benefits self-categorisation provides, for example, addressing the need to belong (Baumeister & Leary, 1995) which then might impact subjective well-being.

To investigate this effect, I have, in part, used recall exercises, which have been a staple of subjective well-being research (e.g. Diener, Sandvik, Pavot, & Gallagher, 1991; Sandvik, Diener, & Seidlitz, 1993; Seidlitz & Diener, 1993, 1998). Research utilising such exercises has established that individuals need less time remembering positive events than negative events (Diener & Diener, 1996) and that they tend to remember more positive than negative events (Ehrlichman & Halpern, 1988; Seidlitz & Diener, 1993; Wagenaar, 1986), the implication being that positive events are more accessible in memory than negative events.

This has generally been put down to the Pollyanna principle (Boucher & Osgood, 1969; Matlin & Stang, 1978), that is, a positivity bias we all carry. Such a positivity bias manifests itself in different ways, for example in the intensity of affect in the recall of positive and negative events (Sedikides & Green, 2000), in the strength of memory of positive versus negative self-relevant attributes (Ritchie, Sedikides, & Skowronski, 2016), and – when going beyond mere recall – the preference to engage in contexts that relate to positive rather than negative aspects of the self (Sedikides, 1993). This positivity bias may be the reason why recall of affective and hedonic experiences tends to be inaccurate (Kent, 1985; Levine, 1997; Rachman & Eyrl, 1989; Thomas & Diener, 1990).

The before mentioned research using recall exercises has almost exclusively relied on the recall of multiple events. In contrast, I found that individuals do not differ in their speed or detail of recall when recalling single important positive or negative events. This suggests that prior findings might be a function of (a) the number of events individuals had to recall and (b) the events' relative importance. Another line of research has shown that individuals generally tend to select material that is in line with their current mood state rather than an overriding need for positivity (Bower, Gilligan, & Monteiro, 1981).

Furthermore, in the recall study, I found gender differences in the impact of remembering positive and negative events relating to one's social group on subjective well-being, with the recall exercise being effective for women but not for men. Prior research has established gender differences in the intensity of emotional experience (Diener et al., 1985; Fujita, Diener, & Sandvik, 1991) and the accuracy of recall of affective experiences (Seidlitz & Diener, 1998), with women experiencing both higher emotional intensity and displaying higher accuracy in the recall of affective experiences than men. Seidlitz and Diener (1998) explained the latter finding with differences in the detail of encoding at the point of experience. My findings support and extend this notion by showing that women seem to store more detail in their memory, which then not only helps in the revival of affective memory,

but generally leads to stronger associations that enable the recall of associative memory (Bower, 1981).

Moreover, research on the impact of life events on subjective well-being has thus far almost exclusively focussed on major life events (e.g. Anusic, Yap, & Lucas, 2014; Lucas, 2007; Luhmann et al., 2012), with few exceptions (e.g. Kanner et al., 1981; Suh et al., 1996). While major life events such as marriage, death of a loved one, unemployment, or retirement are pervasive features of human life, my studies show that these are not the only life events that merit further inquiry. In fact, I demonstrate that even seemingly minor life events, if they relate to individuals' social identities and are of requisite importance, can have a marked influence on individuals' subjective well-being. While they might not lead to lasting changes to individuals' subjective well-being set points like their major counterparts (e.g. Headey et al., 2010), I show that they have effects on subjective well-being that go beyond Kanner et al.'s (1981) characterisation of such events as mere daily hassles and uplifts. In fact, my research shows that these effects can persist even months after the event. Past research on persistence of the effects of life events on subjective well-being has generally shown that these effects tend to subside within three to six months (Suh et al., 1996). In line with recent findings (Lench et al., 2019), my analysis of the Eurobarometer data series demonstrates that, at least in a political context, changes in subjective well-being following national elections can be reliably picked up almost six months after the event, thus pointing toward the upper boundary of the timeline advocated by Suh and colleagues. In contrast to Lench and colleagues (2019), I find that the effects not only persist for happiness in this time frame, but also for life satisfaction (i.e. for subjective well-being as a whole).

Second, my findings add to research on self-categorisation (Turner et al., 1987). In my research, I tap into different social identities (i.e. fan of a sports team, females in leadership positions, supporter of a political party) and show that the performance of these social groups matters to individuals, in such a way that it can influence their subjective well-being. More specifically, my results suggest that self-categorisation into groups is a relevant predictor of subjective well-being in the

context of victory versus defeat of the social group. While associating with a group satisfies the need to belong (Baumeister & Leary, 1995) and is generally perceived as positive for overall well-being, my findings indicate that association can be both positive and negative for subjective well-being. Victories lift and defeats hurt subjective well-being. Existing studies have focussed on highlighting detrimental effects of team allegiance in a sports context (e.g. Cornil & Chandon, 2013; Hirt et al., 1992; Snyder, Lassegard, & Ford, 1986). My research is one of the first studies to transfer this notion to other relevant life domains and social identities.

Prior research has established that victory vs. defeat (success vs. failure) of important social groups can have an effect on individuals' use of various impression management (Leary & Kowalski, 1990) tactics. Chiefly among them are basking in reflecting glory (BIRGing; Cialdini et al., 1976) and cutting off reflected failure (CORFing; Snyder et al., 1986). Both tactics are designed to regulate one's esteem in the eyes of others, and thereby one's self-esteem (Cialdini & Richardson, 1980; Hirt et al., 1992). By basking in reflected glory, individuals try to pronounce their association with a successful social group – for example, by choice of attire or pronouns – in order to benefit from the glow of success of said group (Cialdini et al., 1976). Cutting off reflected failure serves the opposite purpose, with individuals attempting to distance themselves through similar mechanisms from an otherwise identity-relevant and important, but temporarily unsuccessful social group (Snyder et al., 1986). These impression management techniques hence represent deliberate attempts by individuals to personally benefit from their association with a particular social group or, respectively, to disassociate from a social group in order to shield themselves from potential negative backlash. Such impression management tactics are therefore entirely outward-focussed. In contrast, the effects established in this paper are inward-looking and describe the internal, automatic reactions of individuals to experiences of vicarious victories and defeats.

Research on sports fandom, for example, has tended to focus on extreme and negative consequences that apply to the tail-end of the distribution, that is, increases in the number of heart attacks (e.g. Carroll et al., 2002) and fatal traffic

accidents (e.g. Redelmeier & Stewart, 2003). Similarly, research on a political context, with a few exceptions looking at more affective reactions (Kaplan, Levine, Lench, & Safer, 2016; Kitchens, Corser, Gohm, Vonwaldner, & Foreman, 2010; Lench et al., 2019), has primarily looked at political outcomes of elections, for example, political polarization (Maher, Igou, & van Tilburg, 2018), or political trust and satisfaction with democracy (Craig, Martinez, Gainous, & Kane, 2006; Singh, Karakoç, & Blais, 2012). My research expands these findings by showing that (a) event outcomes can have an impact on the wider population (such as Cornil & Chandon, 2013), and (b) do so across different life contexts. Furthermore, I show that the performance of social groups can have positive or negative consequences for individuals, contingent on event outcomes.

Third, my research shows that the magnitude of the impact of the performance of social groups on individuals' subjective well-being is contingent on the strength of attachment to the social group. My conceptualisation of attachment as a social and emotional bond that an individual develops with a focal entity is very close to Mael and Ashforth's (2001) definition of organisational identification "as a sense of oneness with an organization" (p. 197). Specifically, I define organisational-level units as the focal entity, for example, a political party or a sports team. This contrasts my work with what has variably been termed group (Tolman, 1943), in-group (e.g. Doosje, Branscombe, Spears, & Manstead, 1998; Spears, Doosje, & Ellemers, 1997), or social identification (e.g. Cameron, 2004; Luhtanen & Crocker, 1992). What these conceptualisations have in common is an examination of an individual's self-investment and self-definition (Leach et al., 2008) in relation to other members of a group. To build on my prior examples, these members could be other fans of the same sports team, or fellow supporters of a specific political party. Research has shown that the level of such identification with other members of a group shapes the degree to which membership yields influences on individuals' psychological states and behaviour (e.g. Leung, Tong, & Lind, 2007; Mackie, 1986; McCoy & Major, 2003; Van Vugt & De Cremer, 1999). I show that it is not just

the level of identification to other individuals that can shape individuals' psychological states, but also their level of attachment to a more impersonal entity.

Fourth, I provide initial evidence that event outcomes of social groups are causally linked to individuals' subjective well-being via changes in individuals' sense of self-esteem and their beliefs in their self-efficacy. While prior studies have examined individual components of these causal paths (e.g. Cheng & Furnham, 2003; Feltz & Lirgg, 1998; Hirt et al., 1992; Strobel et al., 2011), my research constitutes the, to my knowledge, first collective assessment of these paths. My finding that self-esteem and self-efficacy are concurrent predictors of subjective well-being that account for distinct portions of the variance in subjective well-being corroborates prior research that those two constructs are indeed distinct (Chen et al., 2001, 2004).

Finally, my findings add to prior research on the negativity bias. Reviews of research in the field of psychology have shown that, in line with loss aversion (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981), positive versus negative experiences tend to have asymmetric effects (S. E. Taylor, 1991), with negative experiences generally carrying more weight than positive experiences (for reviews, see Baumeister et al., 2001; Rozin & Royzman, 2001; Vaish, Grossmann, & Woodward, 2008). For example, Brickman et al. (1978) found that lottery winners adapted more quickly to their new life circumstances by returning to their subjective well-being baseline than did individuals paralysed in accidents. Turning to less life-changing events, Sheldon, Ryan and Reis (1996) found that while bad events influenced well-being the following day, good events did not have such a lasting effect. Similarly, David, Green, Martin, and Suls (1997) established that bad events influenced measures of both bad and good moods, but good events only influenced good moods. These findings are consistent with recent research on national elections in the US, which found electoral outcomes to strongly impact partisan losers, but only marginally impact partisan winners (Pierce, Rogers, & Snyder, 2016). In contrast to that, findings from one of my prospective longitudinal studies in a sports context (study 4) illustrate that positive and negative events

have an effect that is similar in magnitude, thus replicating Lench et al.'s (2019) findings from a political context. The discrepancy between my findings and those supporting a pervasive negativity bias adds to recent research in decision-making that has failed to detect a negativity bias (e.g. Kermer, Driver-Linn, Wilson, & Gilbert, 2006; Koritzky & Yechiam, 2010). This discrepancy might be due to the comparison of positive and negative events or effects in prior research that were not necessarily comparable (e.g. Hochman & Yechiam, 2011).

B.10.2 Limitations and Future Directions

Future research should explore the applicability of my findings to other life contexts. While I have replicated the main effect across several social identities, these represent only a fraction of the social identities individuals hold (Roccas & Brewer, 2002), and it would therefore be premature to assume the generalisability of my findings across all life contexts (Simons, Shoda, & Lindsay, 2017). In fact, prior research has established that there are different types of social identity (Deaux, Reid, Mizrahi, & Ethier, 1995) and that social identities are not necessarily all the same (R. Brown & Williams, 1984). One particularly pertinent context would be work, as people spent a large proportion of their lives working (Caza & Wrzesniewski, 2013). Furthermore, work offers individuals a support network and a sense of community which enables them to construct another social identity around their place of work (Ellemers, De Gilder, & Haslam, 2004), and, if it is engaging and meaningful, has been shown to be a "major source of well-being" (Myers & Diener, 1995, p. 15). One's satisfaction with work, in particular, has been shown to affect the other cognitive component of subjective well-being, one's assessment of overall life satisfaction (Crohan, Antonucci, Adelmann, & Coleman, 1989).

A second question that is worth answering is whether the impact of the performance of one's social group on one's well-being is universal across different cultures. My studies have focussed on different European samples so far (Germany, Greece, Portugal, United Kingdom). Prior research has called into question whether samples from WEIRD (Western, Educated, Industrialised, Rich, Democratic)

countries are representative of the world population (Henrich, Heine, & Norenzayan, 2010). Suh et al. (1998), for example, established that the evaluative basis for subjective well-being assessments varies across cultures. Similarly, how much people value subjective well-being overall is culture-dependent, too (Diener, Oishi, & Lucas, 2003). In line with this importance of culture in subjective well-being research, Oishi et al. (1999) showed that the strength of different predictors of subjective well-being differed between individualistic and collectivistic cultures. Similarly, the relation between self-esteem and subjective well-being tends to be weaker in collectivistic than in individualistic cultures (Diener & Diener, 1995; Kwan, Bond, & Singelis, 1997). While attachment has been shown to be comparable across cultures – at least in a work environment (Abrams, Ando, & Hinkle, 1998) – and social identity is a ubiquitous phenomenon around the world (Brewer & Yuki, 2007), their bases might differ between different cultures (Abrams et al., 1998; Brewer & Yuki, 2007). The relative importance of personal and social identities has been shown to vary across cultures (Triandis, 1989), as has the way the self is construed in different cultures (Markus & Kitayama, 1991). Most of this research has focussed on differences between individualistic and collectivistic cultures (Hofstede, 1980; Triandis, 1995). Given the conflicting evidence of the stability versus malleability of the constituent variables of my research, an extension into different cultural contexts seems worthwhile to establish whether the effects are generalisable across cultures.

Furthermore, research on subjective well-being has recently turned to ways in which subjective well-being can be (sustainably) raised (e.g. Dunn, Aknin, & Norton, 2008; Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008; King, 2001; Lyubomirsky, Dickerhoof, Boehm, & Sheldon, 2011; Seligman, Steen, Park, & Peterson, 2005) and a recent meta-analysis of such interventions (Sin & Lyubomirsky, 2009) has shown that these can be successful in increasing subjective well-being (average effect size of $r = .29$). While I have established the importance of the event as a boundary condition for the influence of the performance of social groups on individuals' subjective well-being, individuals have no influence on the performance

of their social group nor the events in which these groups partake. Individuals can, however, modulate on which aspects of the experience they focus on. As Kahneman and colleagues have shown, "people tend to use selected moments as proxies in evaluating temporally extended states or episodes" (Kahneman, Fredrickson, Schreiber, & Redelmeier, 1993, p. 404). Building on this, future research could examine whether the effect of the performance of social groups can be strengthened (in the case of a victory) or negated (in the case of a defeat) through the use of what has been termed event markers (Tonietto & Barasch, 2017).

Event markers are created when individuals generate information during events, thus punctuating the experience. Such activities include communicating with friends and family via messages or social media (Yu & Wang, 2015). Event markers therefore do not only increase engagement with the corresponding experiences (Diehl, Zauberman, & Barasch, 2016), but also provide memory pointers for individuals (Zauberman, Ratner, & Kim, 2009) which makes it easier for them to cue related memories. Future research could examine whether the deliberate use of such event markers in positive or negative situations of the overall experience might enable individuals to override the overall outcome of the experience.

Lastly, while "self-reports are the gold standard to assess subjective well-being" (Luhmann et al., 2012, p. 612) and have been shown to converge with non-self-report measures (Sandvik et al., 1993), investigating the phenomenon examined in the current paper using other measurement methods would nonetheless be beneficial as different approaches yield their own distinct measurement error (Diener & Fujita, 1995). One option – that while still utilising self-reports, is nonetheless able to register real-time changes in subjective well-being – is the experience sampling method (ESM; Larson & Csikszentmihalyi, 2014), or as others have called it, ecological momentary assessment (EMA; Stone & Shiffman, 1994). Due to the high strain on respondents in ESM studies, others have advocated the use of what they term the day reconstruction method (DRM; Kahneman et al., 2004). Several studies (Bylsma, Taylor-Clift, & Rottenberg, 2011; Dockray et al., 2010) have provided support that the DRM can be regarded as a reliable,

converging, less-demanding alternative to ESM. Beyond these self-report measures, smiling has been used as an indicator of subjective well-being (e.g. Harker & Keltner, 2001) and has been shown to converge with other subjective well-being measures (Seder & Oishi, 2012).

B.11 Conclusion

Minor life events permeate our daily lives. I show that if these events relate to the performance of a social group one self-categorises into, they affect that individual's subjective well-being. For those individuals high in attachment to the social group, the impact of such minor life events can even resemble those of major life events.

B.12 References

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B.13 Appendices

Appendix B-I: Measures Used in Studies 1, 2, 4, and 5

Subjective well-being (following Schwarz & Clore, 1983)

Items were anchored at 'not happy/not satisfied' (0) and 'very happy/very satisfied' (10)

- How happy are you about your life as a whole?
- How happy do you feel right now, at this moment?
- How satisfied are you with your life as a whole these days?

Self-esteem (following Rosenberg, 1965)

Items were anchored at 'strongly disagree' (0) and 'strongly agree' (10)

- On the whole, I am satisfied with myself.
- At times I think I am no good at all.*
- I feel that I have a number of good qualities.
- I am able to do things as well as most other people.
- I feel I do not have much to be proud of.*
- I certainly feel useless at times.*
- I feel that I'm a person of worth.
- I wish I could have more respect for myself.*
- All in all, I am inclined to think that I am a failure.*
- I take a positive attitude toward myself.

*reverse-coded

Self-efficacy (following Chen et al., 2001)

Items were anchored at 'strongly disagree' (0) and 'strongly agree' (10)

- I will be able to achieve most of the goals that I have set for myself.
- When facing difficult tasks, I am certain that I will accomplish them.
- In general, I think that I can obtain outcomes that are important to me.
- I believe I can succeed at most any endeavour to which I set my mind.
- I will be able to successfully overcome many challenges.
- I am confident that I can perform effectively on many different tasks.
- Compared to other people, I can do most tasks very well.
- Even when things are tough, I can perform quite well.

Strength of attachment to the group (following Park et al., 2010)

Items were anchored at 'not at all' (0) and 'completely' (10)

- To what extent are the (group name) part of you and who you are?
- To what extent do you feel that you are personally connected to (group name)?
- To what extent are your thoughts and feelings toward the (group name) often automatic, coming seemingly on their own?
- To what extent do your thoughts and feelings toward the (group name) come to you naturally and instantly?

Appendix B-II: Elections Per Country Since Joining the European Union Respective Its Predecessor Institutions

Table B-16: Study 3: Election years per country

Country	Elections
United Kingdom	1974 (February), 1974 (October), 1979
(joined in 1973)	1983, 1987
	1992, 1997
	2001, 2005
	2010, 2015, 2017
Greece	1981, 1985, 1989 (June), 1989 (November)
(joined in 1981)	1990, 1993, 1996
	2000, 2004, 2007, 2009
	2011, 2012, 2013, 2014, 2015 (January), 2015 (September)
Portugal	1987
(joined in 1986)	1991, 1995, 1999
	2002, 2005, 2009
	2011, 2015

Appendix B-III: Variables from Eurobarometer Survey Series

Table B-17 covers the variables that were available in the individual Eurobarometer iterations per country and year. All variables listed, wherever available, were used for data preparation and/or analysis. Vote intention was used as a foundation to approximate party support across all countries and years. The voting behaviour in the last national elections and the party specified in the addendum to the party attachment question were used to ensure consistency in voting preferences wherever available. To illustrate, consider the Portuguese dataset from 1991. Only those respondents that answered the same party to the questions on (a) which party they intended to vote for in the next general election in their country (v397), (b) which party they voted for in the last national elections in their country (v399), and (c) which party their attachment related to were included in the analysis.

Table B-17. Study 3: Variables available for analysis per Eurobarometer iteration

	United Kingdom		Greece		Portugal	
	1987	1992	1985	1993	1987	1991
Eurobarometer	28	38	24	40	28	36
ZA study number	1713	2294	1542	2459	1713	2081
Nation	v7	v7	v7	v7	v7	v8
Life satisfaction	v17	v18	v17	v19	v17	v19
Happiness	–	–	v60	–	–	–
Vote intention	v465	v708	v73	v548	v465	v397
Voting behaviour last national elections	–	v709	–	v549	v467	v399
Party attachment	v461	v707	v58	v547	v461	v395
Party attachment (which party)	–	–	–	–	–	v396
Gender	v469	v717	v76	v559	v469	v407
Age	v470	v718	v77	v560	v470	v408

Note. Missing variable names in the table signify that the variable in question was not measured in that country in the specific year.

Appendix B-IV: Mediated Moderation Analysis from Study 4

Table B-18. Study 4: Model results for mediated moderation

Predictors	*b*	*SE*	*t*	*p*	95% CI
Step 1 (DV: Δ Subjective well-being)					
Intercept	–0.397	0.108	–3.67	<.001	[–0.61, –0.18]
Condition	1.151	0.149	7.75	<.001	[0.86, 1.44]
Attachment^{+}	–0.173	0.060	–2.88	.004	[–0.29, –0.05]
Condition × Attachment^{+}	0.309	0.077	3.99	<.001	[0.16, 0.46]
Step 2a (DV: Δ Self-esteem^{+})					
Intercept	–0.167	0.073	–2.30	.022	[–0.31, –0.02]
Condition	0.319	0.100	3.18	.002	[0.12, 0.52]
Attachment^{+}	–0.028	0.041	–0.69	.488	[–0.11, 0.05]
Condition × Attachment^{+}	0.010	0.052	0.19	.851	[–0.09, 0.11]
Step 2b (DV: Δ Self-efficacy^{+})					
Intercept	–0.210	0.077	–2.72	.007	[–0.36, –0.06]
Condition	0.393	0.106	3.71	<.001	[0.19, 0.60]
Attachment^{+}	–0.050	0.043	–1.17	.241	[–0.13, 0.03]
Condition × Attachment^{+}	–0.021	0.055	–0.38	.751	[–0.13, 0.09]
Step 3 (DV: Δ Subjective well-being)					
Intercept	0.681	0.449	1.52	.130	[–0.20, 1.56]
Condition	0.989	0.146	6.79	<.001	[0.70, 1.28]
Attachment^{+}	–0.146	0.058	–2.52	.012	[–0.26, –0.03]
Condition × Attachment^{+}	0.295	0.076	3.89	<.001	[0.15, 0.44]
Δ Self-esteem^{+}	0.234	0.088	2.67	.008	[0.06, 0.41]
Δ Self-esteem^{+} × Attachment^{+}	–0.017	0.039	–0.43	>.250	[–0.09, 0.06]
Δ Self-efficacy^{+}	0.239	0.083	2.89	.004	[0.08, 0.40]
Δ Self-efficacy^{+} × Attachment^{+}	0.045	0.036	1.24	.217	[–0.02, 0.12]

Note. CI = confidence intervals; $^{+}$ mean-centred.

Appendix B-V: Study 5 Team Split

Table B-19. Study 5: Study participants and social media followers per team

Team	Condition	Number of study participants	Number of Twitter followers	Number of Facebook fans
Arsenal F.C.	Victory	24	14,000,000	37,800,000
A.F.C. Bournemouth	Defeat	4	416,000	379,000
Brighton & Hove Albion F.C.	Defeat	3	215,000	247,000
Burnley F.C.	Victory	1	392,000	411,000
Chelsea F.C.	Defeat	19	12,400,000	47,700,000
Crystal Palace F.C.	Defeat	5	793,000	1,100,000
Everton F.C.	Victory	9	1,700,000	3,100,000
Huddersfield Town A.F.C.	Victory	4	175,000	145,000
Leicester City F.C.	Defeat	7	1,300,000	6,600,000
Manchester City F.C.	Victory	9	6,600,000	37,000,000
Manchester United F.C.	Victory	28	18,700,000	73,300,000
Newcastle United F.C.	Defeat	15	1,300,000	2,200,000
Stoke City F.C.	Defeat	2	1,000,000	1,200,000
Tottenham Hotspur F.C.	Victory	21	3,200,000	10,300,000
West Bromwich Albion F.C.	Victory	2	932,000	834,000
West Ham United F.C.	Defeat	7	1,430,000	2,300,000

Note. Follower numbers rounded (as at 1st February 2019).

C. The Effects of Vicarious Victories and Defeats on the Task Performance of Low- and High-Resilience Individuals

Abstract

Witnessing groups we self-categorise into succeed or fail is a pervasive feature of life. Whether these victories or defeats translate into positive or negative outcomes in individuals' lives has been a perennial issue in research. However, few have looked at whether group performance actually affects individuals' performance, and the evidence to date suggests that this is not the case. This paper constitutes the first to find a persistent effect of the performance (victory vs. defeat) of a group individuals self-categorise into on individuals' performance on unrelated skill tasks, contingent on individuals' psychological resilience. In two natural field experiments, I demonstrate that for high-resilience individuals, vicarious defeats lead to significant improvements in performance relative to vicarious victories (studies 1 and 2). For low-resilience individuals, this effect switches, with victors outperforming losers (study 2). I establish these findings in two life domains (sports and politics) and link them to self-affirmation theory.

Keywords: task performance, resilience, self-categorisation, learned helplessness, self-affirmation, minor life events

C.1 Introduction

People generally believe that the performance of groups they care about will rub off on them. This belief can even take unexpected forms. After the English national football team made it all the way to the semi-final of the 2018 Fédération Internationale de Football Association (FIFA) World Cup[1], for example, a nationally representative poll of Britons showed that 26% of respondents were more positive that the United Kingdom (UK) could succeed outside of the European Union[2] and linked their new-found optimism to England's performance in the World Cup (Deltapoll, 2018).

Prior research has shown that positivity can cloud our predictions (Forgas, Bower, & Moylan, 1990; Newby-Clark, Ross, Buehler, Koehler, & Griffin, 2000). Individuals are generally poor at predicting the future (Kahneman & Tversky, 1973), whether it relates to their self-perceptions (e.g. Armor & Taylor, 1998; Taylor & Brown, 1988), their feelings (e.g. Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998; Kermer, Driver-Linn, Wilson, & Gilbert, 2006; Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000), their knowledge (e.g. Ehrlinger, Johnson, Banner, Dunning, & Kruger, 2008; Kruger & Dunning, 1999; Tracey, Arroll, Barham, & Richmond, 1997), their behaviour (e.g. Osberg & Shrauger, 1986; S. J. Sherman, 1980; Wilson & LaFleur, 1995), or their performance (e.g. Byram, 1997; Glenberg & Epstein, 1985; Kornell & Bjork, 2009; R. E. Lucas, Diener, & Suh, 1996; Mabe & West, 1982). Hirt et al. (1992), for example, illustrated that while individuals anticipated that a victory or defeat of their favourite basketball team would impact their performance on motor, mental, and social skills, the participants of their study showed no such differences in actual performance after a vicarious victory or defeat.

[1] England came fourth in the end after being defeated in the third-place play-off by Belgium. This was England's best performance in a FIFA World Cup in 28 years and was regarded as a great success after years of mediocrity.

[2] This issue refers to the ongoing 'Brexit' process, the departure of the United Kingdom from the European Union. The exact question that was answered as part of the poll was 'Has England's progress in the World Cup made you feel more or less positive that the UK can succeed outside of the EU, or has it made no difference one way or the other?'

I examine whether the performance of groups of importance to individuals can indeed have an impact on individuals' performance in an unrelated field, but posit that this impact is contingent on individuals' psychological resilience. Resilience is a relatively stable personality trait (Ong, Bergeman, & Boker, 2009) that reflects individuals' capacity to quickly and effectively recover from adversity (e.g. J. Block & Kremen, 1996; Luthar, Cicchetti, & Becker, 2000; Masten, 2001; Roisman, 2005) and thus enables a quicker return to a state of equilibrium (Curtis & Cicchetti, 2003; Davidson, 2000). Indeed, individuals with higher levels of resilience recover more quickly from stress, both emotionally and physiologically (Fredrickson, Tugade, Waugh, & Larkin, 2003; Tugade & Fredrickson, 2004). Successful adaptation to stress can be achieved in different ways (Bonanno, 2004, 2005), for example through one's ability to recognise the effects of environmental stressors and to bounce back more quickly from them (i.e. recovery; Davidson, 2000; Masten, 2001) or through one's ability to protect and sustain positive outcomes, such as positive emotions, during unfortunate life events[3] (i.e. resistance; Masten, 2001; Ryff & Singer, 1998; Staudinger, Marsiske, & Baltes, 1993). In fact, positive emotions have been shown to help in the recovery from stressful events (Fredrickson & Levenson, 1998; Fredrickson, Mancuso, Branigan, & Tugade, 2000; Fredrickson et al., 2003; Tugade & Fredrickson, 2004) and to be a key component of psychological resilience (Tugade & Fredrickson, 2004; Tugade, Fredrickson, & Barrett, 2004). Individuals with higher levels of resilience tend to show higher emotionality (Klohnen, 1996) and to be more adept at emotion regulation (Masten, 2001; Rutter, 1987). In addition, positive emotions have been shown to increase resilience (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009). Similarly, moderate exposure to stressors can help build resilience (i.e. individuals 'toughen up', Dienstbier, 1989) for future occurrences. Little or extreme exposure to adversity, however, can be overwhelming (Liu, Reed, & Girard, 2017), causing (lasting) psychological (e.g. anxiety, depression, burnout) and physical damage (e.g.

[3] Recovery and resistance have been shown to represent two separate processes (Ong et al., 2006).

cardiovascular illnesses) to individuals (Southwick, Bonanno, Masten, Panter-Brick, & Yehuda, 2014). As individuals constantly face potential stressors in day-to-day life (Seery & Quinton, 2016), higher levels of psychological resilience are desired over lower levels.

A lot of research has examined the impact of resilience in the context of major life events (such as loss of a loved one, Bonanno, 2004; Bonanno, Moskowitz, Papa, & Folkman, 2005; Bonanno et al., 2002; Wortman & Silver, 1989). My research investigates minor life events (Kanner, Coyne, Schaefer, & Lazarus, 1981), in particular the effects of the outcome of events relating to an identity-relevant social group. Individuals categorise the world around them, including themselves (self-categorisation) and others (social categorisation). This process results in the construction of the personal identity as well as multiple social identities (e.g. a book lover, a Manchester United fan, a Labour Party supporter). During the self-categorisation process, a "shift in self-perception from personal to social identity" occurs (Brewer & Gardner, 1996; Turner, Oakes, Haslam, & McGarty, 1994, p. 454). Such a process can even result in the oneness of the self with the group (Swann, Gómez, Seyle, Morales, & Huici, 2009; Tropp & Wright, 2001). In fact, prior research has established that team successes and failures, to which individuals have made no contribution, are perceived as personal successes and failures (e.g. Cialdini et al., 1976; Hirt et al., 1992).

I investigate possible spill-over effects caused by a victory (defeat) of an identity-relevant social group (sports team, political party) on individuals' performance in a skill task unrelated to the context of that social group (and individuals' social identity), subject to individuals' level of psychological resilience. Specifically, I test if a boost of positive emotions – such as elation caused by the victory of a social group – can temporarily override a stable personality trait such as resilience by endowing low-resilient individuals with a strong belief in their own abilities akin to high resilience. While there is some evidence that the social support provided by association with a group, in general, and positive emotions, in particular, can buffer individuals against the impact of adverse events (S. Cohen & Wills, 1985; Ong,

Bergeman, Bisconti, & Wallace, 2006), I posit a *victory transferal* for low-resilient individuals. This means that I expect supporters of the winning group to significantly outperform supporters of the losing group on a skill task unrelated to the context in which the group performed. On the other hand, because high-resilience individuals have the capacity to bounce back in spite of stress and threats to them (J. H. Block & Block, 1980; Carver, 1998; Lazarus, 1993; Masten, 2001), I propose that there will not be any differences in performance between these resilient supporters of the winning and losing groups. This might be because such individuals proactively use positive emotions in order to resist and to more quickly recover from strenuous episodes (e.g. Fredrickson & Branigan, 2005; Fredrickson et al., 2003; Ong et al., 2006; Tugade & Fredrickson, 2004).

In what follows, I present evidence from two natural field experiments conducted around events involving social groups in two different life domains – sports and politics.

C.2 Study 1: FA Cup Final

C.2.1 Method

C.2.1.1 Purpose

The goal of study 1 was to test my main interaction hypothesis that the impact of performance of one's team on individuals' task performance in an unrelated area is contingent on individuals' level of psychological resilience. To this end, I conducted a 2 (group performance: victory vs. defeat) × 2 (identity salience: fan identity vs. team identity) between-subjects natural field experiment with two rounds of measurement around the final match of the 2017 Football Association (FA) Cup, an annual English football knock-out competition. I used the naturally occurring outcome of the FA Cup final (one winning and one losing team) as group performance. I manipulated identity salience in round 2 to check whether differences in which social identity is triggered would affect performance on the anagram tasks. The fan identity condition was designed to raise the salience of individuals' identity as a generic football fan with the goal of attenuating the effect

of their team's performance on their own task performance. In contrast, the team identity condition was designed to raise the salience of individuals' identity as a fan of their specific football team with the goal of amplifying the effect of their team's performance on their own task performance.

C.2.1.2 Participants

Round 1. I recruited five hundred and seventy UK residents via Prolific (Palan & Schitter, 2018; Peer, Brandimarte, Samat, & Acquisti, 2017) to participate in the first round of this study one day prior to the final of the 2017 FA Cup. I chose the FA Cup final because it is (a) the last match of the knock-out competition, thus resulting in clear-cut victory and defeat conditions, and (b) one of the season's sporting event highlights of a very popular sport (about 50% of UK residents are football fans, see MORI, 2003). A prerequisite for participation was that individuals were a fan of one of the two teams competing in the final (Arsenal F.C. and Chelsea F.C.). Of the 570 individuals that took part in the first round, 70 indicated that they were not a fan of any of the two teams contesting the 2017 FA Cup final. Nine respondents did not provide a (valid) Prolific ID. This left 491 respondents which I invited to the second round conducted one week after the 2017 FA Cup final.

Round 2. Two hundred and fifteen respondents (43.8% of the round 1 participants) took part in the second round of the study. I excluded 30 respondents because they failed attention checks and 15 respondents because they changed their team allegiance or claimed not to be football fans at all in round 2. Analysis proceeded with 170 participants (52.9% female) – 96 Arsenal fans (victorious team) and 74 Chelsea fans (defeated team).

As I was unsure of the size of the hypothesised interaction effect, I recruited as many respondents as possible in round 1 in order to meet my target of 50 respondents per cell (Simmons, Nelson & Simonsohn, 2018) for round 2 after accounting for response inconsistencies and low-quality submissions.

C.2.1.3 Procedure

Round 1. After providing informed consent, participants first answered questions relating to their psychological resilience (following B. W. Smith et al., 2008) and self-efficacy (following Chen, Gully, & Eden, 2001)[4]. This was followed by questions designed to screen for levels of depression (following Andresen, Malmgren, Carter, & Patrick, 1994). All items were measured on 11-point bipolar scales with differently labelled endpoints for low (0) and high (10). Participants then indicated whether they were a fan of one of the two teams competing in the 2017 FA Cup final and, if so, which one. After this, participants provided basic demographic information (gender, age, country of residence) and their Prolific ID, which was used to enable them to complete round 2 and to match responses from the two rounds. Participants were not informed of the second round at this stage.

Round 2. Respondents were randomly allocated to one of two experimental conditions: a fan identity condition or a team identity condition. In the fan identity condition, participants answered three different questions relating to them as football fans in general (without any mention of their football team), while in the team identity condition participants answered three questions relating to them as a fan of their particular football team. This manipulation and the corresponding fan and team identity salience questions were adapted from Levine, Prosser, Evans, and Reicher (2005)[5]. After responding to these questions, participants across all conditions were asked to solve five different five-letter anagrams, a type of word puzzle. They were instructed that all anagrams were solvable, that people on average took 15 seconds to solve each anagram[6], and to proceed to the next anagram

[4] For an overview of all measures used throughout this paper, please refer to appendix C-I.

[5] For the list of questions used per condition, please refer to appendix C-II.

[6] I provided an ambitious timing as a reference category (for a comparison of solution times for various five-letter anagrams, see Tresselt & Mayzner, 1965). Such attributional cues have been shown to impact the strength of a learned helplessness induction, with instructions suggesting an easy task facilitating the transition into a state of learned helplessness (Tennen & Eller, 1977). Learned helplessness describes a state in which

in case they could not solve a particular anagram[7]. Unbeknownst to the participants, the first two of the five anagrams were not solvable across conditions (B–P–A–E–S; R–O–K–U–W). Such unsolvable tasks have been repeatedly used to induce learned helplessnesss[6] (e.g. Klein, Fencil-Morse, & Seligman, 1976; Maier & Seligman, 1976), which has been identified as a key contributor to clinical depression (Abramson, Seligman, & Teasdale, 1978). Unsolvable tasks tend to be followed by solvable ones to assess the effect of the learned helplessness induction. While some researchers have used different categories of tasks in the unsolvable and solvable trials, I followed Schmeck and colleagues (Schmeck & Clements, 1971; Schmeck & Dunckley, 1973) and only used anagrams. The two unsolvable anagrams were thus followed by three relatively easy solvable anagrams: (a) B–I–A–T–H, (b) U–L–A–T–F, (c) E–R–L–K–C. The three solvable anagrams were taken from Hiroto and Seligman (1975) and were ordered in a fixed pattern (see Benson & Kennelly, 1976; Coyne, Metalsky, & Lavelle, 1980; Hiroto & Seligman, 1975) – 3–4–2–5–1 – so they would correctly spell (a) HABIT, (b) FAULT, (c) CLERK. For each solvable anagram, there was only one possible solution. I recorded the time participants spent working on each individual anagram as an indicator of task persistence. After working on the anagram tasks, participants were asked to which category the questions they answered at the beginning of the study referred to[8] (two of the response options corresponded to the fan identity resp. team identity conditions). Participants then provided their Prolific ID and were debriefed. I employed several measures to identify careless or insufficient effort responding throughout the second round of the study (Berinsky, Margolis, & Sances, 2014; Curran, 2016; Huang, Liu, & Bowling, 2015; Meade & Craig, 2012).

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individuals have come to expect that outcomes are independent of their own actions, that is, that nothing that they can do has an impact on the outcome (Maier & Seligman, 2016).

[7] For the complete set of instructions, please refer to appendix C-III.

[8] 'At the beginning of the study, you answered three open-ended questions. What were the questions about?' Response options (order randomised): (a) my job, (b) my flat/house, (c) my life as a football fan, (d) my Premier League football team, (e) my family & friends.

C.2.2 Results

Group performance (–1 = defeat, 1 = victory), identity salience (–1 = fan identity, 1 = team identity), and gender (–1 = male, 1 = female) were contrast-coded (Judd, McClelland, & Culhane, 1995) and all continuous predictors (age, resilience, self-efficacy, depression, task persistence) were mean-centred (J. Cohen, Cohen, West, & Aiken, 2003; Dalal & Zickar, 2012). In preparation for data analysis, I computed a task performance score that reflected how many of the solvable anagrams participants actually solved. This score ranged from zero to three in integers. As the dependent variable (number of solved anagrams) was a count variable, I planned to analyse the data using Poisson models (following W. Gardner, Mulvey, & Shaw, 1995). Exploratory analysis of the data showed that they did not suffer from an inflated number of zero counts, but that they were underdispersed (dispersion parameter: Pearson $\chi^2/df < 1$). I therefore analysed the data using generalized Poisson regression models (Consul, 1989; Consul & Jain, 1973) with maximum likelihood estimation (Nelder & Wedderburn, 1972) as these models represent a suitable approach to fitting underdispersed count data (Consul & Famoye, 1992; Hilbe, 2014).

There were no differences in gender split, age, psychological resilience, perceived self-efficacy, levels of depression, or task persistence across the conditions. For the sample descriptive statistics, please refer to table C-1, and for the correlations table of all continuous variables to table C-2.

Table C-1. Study 1: Sample descriptive statistics

	Victory Condition		Defeat Condition		
Parameters	Fan Salience	Team Salience	Fan Salience	Team Salience	*p*
n	46	50	39	35	
Gender split	45.7% female	58.0% female	51.3% female	57.1% female	.676
M_{Age}	37.7 y. (11.5)	36.4 y. (12.2)	35.4 y. (10.6)	35.1 y. (9.9)	.786
$M_{\text{Resilience}}$	5.70 (2.12)	5.68 (2.28)	5.56 (2.36)	6.25 (2.06)	.300
$M_{\text{Self-efficacy}}$	6.27 (1.75)	6.65 (1.75)	6.78 (2.04)	7.30 (1.97)	.797
$M_{\text{Depression}}$	3.75 (1.62)	3.84 (1.92)	3.60 (1.80)	3.05 (1.62)	.231
$M_{\text{Task Persistence}}$	66.5 sec (32.2)	73.7 sec (30.4)	71.0 sec (41.8)	69.0 sec (38.0)	.404

Note. Standard deviations are in parentheses.

Table C-2. Study 1: Correlations for continuous variables

Variable	1	2	3	4	5	6
1. Task performance	–					
2. Task persistence	.067	–				
3. Resilience	.012	–.009	–			
4. Self-efficacy	.027	.028	**.587**	–		
5. Depression	–.069	–.120	**-.650**	**-.567**	–	
6. Age	.033	–.004	.031	.061	–.073	–

Note. Correlations in bold significant at $p < .001$.

C.2.2.1 Impact of Fan Versus Team Identity Salience

I first fit generalised Poisson regression models (DV: task performance) to check whether the impact of the group performance (victory vs. defeat), the level of psychological resilience, and their interaction differed between the two identity salience conditions (fan identity vs. team identity). Surprisingly, these analyses showed that there were no differences in the impact of the group performance (b = 0.065, SE = 0.051, p = .201, 95% CI = [–0.03, 0.17]), the level of psychological resilience (b = –0.013, SE = 0.023, p = .577, 95% CI = [–0.06, 0.03]), nor their interaction (b = –0.005, SE = 0.024, p = .851, 95% CI = [–0.05, 0.04]) on task

performance between the two identity salience conditions (for full results for all three models, please refer to table C-3).

Table C-3. Study 1: Generalised Poisson regression results for task performance

Parameters	Model 1	Model 2	Model 3
Intercept	0.451***	0.451***	0.439***
	(0.051)	(0.051)	(0.052)
Group performance	–0.073		–0.069
	(0.051)		(0.052)
Resilience^{+}		0.002	0.007
		(0.023)	(0.024)
Group performance × Resilience^{+}			–0.052*
			(0.024)
Identity salience	0.064	0.064	0.052
	(0.051)	(0.051)	(0.052)
Group performance × Identity salience	0.065		0.074
	(0.051)		(0.052)
Resilience^{+} × Identity salience		–0.013	–0.003
		(0.023)	(0.024)
Group performance × Resilience^{+} ×			–0.005
Identity salience			(0.024)

Note. Unstandardized Poisson regression coefficients are displayed, with standard errors in parentheses.

***$p < .001$, *$p < .05$; $^{+}$ mean-centred.

This lack of difference in the results between the two salience conditions might be because the manipulation was not strong or clear enough for participants for my particular research purpose. In fact, at the end of the second round, I asked participants to indicate what the identity salience questions referred to (answer categories were provided). I found significant differences (Likelihood Ratio $\chi^2 = 42.174$, $p < .001$) in the percentage of participants correctly identifying which salience condition they were in, with 97.7% of participants in the fan identity condition making the right allocation, while only 60% of the participants in the team identity condition made the right allocation (i.e. they stated that the questions they had to answer at the beginning of the study referred to their life as

a fan of their particular football team). Data were therefore collapsed across the identity salience conditions and analysis proceeded with an examination of the effects of the group performance, the level of psychological resilience, and their interaction on task performance.

C.2.2.2 Main Effects

In line with prior research, I found no effect of group performance (victory vs. defeat) on task performance, so participants whose team had won were not more successful at solving the anagram tasks ($M_{\text{Victory}} = 1.48$, $SD_{\text{Victory}} = 1.07$) than those participants whose team had lost ($M_{\text{Defeat}} = 1.69$, $SD_{\text{Defeat}} = 0.99$), $b = –0.066$, $SE = 0.051$, $p = .193$, $d = 0.20$[9], 95% confidence interval (CI) = [–0.17, 0.03]. Similarly, I found no effect of level of psychological resilience on task performance, $b = 0.004$, $SE = 0.023$, $p = .877$, 95% CI = [–0.04, 0.05].

C.2.2.3 Interaction

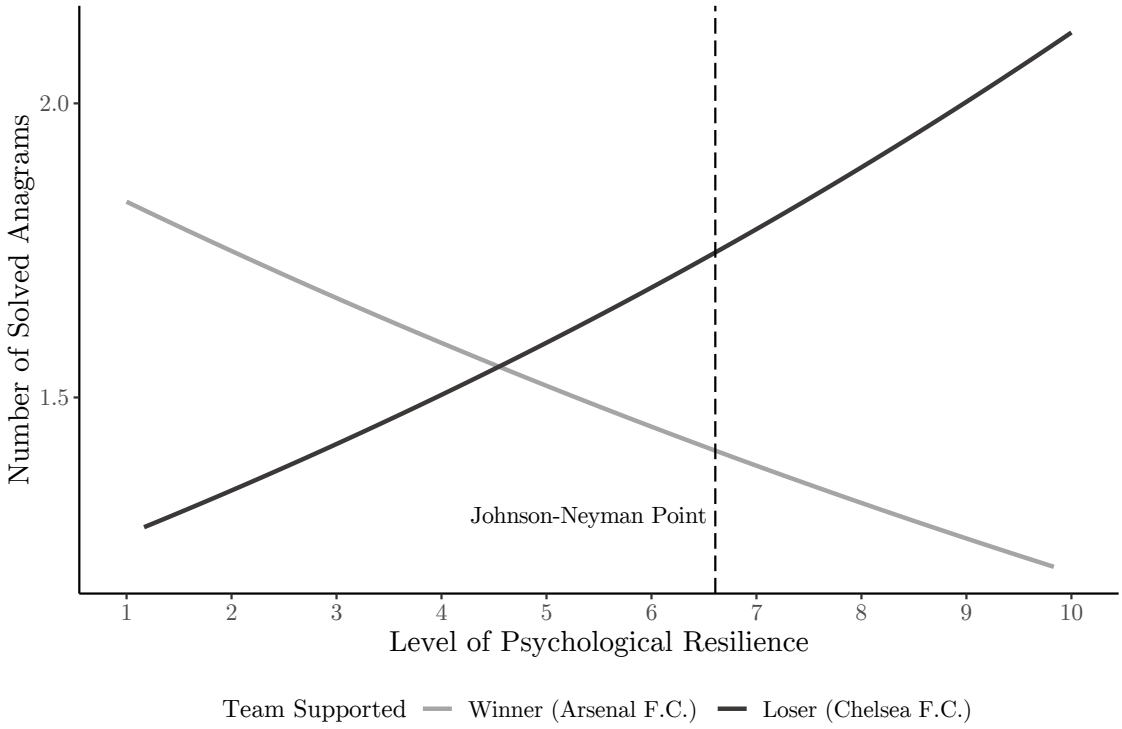
When including group performance, psychological resilience, and their interaction into the model, I found that the level of psychological resilience moderated the impact of the group performance on individuals' task performance, $b = –0.052$, $SE = 0.023$, $p = .025$, 95% CI = [–0.10, –0.01]. This confirmed my main hypothesis.

I then performed a floodlight analysis (Aiken & West, 1991; Spiller, Fitzsimons, Lynch, & McClelland, 2013) to further examine this interaction effect. Specifically, I implemented Bauer and Curran's (2005) generalisation of the original Johnson-Neyman technique (Johnson & Fay, 1950; Johnson & Neyman, 1936) to determine for what levels of psychological resilience there was a significant difference ($p < .05$) between how supporters of the different teams performed on the anagram tasks. This analysis yielded a Johnson-Neyman point of 6.61 on an 11-point bipolar scale with endpoints 0 and 10, indicating that the effect of outcome of the FA Cup final on task performance differed significantly for those individuals high (> 6.61) in psychological resilience. A visual examination of the interaction (see figure C-1) did

[9] Throughout this paper, Cohen's d (J. Cohen, 1962) has been calculated using pooled standard deviation (Cumming, 2014).

not confirm my hypothesis that low-resilience supporters of the winning team would significantly outperform their low-resilience counterparts supporting the losing team. Instead, for those individuals with high levels of psychological resilience, losers outperformed winners on the anagram tasks – a difference I did not anticipate.

Figure C-1. Study 1: Task performance as a function of group performance and resilience



C.2.2.4 Controls

The above results hold when controlling for task persistence, perceived self-efficacy, levels of depression, age, and gender. Task persistence refers to "directed effort extended over time" (Locke, Shaw, Saari, & Latham, 1981, p. 132). I included a measure of task persistence, operationalised as the time individuals spent attempting to solve the three solvable anagrams (see Feather, 1963; Shah, 2003), as a covariate because prior research has shown that persistence generally impacts outcomes across different contexts (Brandon et al., 2003; Locke et al., 1981; B. J. Lucas & Nordgren, 2015; Shah & Kruglanski, 2003), with higher persistence

resulting in better performance. Similarly, prior work has linked self-efficacy and task performance (Wood, Bandura, & Bailey, 1990), with meta-analyses (Moritz, Feltz, Fahrbach, & Mack, 2000; Stajkovic & Luthans, 1998) showing positive correlations between self-efficacy on the one hand and performance in sports and at work on the other hand. Experimental research has even established a causal link between the two variables, with higher perceived self-efficacy resulting in improved task performance (Locke, Frederick, Lee, & Bobko, 1984). Moreover, self-efficacy has been linked to learned helplessness, with Bandura (1977) arguing that people might give up on tasks for one of two reasons: (a) either because they do not think that they will be able to succeed or (b) because they come to learn that they cannot succeed. As learned helplessness is a key contributor to levels of clinical depression (Seligman, 1975), I included a measure of depression as I expected that the task-based learned helplessness induction may exacerbate related symptoms and therefore worsen the task performance of clinically depressed individuals.

Given the focus on solving word puzzles as the dependent variable, gender was included to account for established differences in verbal ability between men and women (Hyde & Linn, 1988). Similarly, age was included as cognitive functioning tends to decrease with older age (Salthouse, 1996). These variables are used as control variables throughout the paper for the above reasons. For full results, please refer to table C-4, model 4.

Table C-4. Study 1: Generalised Poisson regression results for task performance with data collapsed across identity salience conditions

Parameters	Model 1	Model 2	Model 3	Model 4
Intercept	0.458***	0.451***	0.446***	0.445***
	(0.051)	(0.051)	(0.051)	(0.052)
Group performance	–0.066		–0.064	–0.061
	(0.051)		(0.051)	(0.053)
Resilience^{+}		0.004	0.005	–0.012
		(0.023)	(0.023)	(0.034)
Group performance × Resilience^{+}			–0.052*	–0.056*
			(0.023)	(0.024)
Task persistence^{+}				0.001
				(0.001)
Self-efficacy^{+}				–0.012
				(0.036)
Depression^{+}				–0.038
				(0.041)
Age^{+}				0.000
				(0.005)
Gender				–0.038
				(0.053)

Note. Unstandardized Poisson regression coefficients are displayed, with standard errors in parentheses.
***$p < .001$, *$p < .05$; $^{+}$ mean-centred.

C.2.3 Discussion

The results from the first natural experiment in a sports context provide initial support for my main hypothesis that the impact of the group's performance on individuals' task performance in an unrelated area is moderated by individuals' level of psychological resilience. However, surprisingly there was no difference in the performance on the anagram tasks between low-resilience supporters of the winning and losing teams. Collapsing the data across the two salience conditions potentially masked differences between low-resilience supporters of the winning and losing teams. Instead, there were significant differences between the highly resilient individuals: Supporters of the losing team outperformed supporters of the winning

team. This might be due to psychological reactance, although further studies are required to establish whether this is a consistent effect or just an anomaly of this study. I furthermore did not find any differences in task performance between the identity salience conditions using Levine et al.'s (2005) manipulation.

C.3 Study 2: UK General Election

C.3.1 Method

C.3.1.1 Purpose

Study 2 served two main purposes: First, to provide a conceptual replication of the hypothesised and observed interaction effect in another context – politics. Second, to further explore whether the pronounced effect for individuals with high levels of psychological resilience and the null effect for individuals with lower levels of resilience would persist or whether they just constituted idiosyncrasies of the initial study. I therefore conducted another natural field experiment around the 2017 UK General Election. The UK has traditionally had a de facto two-party political system (Gordon & Segura, 1997), operationalised here as two parties (Conservative Party, Labour Party) having a realistic chance of achieving an overall majority in parliament. I therefore used the number of seats won in the House of Commons (elected chamber of the UK parliament) as an indicator of group performance, with the party that would command the highest number of members of parliament (MPs) declared as the winner.

C.3.1.2 Participants

Round 1. I recruited five hundred and seventy residents of England, Scotland, and Wales[10] via Prolific (Palan & Schitter, 2018; Peer et al., 2017) to participate in the first round of this study one day prior to the 2017 UK General Election (Wednesday). A prerequisite for participation was that individuals had to be a supporter of a UK political party contesting the election. A nondisclosed filter

[10] I excluded Northern Ireland as the two main national parties (Conservative Party, Labour Party) do not field candidates there.

criterion was that individuals had to be registered to vote in the general election (which necessitates British citizenship and a minimum age of 18). Of the 570 individuals that took part in the first round, eight participants stated that they were not allowed to vote in the general election, 16 participants stated that they had not registered to vote, 14 did not support a political party, and 59 respondents failed attention checks. A further respondent did not provide a (valid) Prolific ID. For these reasons, I excluded these respondents, which left 472 respondents that were invited to take part in the second round conducted on the day after the 2017 UK General Election (Friday).

Round 2. Four hundred and eighteen respondents (88.6% of the round 1 participants) took part in the second round of the study. I excluded 19 respondents because they failed attention checks, 44 respondents because they claimed to support a different party or no party at all after the election, 24 respondents because they did not vote in the election and 57 respondents because they voted for a party other than the one they previously stated they support. This left 274 respondents, 154 of which stated that they were supporters of the Labour Party and 63 of which stated that they were supporters of the Conservative Party. Analysis hence proceeded with these 217 participants (64.5% female).

As I tried to replicate the findings from study 1, I targeted a higher minimum sample size of 100 respondents per cell. The asymmetry in the number of supporters of the Labour and Conservative parties in my sample roughly maps the differences in overall party membership in the UK (Audickas, 2018) and can also be explained with the 'shy Tory' phenomenon (Curtice, 1997; Elgot, 2015), that is, the phenomenon that conservative voters in the UK tend not to admit to pollsters that they are voting for the Conservative Party.

C.3.1.3 Procedure

The procedure for both rounds was similar to that of study 1.

Round 1. Upon providing informed consent and agreeing to participate, participants first answered the same resilience, self-efficacy, and depression

questions as in study 1. Participants then specified whether they were allowed to vote in the upcoming general election, whether they were registered to vote, and, if so, whether they supported one of the political parties contesting the election. Those that stated that they supported a party then specified which party they supported. This was followed by questions on how many years the participants had been a supporter of their particular party and how they expected their party to perform in the upcoming general election ('How do you expect the (party name) to perform in the 2017 UK General Election?'; measured on an 11-point bipolar scale with anchors 'very poorly' (0) and 'very well' (10)). Participants then provided basic demographic information (age, gender, country of residence) along with their Prolific ID, which was used to invite them to round 2 of the study and to match their responses from both rounds. Participants were informed of the second round upon concluding the first round.

Round 2. Participants received an invitation email once the second round of the study was available on the Prolific platform. In contrast to study 1, the second round of study 2 was identical for all respondents. I first asked participants to specify which UK political party they support in order to check for consistency of responses across the two rounds. This was followed by an assessment of how their party performed in the general election, in analogy to the prediction from round 1 ('From your perspective, how did the (party name) perform in the 2017 UK General Election?'; measured on an 11-point bipolar scale with anchors 'very poorly' (0) and 'very well' (10)). Participants then answered questions on whether they had voted in the general election, and, if so, whether they had voted for the party they support. Those individuals that voted for another party were asked to specify why they voted for another party[11]. Participants were then shown how many members of parliament (MPs) each party won in the election, before proceeding to the anagram tasks. The instructions and the individual tasks were identical to study 1. Participants then provided their Prolific ID and were debriefed.

[11] Participants were provided with a number of response options, including tactical voting, party did not field a candidate, etc. plus an open-response field.

C.3.2 Results

I again computed the number of solved anagrams as the indicator of task performance. Furthermore, in order to gauge whether the two parties performed better or worse than their supporters expected, I calculated a difference measure for group performance appraisal by subtracting the expected score from the actual score (i.e. score from round 2 – score from round 1). A positive (negative) score thus indicated that the party performed better (worse) in the elections than the specific supporter expected, while a score of zero indicated that the party performed exactly as the supporter expected.

Following study 1, group performance (–1 = defeat, 1 = victory) and gender (–1 = male, 1 = female) were contrast-coded and all continuous predictors (age, resilience, self-efficacy, depression, task persistence, length of support), except group performance appraisal, were mean-centred.

Crucially, participants did not differ in terms of their psychological resilience, perceived self-efficacy, levels of depression, task persistence, or gender. Supporters of the Conservative Party, however, were 10 years older on average than supporters of the Labour Party, which is in line with the general observation that individuals tend to become more (likely to vote) conservative with increasing age (Feather, 1979; Truett, 1993). Similarly, it was not surprising that the length of time for which individuals had supported their party was different given the mean age differences. Lastly, and in line with polling leading up to the election ("Election polls tracker 2017: Survation has Labour almost level with Tories," 2017), supporters of the winning party (Conservative Party) assessed their party's actual performance in the election significantly worse relative to their expectations of their party's performance (as stated ahead of the election), while the performance of the losing party (Labour Party) in the election exceeded the expectations of its supporters. For all results, please refer to table C-5, and for the correlations table of all continuous variables to table C-6.

I followed the same analysis approach as in study 1 because the data were again underdispersed (dispersion parameter: Pearson $\chi^2/df < 1$).

Table C-5. Study 2: Sample descriptive statistics

	Group performance		
Parameters	Victory	Defeat	*p*
n	154	63	
Gender split	68.3% female	63.6% female	.518
M_{Age}	47.5 years (10.8)	36.7 years (11.2)	<.001
$M_{\text{Resilience}}$	5.93 (2.26)	5.62 (2.35)	.378
$M_{\text{Self-efficacy}}$	6.96 (1.93)	6.70 (1.71)	.338
$M_{\text{Depression}}$	3.59 (2.05)	4.13 (2.01)	.078
$M_{\text{Task persistence}}$	79.2 sec (63.0)	69.0 sec (46.2)	.189
$M_{\text{Group performance appraisal}}$	–3.87 (2.59)	1.84 (2.19)	<.001
$M_{\text{Length of support}}$	19.6 years (15.3)	13.3 years (12.3)	.002

Note. Standard deviations are in parentheses.

Table C-6. Study 2: Correlations for continuous variables

Variable	1	2	3	4	5	6	7	8
1. Task performance	–							
2. Task persistence	–.023	–						
3. Group performance appraisal	–.055	–.075	–					
4. Resilience	.074	.018	–.041	–				
5. Self-efficacy	.062	.008	*–.142*	**.708**	–			
6. Depression	–.086	.018	.087	**-.742**	**-.608**	–		
7. Age	*.145*	.109	**-.346**	*.151*	.126	*–.153*	–	
8. Length of support	.108	–.008	*–.148*	.095	.051	–.090	**.690**	–

Note. Correlations in bold significant at $p < .001$, correlations in italics significant at $p < .05$.

C.3.2.1 Main Effects

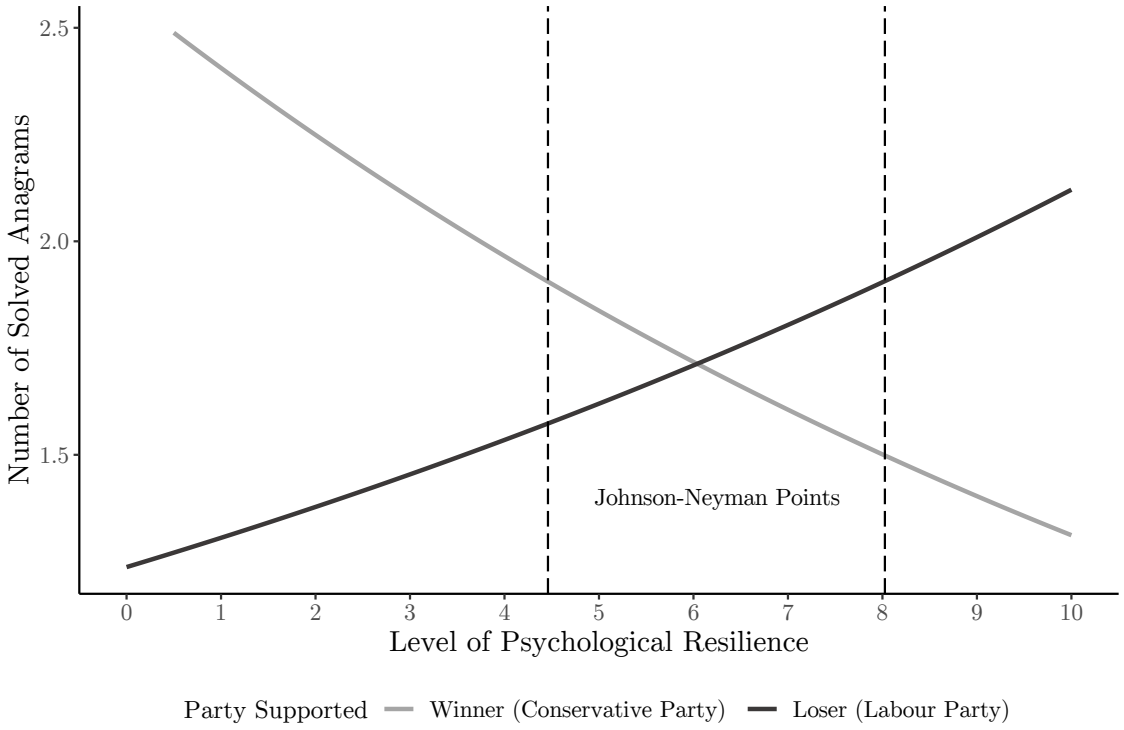
Replicating the results from study 1, neither the group performance ($M_{\text{Victory}} = 1.75$, $SD_{\text{Victory}} = 1.06$; $M_{\text{Defeat}} = 1.69$, $SD_{\text{Defeat}} = 0.97$; $b = 0.017$, $SE = 0.044$, $p = .700$, $d = 0.06$, 95% CI = [–0.07, 0.10]) nor the level of psychological resilience ($b = 0.019$, $SE = 0.017$, $p = .277$, 95% CI = [–0.01, 0.05]) had an impact on individuals' task performance.

C.3.2.2 Interaction

Replicating the findings from study 1, when including group performance, psychological resilience, and their interaction into the model, I found that the level of psychological resilience moderated the impact of the group's performance on individuals' task performance in an unrelated area, $b = –0.061$, $SE = 0.019$, $p = .001$, 95% CI = [–0.10, –0.02].

I again followed up the significant interaction with a floodlight analysis which resulted in Johnson-Neyman points of 4.46 and 8.03. This means that the effect of the outcome of the UK general election on task performance differed significantly for those individuals low (< 4.46) and very high (> 8.03) in psychological resilience. This time, a visual examination of the interaction (see figure C-2) confirmed my hypothesis that low-resilience supporters of the winning party significantly outperformed their low-resilience counterparts supporting the losing party. In line with study 1, I also replicated that for those individuals with high levels of psychological resilience, losers outperformed winners on the anagram tasks.

Figure C-2. Study 2: Task performance as a function of group performance and resilience



C.3.2.3 Controls

The above results hold when controlling for task persistence, perceived self-efficacy, levels of depression, age, gender, group performance appraisal, and the number of years participants have supported their party. The last two variables were included because I assumed that differences in expectations might reduce the overall effect of the group performance and because repeated exposures to victories or defeats (the likelihood of which increases as length of support increases) might reduce their effect (Luhmann & Eid, 2009). The remaining control variables were included for the reasons laid out in study 1. For the full results, please refer to table C-7, model 4.

Table C-7. Study 2: Generalised Poisson regression results for task performance

Parameters	Model 1	Model 2	Model 3	Model 4
Intercept	0.541***	0.533***	0.540***	0.505***
	(0.044)	(0.040)	(0.043)	(0.051)
Group performance	0.017		0.020	–0.038
	(0.044)		(0.043)	(0.069)
Resilience^{+}		0.019	–0.007	–0.027
		(0.017)	(0.019)	(0.032)
Group performance × Resilience^{+}			–0.061**	–0.057**
			(0.019)	(0.019)
Task persistence^{+}				–0.000
				(0.001)
Self-efficacy^{+}				0.008
				(0.034)
Depression^{+}				–0.021
				(0.030)
Age^{+}				0.006
				(0.005)
Gender				0.031
				(0.042)
Group performance appraisal				–0.008
				(0.018)
Length of support^{+}				–0.000
				(0.004)

Note. Unstandardized Poisson regression coefficients are displayed, with standard errors in parentheses.
$^{***}p < .001$, $^{**}p < .01$; $^{+}$ mean-centred.

C.3.3 Discussion

Study 2 replicates not only the key interaction hypothesis from study 1, but also shows that the unexpected difference between high-resilience individuals I observed in study 1 represents a consistent pattern. Again, for those individuals with high levels of psychological resilience, the losers outperformed the winners. In contrast, low-resilience individuals supporting the winning group significantly outperformed their low-resilience counterparts supporting the losing team. I observed these effects even in a scenario in which victory and defeat were not as clear-cut as in study 1;

the 2017 UK General Election was unusual in the sense that it did not result in a single party winning an overall majority of seats in parliament – only the third parliament in which this has happened since the conclusion of the Second World War.

C.4 General Discussion

People have the inherent belief that the performance of groups they self-categorise into somehow affects their own performance. Addressing this belief, this research is one of the first to explain why group performance can have spill-over effects on individuals' performance – even in unrelated settings. In two natural experiments, I showed that group performance (victory vs. defeat) significantly impacted the task performance of individuals (self-categorising into these groups) as a function of individuals' psychological resilience. In particular, I found diametrical effects of winning versus losing on individuals with low levels of resilience and those individuals with high levels of resilience: For individuals with high levels of resilience, supporters of the losing group outperformed supporters of the winning group on the anagram tasks following a learned helplessness induction (studies 1 and 2). For low-resilience individuals, this effect switched: vicarious victories (relative to vicarious defeats) significantly improved their performance in solving anagrams (study 2). Crucially, I demonstrated these effects in different contexts (sports and politics) and with group performance outcomes that vary in ambiguity (i.e. a clear-cut victory in the sports context, a more ambiguous victory in the politics context).

Individuals often face multiple stressors at any one point in their everyday lives (Almeida & Kessler, 1998; Epstein & Katz, 1992; Fleming, Baum, & Singer, 1984; Ilfeld, 1976). Throughout the studies, I therefore made use of two separate stressors – one that applied to all participants across all conditions (i.e. the learned helplessness induction) and one that additionally applied to those participants who supported the losing groups (i.e. the defeat of their team or party). Stress refers to the process through which such environmental stressors can negatively affect

individuals (McEwen, 1998). One important source of stress are threats to one's perceived self-worth (Creswell et al., 2005). Such threats are so powerful because they jeopardize the universal human need for positive self-regard (Allport, 1938; Krueger, 1998; Sedikides, Gaertner, & Toguchi, 2003; Sedikides, Gaertner, & Vevea, 2005; Taylor & Brown, 1988). People draw this sense of self-regard from two key sources, their personal identity and their multiple social identities (Crocker, Luhtanen, Cooper, & Bouvrette, 2003; Raskin, Novacek, & Hogan, 1991), and the social groups built around social identities are a key aspect of how individuals see themselves (Abrams & Hogg, 1988; Tajfel & Turner, 1986). Moreover, personal and social identities tend to overlap (G. L. Cohen & Garcia, 2005; E. R. Smith, Coats, & Walling, 1999; E. R. Smith & Henry, 1996) in the sense that they both support the maintenance of self-integrity (e.g. Gaertner, Sedikides, & Graetz, 1999). These identities can thus be used as respective anchors for each other (e.g. Cadinu & Rothbart, 1996; Otten, 2002), or put differently: one way of dealing with a threat in one domain is to activate other aspects of the self (in another domain) and reaffirm those (Steele, 1975). Such a shift in focus and corresponding self-affirmation can protect individuals' positive self-regard in life domains that are different from the domain of the original environmental stressor (Creswell et al., 2005). Across domains, the importance of the respective identity to the overall self-concept is decisive for whether threats are experienced as such and have an effect (Boninger, Krosnick, & Berent, 1995; D. K. Sherman, Kinias, Major, Kim, & Prenovost, 2007).

My findings for low-resilience individuals thus link to prior research, which found that if others are included in one's conception of the self, then 'their' successes become 'my' successes (W. L. Gardner, Gabriel, & Hochschild, 2002). I propose that their group's victory gave low-resilience individuals a boost through the positive emotions associated with winning (Matsumoto & Willingham, 2006) that endowed individuals with resources akin to increased resilience (Cohn et al., 2009). This rush of positive emotions rendered the learned helplessness induction

ineffective. In other words, this *victory transferal* gave supporters wings on the anagram tasks.

Similarly, research on social identity threats (Steele, Spencer, & Aronson, 2002) has linked identity threats to poorer performance (Spencer, Steele, & Quinn, 1999; Steele, 1997; Steele & Aronson, 1995). In my research, the vicarious group defeats represent such an identity threat. Given that low-resilience individuals supporting the losing group faced two separate threats (i.e. group defeat and learned helplessness induction), the absence of positive emotions and their lack of ability to cope with such stressors quickly resulted in them significantly underperforming relative to their low-resilience peers that supported the winning group.

While the social group's defeat represents an adverse event that threatens individuals' social identity (i.e. being a supporter of that group), high-resilience individuals – by definition – are more likely to 'brush it off' and recover from this negative episode than low-resilience individuals. Moreover, high-resilience individuals may counter this social identity threat with a shift in focus on another part of the self-concept and sub-conscious self-affirmation, thus adopting a 'now more than ever' attitude toward the task presented to them. This reasoning is in line with self-categorisation theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987), which suggests that identity threats cause individuals to revert to another, successful self-category in order to restore a positive sense of self (Elsbach & Kramer, 1996). In support of this notion, it has been established that group success is perceived as personal success (see Cialdini et al., 1976; Cialdini & Richardson, 1980), but group failure does not necessarily translate into an experience of personal failure (Snyder, Lassegard, & Ford, 1986). Disassociating from the group by focussing on one's personal identity or another social identity may thus work to negate the stressor (Hirt et al., 1992; Van Vugt & Hart, 2004). To prove their own self-worth, such individuals stake it on another context (Crocker & Wolfe, 2001) – in this case the anagram tasks – and ultimately end up being more successful.

High-resilience supporters of the winning group, on the other hand, have fulfilled their need for positive self-regard through their group's positive performance and

can thus quickly overcome a – in comparison – minor blow to their sense of self-worth introduced by the unsolvable anagram tasks. This is consistent with Tugade and Fredrickson (2004), who stated that highly resilient individuals perceive stressful situations (such as the task-based induction of learned helplessness) as less threatening than low-resilient individuals.

Overall, I suggest that performance in any one task is primarily driven by three main factors: individuals' innate ability, individuals' persistence or effort, and individuals' belief in themselves. Given that I did not find any differences in the key pre-event measures across the two studies, one can reasonably assume that there is a certain level of random allocation to the natural groups I utilised (see Parkes, 1982). This provides tentative evidence that any differences in performance I observed are not due to ability. Similarly, given that task persistence did not differ across the groups and that controlling for it did not weaken the key interaction effect, I rule this out as an explanatory mechanism, too. This leaves individuals' subjective beliefs, which I propose are influenced by self-affirmation processes operating outside of individuals' awareness (D. K. Sherman et al., 2009).

Interestingly, while one would suspect that raising the salience of an identity should impact the effects of the identity threat on individuals and their self-affirmation attempts (G. L. Cohen et al., 2007), I did not find such an effect when using Levine et al.'s (2005) manipulation of social identity salience. Given that their results in a prosocial behaviour context were very pronounced, my study suggests that this manipulation might not be effective (a) in an online environment and (b) with a different dependent variable.

While the sports study provided relatively clear-cut winners and losers, the politics study – by accident rather than design – provided a more ambiguous result, comparable to what Larsen et al. (2004, p. 325) termed disappointing wins ('good outcomes that could have been better') and relieving losses ('bad outcomes that could have been worse'). In my case, this assessment was not due to counterfactual comparisons (Roese, 1997), but to participants' assessment of group performance after the event relative to their expectations before the event.

Future research might consider the use of an adjusted indicator of task performance. Given the relatively small number of anagrams participants were confronted with and the relatively subtle learned helplessness induction, the question remains over how many trials the effects I observed would persist. Similarly, given the uncertainty that was entailed in the anagram setup (in contrast to other studies, e.g. Benson & Kennelly, 1976, I provided no – false or correct – feedback to participants), future research might consider the use of continuous performance feedback (e.g. Elliot et al., 2000; Lawrence & Klein, 2013; Rakestraw & Weiss, 1981) in order to assess whether certainty on their performance will exacerbate or weaken the effects for individuals.

Cross-cultural research has furthermore shown that persistence on tasks after failure (Heine et al., 2001) as well as the importance individuals attach to performance on such tasks differ across cultures (Hetts, Sakuma, & Pelham, 1999). While some (e.g. Heine, Lehman, Markus, & Kitayama, 1999) have called into question whether there is a need for positive self-regard in more collectivist cultures, it is possible that the need for positive self-regard relates more to social rather than personal identities in such countries (Hetts et al., 1999). Given these and other findings that have shown strong effects of current cultural contexts outside of individuals' home country (Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997), future research could seek to extend these findings across different countries and cultures to account for variations in the world population (Henrich, Heine, & Norenzayan, 2010).

In sum, although group allegiance and being witness to these groups' victories and defeats are pervasive features of our everyday lives, few studies have examined whether such group performances can affect individuals' performance. The few that did found no link between group performance and individual performance. In contrast, I demonstrate that the performance of groups individuals self-categorise ito can indeed impact the performance of those individuals. Crucially, I establish that this effect is contingent on individuals' psychological resilience. My findings indicate that positive emotions caused by group wins can temporarily equip

otherwise low-resilient supporters with mental strengths to overcome a stressor akin to higher levels of resilience – an effect I termed *victory transferal*. Furthermore, my findings suggest that highly resilient individuals shift their focus from social to personal identity and use self-affirmation to counterbalance environmental stressors. I show that these effects do not necessarily depend on the salience of the social identity nor the certainty of the group performance outcome.

C.5 References

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C.6 Appendices

Appendix C-I: Measures

Resilience (following B. W. Smith et al., 2008)

Items were anchored at 'strongly disagree' (0) and 'strongly agree' (10)

- I tend to bounce back quickly after hard times.
- I have a hard time making it through stressful events.*
- It does not take me long to recover from a stressful event.
- It is hard for me to snap back when something bad happens.*
- I usually come through difficult times with little trouble.
- I tend to take a long time to get over set-backs in my life.*

*reverse-coded

Self-efficacy (following Chen et al., 2001)

Items were anchored at 'strongly disagree' (0) and 'strongly agree' (10)

- I will be able to achieve most of the goals that I have set for myself.
- When facing difficult tasks, I am certain that I will accomplish them.
- In general, I think that I can obtain outcomes that are important to me.
- I believe I can succeed at most any endeavour to which I set my mind.
- I will be able to successfully overcome many challenges.
- I am confident that I can perform effectively on many different tasks.
- Compared to other people, I can do most tasks very well.
- Even when things are tough, I can perform quite well.

Depression (following Radloff, 1977)

Introductory text: “Below is a list of some of the ways you may have felt or behaved. Please indicate how often you have felt/behaved this way recently.”

Items were anchored at ‘rarely/none of the time’ (0) and ‘all of the time’ (10)

- I was bothered by things that usually don't bother me.
- I had trouble keeping my mind on what I was doing.
- I felt depressed.
- I felt that everything I did was an effort.
- I felt hopeful about the future.*
- I felt fearful.
- My sleep was restless.
- I was happy.*
- I felt lonely.
- I could not "get going".

*reverse-coded

Appendix C-II: Identity Salience Manipulation Used in Study 1

In order to raise the salience of different social identities, I developed a set of questions in line with procedures used by Levine et al. (2005). For each question, participants were asked to answer in an open-ended format in full sentences.

The following questions were used to raise the *salience of the fan identity* in the fan salience condition:

- When did you first become interested in football?
- What do you like about being a football fan?
- What does being a football fan mean to you?

The following questions were used to raise the *salience of the team identity* in the team salience condition:

- Since when have you been supporting your team?
- Why do you support your team?
- How do you feel about being a supporter of your team?

Appendix C-III: Instructions on Anagram Tasks

Before starting on the individual anagram tasks, participants read the following instructions:

> You will be asked to solve some anagrams now. As you know anagrams are words with the letters scrambled. The problem for you is to unscramble the letters so they form a word in the English language.
>
> Please take some time to work on the anagrams. On average, participants need roughly 15 seconds per anagram, but please feel free to spend more time if you need to.
>
> In case you can't solve an anagram, then please just retype the original letters.
>
> Please don't use any help in solving the anagrams.

The individual anagram tasks were presented on separate pages. The following shows the setup for the first unsolvable anagram. The average time other participants supposedly took to solve the anagrams was constantly reinforced to imply that the task was easy and thereby strengthen the learned helplessness induction:

> Please solve the following anagram. Participants usually take about 15 seconds to solve it.
>
> B P A E S

D. Ecological Validity Revisited: A Tale of Failed Replications in the Laboratory

Abstract

Randomised laboratory experiments are considered the gold standard for establishing causation in the behavioural sciences. However, they often require an abstraction from the real world which then introduces a level of artificiality to the research phenomenon in question. While researchers have accepted this cost and downplayed its impact, they have instead been primarily concerned with the external validity of their experimental studies. I posit that this focus on external validity at the expense of a closely related construct, ecological validity, can be highly problematic depending on one's research goals. Drawing on a natural experiment and two randomised laboratory experiments, I show that the abstraction and artificiality involved in translating the real world into a laboratory setting can have dramatic consequences for the effects that are being studied, to the degree that one is examining different effects. This then has spill-over effects on the inferences that can be drawn from one's research findings. I place my findings in the context of the current replication debate and show that ecological validity ought to be a key concern for researchers interested in studying naturally occurring phenomena.

Keywords: ecological validity, affect induction, self-categorisation, natural experiments, randomised experiments, field research

Science is the search for truth.
– Linus Pauling

D.1 Introduction

As Linus Pauling's quote illustrates, the ultimate goal of scientists is not merely the generation of new knowledge and its contextualisation in existing knowledge structures (i.e. "a systematic quest for knowledge"; Ponterotto, 2005, p. 127), but to do so without bias. Over the past decades, methodologists have therefore examined several factors that might bias – that is, at best put into question or at worst invalidate – their findings in order to weed out their influences on the scientific process.

Biasing factors can relate to respondents, to interviewers, as well as the process of asking questions. On the respondent side, individuals' mood (Schwarz & Clore, 2003), their level of negative affectivity (Watson & Clark, 1984) and their tendency to provide socially desirable answers (Crowne & Marlowe, 1960) are key factors that have been shown to affect findings under the broad heading of response artefacts. On the interviewer side, bias can be introduced by interviewer idiosyncrasies, for example how aggressive interviewers are in eliciting responses (Shapiro, 1970) or how interviewers' vocabulary and verbosity influences respondents (W. A. Collins, 1970). The majority of work, however, has looked at the process of interviewing, for example how the interview is administered (C. L. Martin & Nagao, 1989; Richman, Kiesler, Weisband, & Drasgow, 1999), and how questions and response options are constructed. Among the factors that can impact respondents' answers are whether the questions are complex or ambiguous (e.g. Hinkin, 1995; Peterson, 2000), have positive or negative connotations that might impact individuals' mood (Peterson, 2000) or have an obvious, socially desirable answer (Nederhof, 1985; Thomas & Kilmann, 1975). Similarly, how respondents are allowed to answer has a dramatic impact on their answers: for example, whether they are provided with open or closed response formats (Schwarz & Hippler, 1991),

what response alternatives they are offered when researchers are interested in the frequency of certain actions or behaviours (Gaskell, O'Muircheartaigh, & Wright, 1994; Schwarz, Strack, Müller, & Chassein, 1988; Winkielman, Knäuper, & Schwarz, 1998), or what kind of rating scales are chosen and how they are anchored (Schwarz, Grayson, & Knäuper, 1998; Schwarz & Hippler, 1995; Schwarz, Knäuper, Hippler, Noelle-Neumann, & Clark, 1991; Tourangeau, Rips, & Rasinski, 2003). Even the order in which questions are asked can impact the answers (Schwarz, Strack, & Mai, 1991) as answers to prior questions might prime answers to subsequent questions (Salancik, 1984).

Most of the identified issues in the interview process relate to self-reports which are a staple in the social sciences (Baumeister, Vohs, & Funder, 2007; Podsakoff & Organ, 1986; Schwarz, 1999) and are seen as contributing factors to so-called *common method bias* (CMB; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Podsakoff, MacKenzie, & Podsakoff, 2012). CMB is widely regarded as a problem in the research process (Bagozzi & Yi, 1991; Campbell & Fiske, 1959; Cote & Buckley, 1987; Doty & Glick, 1998; Millsap, 1990; Podsakoff et al., 2003; Schmitt, 1994; Sharma, Yetton, & Crawford, 2009) because it can lead to both type I and type II errors (Podsakoff et al., 2012). The identification of these issues has allowed researchers to devise procedural and statistical remedies to minimise the impact of CMB.

Most academic research in the social sciences is built on the backs of a very small participant pool, heavily relying on student samples (i.e. largely convenience samples; Ferber, 1977; Gallander Wintre, North, & Sugar, 2001; Henry, 2008; Norenzayan & Heine, 2005; Peterson, 2001; Petty & Cacioppo, 1996; Rozin, 2009; Sears, 1986) and samples that primarily feature only small segments (mostly Western) of the world population (Arnett, 2008; Henrich, Heine, & Norenzayan, 2010; Quiñones-Vidal, Loźpez-García, Peñarañda-Ortega, & Tortosa-Gil, 2004; Sue, 1999). The use of these narrow samples has called into question the generalisability of the findings. Hence, there has been a push not to overstate the importance of one's findings beyond the population that was studied (Simons, Shoda, & Lindsay,

2017). The critique of this usage of narrow samples has also led, amongst other reasons, to the increasing use of online labour markets such as Amazon Mechanical Turk (Berinsky, Huber, & Lenz, 2012; Buhrmester, Kwang, & Gosling, 2011; Crump, McDonnell, & Gureckis, 2013; Palan & Schitter, 2018; Peer, Brandimarte, Samat, & Acquisti, 2017). These platforms offer the opportunity to broaden the respondent pool in terms of demographics and other characteristics (Chandler, Paolacci, & Mueller, 2013), albeit in a skewed way (Goodman, Cryder, & Cheema, 2013; Goodman & Paolacci, 2017; Paolacci & Chandler, 2014). Samples from such online labour markets are now widely used across disciplines (Chandler & Shapiro, 2016), particularly in experimental psychological research (Zhou & Fishbach, 2016). These platforms, however, are not without criticism and bring with them new challenges (e.g. Chandler, Mueller, & Paolacci, 2014; Chandler & Paolacci, 2017; Sharpe Wessling, Huber, & Netzer, 2017).

While concerns over the external validity of experimental research has been an ongoing issue of discussion (Berkowitz & Donnerstein, 1982; Calder, Phillips, & Tybout, 1981, 1982, 1983; Campbell, 1957; Lynch, 1982, 1983; McGrath & Brinberg, 1983; Mitchell, 2012; Mook, 1983; Vissers, Heyne, Peters, & Guerts, 2001), little attention has been devoted to a related issue – *ecological validity* (Aanstoos, 1991; Orne, 1962). Both external and ecological validity relate to the generalisability of one's findings, but regarding different aspects. External validity means that findings apply to different persons, settings, and times (Cook & Campbell, 1979), while ecological validity is an indicator that findings reflect the real world (Bem & Lord, 1979). External validity therefore is concerned with "generalising across" while ecological validity is concerned with "generalising to" (Highhouse, 2009). One way to ensuring ecological validity is for one's design to be life-like[1]. This stands in contrast to randomised laboratory experiments, which often rely on abstraction. Nonetheless, they are generally considered the gold standard for establishing causality in psychology and other social sciences (Cook & Shadish,

[1] A related, albeit different, concept is that of *mundane realism* which refers to how far the experimental setting physically resembles the real world (Aronson & Carlsmith, 1968).

1994; West, 2009), but the rigour involved in these experiments usually comes at the cost of reduced ecological validity (Ferrer, Padgett, & Ellis, 2016).

For these and other reasons, researchers have increasingly turned to the use of field experiments (Cook & Shadish, 1994; Shadish, 2002; Shadish & Cook, 2009), primarily to reduce the trade-off involved between randomised experiments in sterile laboratory settings and nonrandomised settings in the real world (Harrison & List, 2004). Such field experiments can complement other approaches either by testing previously established effects in the field or by providing initial findings that can be followed up in laboratory settings (Gneezy, 2017). Ultimately, the use of field research – whether randomised or nonrandomised (Shadish & Cook, 2009) – in combination with laboratory experiments and the comparison of findings from both settings represents the core strategy for establishing or refuting the ecological validity of one's findings (Bronfenbrenner, 1977). While some (Anderson, Lindsay, & Bushman, 1999) have claimed that laboratory and field effects are highly comparable, others (Mitchell, 2012) have provided a more nuanced picture that shows large variation across disciplines. The general notion, however, is that one would generally establish the same effects through either method (Anderson et al., 1999; Mitchell, 2012).

It is precisely this notion that I want to challenge. Using findings from a natural experiment as the starting point, I devise several randomised laboratory experiments in an attempt to replicate the findings utilising established procedures for affect induction (Ferrer, Grenen, & Taber, 2015; Isen & Gorgoglione, 1983; Polivy, 1981; Zhang, Yu, & Barrett, 2014). While these affect induction procedures have generally been shown to be valid (Gerrards-Hesse, Spies, & Hesse, 1994; Lench, Flores, & Bench, 2011; M. Martin, 1990; Westermann, Spies, Stahl, & Hesse, 1996), my findings suggest that they are inadequate to induce affect in the context of self-categorisation. I conjecture that this is due to a lack of ecological validity and question the appropriateness of randomised laboratory experiments in such settings. In what follows, I present evidence from one natural experiment and two randomised laboratory experiments supporting these notions.

D.2 Study 1: Establishing Effects in an Ecologically Valid Setting

I first report a longitudinal study in an ecological setting from a multi-study paper examining the impact of group performance on the subjective well-being of individuals associated with the group (Esch & Wilson, 2019). The study is one component from correlational, longitudinal, and experimental evidence for the main effect and the interaction effect discussed here. The longitudinal study was conducted around the 2017 final of the Football Association (FA) Cup, a yearly English knock-out football competition. It consisted of two points of measurement, one conducted on the day prior to the final (Friday), and one conducted the day after the final (Sunday).

D.2.1 Method

D.2.1.1 Participants

I recruited 570 UK residents via Prolific, a UK online labour market (Palan & Schitter, 2018; Peer et al., 2017), to take part in the first round of this study. A requirement for participation was that individuals were a fan of one of the two teams competing in the 2017 FA Cup final (Arsenal F.C. and Chelsea F.C.). Seventy of the 570 respondents stated that they were not a fan of any of the two teams. Nine further respondents did not provide a (valid) Prolific ID and thus could not be invited to the second round.

I therefore invited 491 respondents to the second round on the day after the 2017 FA Cup final. Four hundred and forty-eight respondents took part in the second round of the study (91.2% of invited participants from the first round). Forty-one of these participants failed attention checks, 18 respondents changed their team allegiance or claimed to be fan of none of the two teams and 12 respondents did not know the result of the 2017 FA Cup final. I therefore analysed the responses from the remaining 377 participants (52.7% female), 199 of which were Arsenal fans (victory condition) and 178 Chelsea fans (defeat condition).

I used G*Power (Faul, Erdfelder, Buchner, & Lang, 2009; Faul, Erdfelder, Lang, & Buchner, 2007) to determine the sample size for this study based on the effect size of the key interaction effect obtained in a pilot study (Cohen's $f^2 = .078$ for the key interaction effect between group performance and attachment to the group). This resulted in a minimum sample of 103 usable participants to detect significant effects ($p < .05$) with 80% statistical power.

D.2.1.2 Procedure

I only report the key variables for the interaction plus control variables. For this and all subsequent studies, participants first provided informed consent before proceeding with the study.

Round 1. Participants first answered questions regarding their subjective well-being (SWB; three items adopted from Schwarz & Clore, 1983)[2]. This was followed by questions on whether the participants were a fan of one of the two teams contesting the 2017 FA Cup final and, if so, which one. Participants then indicated the strength of their attachment to that team (four items adopted from Park, MacInnis, Priester, Eisingerich, & Iacobucci, 2010). The first round ended with questions on basic demographics (gender, age, country of residence) and participants' Prolific ID. This ID was used to invite them to complete the second round and to match responses from both rounds. Upon conclusion of the first round, participants were informed that there would be a second round two days later.

Round 2. The procedure used for the second round was very similar to the first round. Participants first answered the same subjective well-being questions as in the first round, followed by questions on whether they were a fan of any of the two teams that competed in the 2017 FA Cup final, and if so, which one. They then indicated whether they had watched the 2017 FA Cup final, whether they

[2] Throughout this paper, all variables were measured on 11-point bipolar scales with variously labelled endpoints indicating low (0) and high (10) unless otherwise stated. For an overview of the measures used across all studies, please refer to appendix D-I.

remembered which team won and, if so, which team they thought won. Finally, participants provided their Prolific ID and were debriefed.

D.2.2 Results

In preparation for data analysis, I first averaged participants' responses to the three items measuring subjective well-being to create a composite subjective well-being index (cf. Arthaud-Day, Rode, Mooney, & Near, 2005; Diener, 2000; Diener, Diener, & Diener, 1995; Emmons & Colby, 1995) for the first ($\alpha = .93$) and second round ($\alpha = .94$). As I was particularly interested in mean-level changes in subjective well-being (Luhmann, Hofmann, Eid, & Lucas, 2012) in this study, I calculated whether participants' subjective well-being had changed from the first to the second round (i.e. round 2 – round 1). A score of 0 indicates no change between the two rounds, while a positive (negative) score indicates that the participant reported higher (lower) subjective well-being after the event than before. Analysis proceeded with these difference (Δ) measures, unless stated otherwise. Condition (0 = defeat, 1 = victory) and gender (0 = female, 1 = male) were dummy-coded and the continuous predictors (age, attachment) were mean-centred (J. Cohen, Cohen, West, & Aiken, 2003; Dalal & Zickar, 2012). There were no differences between conditions in terms of gender, age or the pre-event measures (see table D-1).

Table D-1. Study 1: Sample descriptive statistics

	Condition		
Parameters	Victory	Defeat	p
n	199	178	
M_{Age} (SD)	37.0 years (12.3)	34.9 years (11.9)	.101
Gender split	53.3% female	52.2% female	.843
$M_{\text{SWB(PRE)}}$ (SD)	6.83 (2.01)	7.06 (1.90)	.244
$M_{\text{Attachment}}$ (SD)	6.18 (2.08)	6.53 (1.79)	.081

As the dependent variable (subjective well-being) was normally distributed, I followed Cohen (1968) and therefore carried out all analyses using multiple regression throughout the remainder of this paper unless otherwise stated.

D.2.2.1 Main Effects

Fans of the winning team reported higher subjective well-being after the match relative to baseline levels ($M_{\text{Victory}} = 0.73$, $SD_{\text{Victory}} = 1.54$), while fans of the losing team reported lower subjective well-being ($M_{\text{Defeat}} = –0.43$, $SD_{\text{Defeat}} = 1.37$), $t(375) = 7.71$, $b = 1.161$, $p < .001$, $d = 0.80$, 95% CI = [0.86, 1.46]). This confirmed my hypothesis. There was no main effect of strength of attachment to the team on subjective well-being, $t(375) = –0.33$, $b = –0.013$, $p = .745$, $\eta_P^2 = .000$, 95% CI = [–0.09, 0.07].

D.2.2.2 Moderation

Regressing Δ subjective well-being on whether a participant supported the winning or losing team, the strength of their attachment to the team, and the interaction between these revealed that, as I had hypothesised, the effect of team performance on participants' subjective well-being was significantly moderated by the strength of their attachment to the team ($t(373) = 3.99$, $b = .309$, $p < .001$, $\eta_P^2 = .041$, 95% CI = [.16, .46]). For full results please refer to table D-2, model 3.

Table D-2. Study 1: Model results for Δ subjective well-being

Predictors	*b*	*SE*	*t*	*p*	95% CI
Model 1					
Intercept	–0.429	0.109	–3.92	<.001	[–0.64, –0.21]
Condition	1.161	0.151	7.71	<.001	[0.86, 1.46]
Model 2					
Intercept	0.184	0.081	2.27	.024	[0.02, 0.34]
Attachment^{+}	–0.013	0.041	–0.33	.745	[–0.09, 0.07]
Model 3					
Intercept	–0.397	0.108	–3.67	<.001	[–0.61, –0.18]
Condition	1.151	0.149	7.75	<.001	[0.86, 1.44]
Attachment^{+}	–0.173	0.060	–2.88	.004	[–0.29, –0.05]
Condition × Attachment^{+}	0.309	0.077	3.99	<.001	[0.16, 0.46]
Model 4					
Intercept	–0.305	0.149	–2.04	.042	[–0.60, –0.01]
Condition	0.957	0.206	4.64	<.001	[0.55, 1.36]
Attachment^{+}	–0.165	0.061	–2.70	.007	[–0.28, –0.04]
Condition × Attachment^{+}	0.298	0.078	3.81	<.001	[0.14, 0.45]
Gender	–0.202	0.218	–0.93	.355	[–0.63, 0.23]
Condition × Gender	0.412	0.301	1.37	.172	[–0.18, 1.00]
Age^{+}	–0.003	0.009	–0.33	.744	[–0.02, 0.01]
Condition × Age^{+}	0.007	0.012	0.58	.565	[–0.02, 0.03]

Note. CI = confidence intervals; $^{+}$ mean-centred.

D.2.2.3 Controls

The results for the full model hold when controlling for age and gender, see table D-2, model 4. I controlled for gender to account for established differences in subjective well-being between men and women, with women generally reporting higher levels of subjective well-being (Wood, Rhodes, & Whelan, 1989). Similarly,

I controlled for age as levels of subjective well-being tend to increase with older age (Carstensen, Pasupathi, Mayr, & Nesselroade, 2000).

D.2.2.4 Subjective Well-Being After Event

In order to allow easier comparison with the randomised laboratory experiments to follow, I reran my previous analysis with subjective well-being measured after the event (T_1) as the dependent variable. This analysis yielded very similar results (see table D-3).

D.2.3 Discussion

As hypothesised, group performance (victory vs. defeat) had an impact on the subjective well-being of fans, with fans of the winning (losing) team reporting higher subjective well-being after their team's victory (defeat) relative to baseline levels. This effect was moderated by strength of team attachment, with fans with stronger attachment reacting more strongly (positive in the case of a victory of their team, negative in the case of a defeat of their team) towards the outcome. I report this study from a multi-study paper (Esch & Wilson, 2019) in order to provide evidence on the main effect and interaction.

Table D-3. Study 1: Model results for subjective well-being (T_1)

Predictors	*b*	*SE*	*t*	*p*	95% CI
Model 1					
Intercept	6.633	0.152	43.67	<.001	[6.33, 6.93]
Condition	0.925	0.209	4.42	<.001	[0.51, 1.34]
Model 2					
Intercept	7.121	0.107	66.84	<.001	[6.91, 7.33]
Attachment$^+$	0.104	0.054	1.91	.057	[–0.00, 0.21]
Model 3					
Intercept	6.638	0.151	44.02	<.001	[–0.61, –0.18]
Condition	0.957	0.207	4.62	<.001	[0.86, 1.44]
Attachment$^+$	–0.029	0.084	–0.35	.726	[–0.29, –0.05]
Condition × Attachment$^+$	0.259	0.108	2.39	.017	[0.16, 0.46]
Model 4					
Intercept	7.007	0.207	33.80	<.001	[6.60, 7.42]
Condition	0.615	0.286	2.15	.032	[0.05, 1.18]
Attachment$^+$	0.003	0.085	0.04	.968	[–0.16, 0.17]
Condition × Attachment$^+$	0.226	0.109	2.09	.038	[0.01, 0.44]
Gender	–0.778	0.303	–2.57	.011	[–1.37, –0.18]
Condition × Gender	0.723	0.418	1.73	.084	[–0.10, 1.54]
Age$^+$	0.003	0.013	0.27	.786	[–0.02, 0.03]
Condition × Age$^+$	–0.004	0.017	–0.23	.822	[–0.04, 0.03]

Note. CI = confidence intervals; $^+$ mean-centred.

D.3 Study 2: Attempted Replication in a Laboratory Setting

The main purpose of study 2 was to examine whether the experience of group victory and defeat can be successfully translated from an ecological setting into an experimental laboratory setting, and thus replicate my findings from the natural experiment in an experiment with true random allocation. To this end, I conducted a single-factorial (victory vs. defeat) experiment with fans from four English

Premier League football teams with large followership (Arsenal F.C., Chelsea F.C., Liverpool, F.C., Manchester United F.C.). In line with prior research that has used text- and video-based manipulations (e.g. Grieve, Houston, Dupuis, & Eddy, 1999; Hemenover, 2003; Hirt, Zillmann, Erickson, & Kennedy, 1992; Leach & Spears, 2009; Leach, Spears, Branscombe, & Doosje, 2003; van der Linden, 2015), I manipulated victory and defeat using these means.

D.3.1 Method

D.3.1.1 Participants

I recruited 295 UK residents via Prolific (Palan & Schitter, 2018; Peer et al., 2017) to take part in this study. A requirement for participation was that individuals were a fan of one of four English Premier League teams (Arsenal F.C., Chelsea F.C., Liverpool F.C., Manchester United F.C.). I therefore only allowed participants with matching preferences stated on the Prolific platform to take part in this study. One hundred and thirty-nine of the 295 respondents failed attention checks and a further four respondents misspecified which team had won the match they had read about/watched. I therefore analysed the responses from the remaining 152 participants (59.2% female) – 76 in the victory condition and 76 in the defeat condition. While there were some differences in terms of number of participants per team (Arsenal F.C. – 36, Chelsea F.C. – 13, Liverpool F.C. – 50, Manchester United F.C. – 53), within each team there was an even split across the two conditions (victory vs. defeat). I again based my sample size calculations on the effect size from the pilot study and therefore aimed to recruit a minimum of 103 usable participants.

D.3.1.2 Stimulus Preparation

I devised an algorithm in order to select a competitor team from the English Premier League against which the focal teams had lost and won one match each in the prior English Premier League season[3]. This algorithm resulted in the selection of games where victories happened at home games and defeats at away games. I

[3] For a full explanation of the algorithm, please refer to appendix D-II.

then accessed match reports from a major British news outlet for all matches. These match reports were sterilised in the sense that all references to developments outside of the focal match (e.g. performance in the league and other competitions leading up to the match) were taken out[4]. Furthermore, I accessed live TV recordings of all selected matches in order to cut out selected goal-scoring scenes for the victory and defeat conditions.

D.3.1.3 Procedure

After a short introduction, participants first specified whether they were a fan of an English Premier League team. If so, they then specified which team they were a fan of. This was followed by questions on the strength of their attachment to that team (same items as in study 1; $\alpha = .93$). Participants were then randomly allocated to one of two conditions. In both conditions, they first read a match report on an English Premier League match from the previous season involving their team, followed by a 25-second video extract from the live recording of the match. In the victory (defeat) condition, the match that participants read about was a victory (defeat) of their team. This was followed by a quick 25-second snippet of the match showing the last goal their team (the opposite team) scored. After watching the clip, participants stated whether they remembered the particular game they had read about. Participants then assessed how their team played in the particular scene they watched and in the match overall ('Based on the clip you've just seen, how did your team *(team name)* play in that particular scene?', 'Leaving aside the end result, how did your team *(team name)* play in the match you've just read about/seen?', endpoints 'very poorly' and 'very well'). After this, participants rated how close ('Based on your memory/the match report, do you think it was a close match?', endpoints 'not at all close' and 'very close') and how important they thought the match was ('Do you think it was an important match?', endpoints 'not at all important' and 'very important'). Afterward, participants specified which team had won the match or whether it resulted in a draw. This was followed by

[4] Please refer to appendix D-III for an example sterilised match report.

the same subjective well-being questions used in study 1. The study concluded with questions on basic demographics (gender, age, country of residence) and participants' Prolific ID, after which participants were debriefed.

D.3.2 Results

I first computed the composite subjective well-being index as in study 1 ($\alpha = .93$). Condition (0 = defeat, 1 = victory), gender (0 = female, 1 = male), and whether participants remembered the match they read about (0 = no, 1 = yes) were dummy-coded, and most continuous predictors (age, attachment, and the match variables – performance in the clip, overall performance, closeness of the match, importance of the match) were mean-centred. There were no differences between conditions in terms of gender, age, or attachment (see table D-4).

As I assumed that the teams that respondents were a fan of represented a sample of all football teams and because I was not interested in team-specific effects, I used linear mixed models to analyse the data for this study (Gałecki & Burzykowski, 2013).

Table D-4. Study 2: Sample descriptive statistics

	Condition		
Parameters	Victory	Defeat	*p*
n	76	76	
M_{Age} (*SD*)	34.2 years (9.9)	35.6 years (11.0)	.431
Gender split	64.5% female	53.9% female	.186
$M_{\text{Attachment}}$ (*SD*)	5.82 (2.56)	6.04 (2.46)	.589

D.3.2.1 Manipulation Checks

I used the two questions assessing the team's performance in the clip and the overall match as manipulation checks and first computed a composite index. An analysis of this index showed that participants in the victory condition rated their team's performance significantly better ($M_{\text{Victory}} = 7.98$, $SD_{\text{Victory}} = 1.34$) than those in the

defeat condition ($M_{\text{Defeat}} = 2.82$, $SD_{\text{Defeat}} = 1.90$, $t(150) = 19.31$, $b = 5.151$, $p < .001$, $d = 3.13$, 95% CI = [4.62, 5.68]).

D.3.2.2 Main Effects

I fit several linear mixed models to predict subjective well-being from the random effect of team supported and the fixed effect of condition (victory vs. defeat) or the fixed effect of strength of attachment. Contrary to my findings from study 1, I found no main effect of condition on subjective well-being ($M_{\text{Victory}} = 6.44$, $SD_{\text{Victory}} = 2.28$, $M_{\text{Defeat}} = 6.54$, $SD_{\text{Defeat}} = 2.19$, $t(149.63) = 0.34$, $b = 0.123$, $p = .738$, $d = 3.0$, 95% CI = [–0.60, 0.85]). However, there was a main effect of strength of attachment to the team on subjective well-being, $t(148.49) = 3.63$, $b = 0.254$, $p < .001$, 95% CI = [0.12, 0.39].

D.3.2.3 Moderation

I fit a linear mixed model to predict subjective well-being from the fixed effects of condition (victory vs. defeat), strength of attachment and their interaction, and the random effect of team supported. In contrast to study 1, this analysis revealed that the impact of condition on participants' subjective well-being was not moderated by the strength of their attachment to the team ($t(146.63) = –0.13$, $b = –.019$, $p = .893$, 95% CI = [–.30, .26]). For full results please refer to table D-5, model 3.

Table D-5. Study 2: Linear mixed model results for subjective well-being

	b	*SE*	*t*	*p*	95% CI
Model 1					
Fixed Effects Parameter Estimates					
Intercept	6.425	0.201	31.95	<.001	[6.02, 6.83]
Condition	0.123	0.366	0.34	.738	[–0.60, 0.85]
Random Effects Covariance Parameter Estimates					
Team	–0.085	0.020		<.001	[–0.12, –0.05]
Model 2					
Fixed Effects Parameter Estimates					
Intercept	6.469	0.087	74.13	.002	[5.89, 7.05]
Attachment^{+}	0.254	0.070	3.63	<.001	[0.12, 0.39]
Random Effects Covariance Parameter Estimates					
Team	–0.077	0.020		<.001	[–0.11, –0.04]
Model 3					
Fixed Effects Parameter Estimates					
Intercept	6.437	0.195	33.00	<.001	[6.04, 6.83]
Condition	0.065	0.354	0.18	.854	[–0.63, 0.76]
Attachment^{+}	0.263	0.098	2.69	.008	[0.07, 0.45]
Condition × Attachment^{+}	–0.019	0.141	–0.13	.893	[–0.30, 0.26]
Random Effects Covariance Parameter Estimates					
Team	–0.078	0.020		<.001	[–0.11, –0.04]
Model 4					
Fixed Effects Parameter Estimates					
Intercept	6.230	0.174	35.90	<.001	[5.87, 6.59]
Attachment+	0.273	0.071	3.88	<.001	[0.13, 0.41]
Attachment+ (squared)	0.040	0.025	1.61	.110	[–0.01, 0.09]
Random Effects Covariance Parameter Estimates					
Team	–0.077	0.018		<.001	[–0.11, –0.04]

(continued)

Table D-5. (continued)

	b	*SE*	*t*	*p*	95% CI
Model 5					
Fixed Effects Parameter Estimates					
Intercept	6.193	0.183	33.93	<.001	[5.82, 6.57]
Attachment^{+}	0.188	0.148	1.27	.208	[–0.11, 0.48]
Attachment^{+} (squared)	0.048	0.027	1.74	.085	[–0.01, 0.10]
Attachment^{+} (cubed)	0.006	0.009	0.65	.514	[–0.01, 0.02]
Random Effects Covariance Parameter Estimates					
Team	–0.076	0.020		<.001	[–0.11, –0.04]

Note. CI = confidence interval; $^{+}$ mean-centred.

D.3.2.4 Checking for Nonlinearity

I then followed up the significant main effect of strength of team attachment on subjective well-being by checking for nonlinearity. The included quadratic and cubic terms were not significant (see table D-5, models 4 and 5) and did not improve overall model fit.

D.3.2.5 Controls

The effect of attachment on subjective well-being holds when controlling for (a) whether participants had remembered seeing the match before, how they assessed the performance of their team (b) in the scene they watched and (c) the report they read, participants' evaluation of how (d) close and (e) important the match was, (f) their team's and (g) the competitor team's final league table position, as well as (h) gender and (i) age, see table D-6[5].

[5] I used multiple linear regression (J. Cohen, 1968) as the linear mixed model did not converge due to the number of predictors.

Table D-6. Study 2: Model results for subjective well-being including control variables

Predictors	*b*	*SE*	*t*	*p*	95% CI
Intercept	5.797	0.866	6.69	<.001	[4.08, 7.51]
Attachment^{+}	0.282	0.083	3.40	<.001	[0.12, 0.45]
Remember Match	0.739	0.400	1.85	.066	[–0.05, 1.53]
Performance (Clip) $^{+}$	0.028	0.084	0.34	.737	[–0.14, 0.19]
Performance (Overall) $^{+}$	0.063	0.106	0.59	.555	[–0.15, 0.27]
Closeness^{+}	0.069	0.078	0.89	.376	[–0.08, 0.22]
Importance^{+}	–0.127	0.089	–1.42	.157	[–0.30, 0.05]
Final League Table Position	0.067	0.136	0.50	.621	[–0.20, 0.34]
Final League Table Position (Competitor)	0.003	0.048	0.06	.956	[–0.09, 0.10]
Gender	–0.308	0.375	–0.82	.413	[–1.05, 0.43]
Age^{+}	0.004	0.017	0.21	.835	[–0.03, 0.04]

Note. CI = confidence intervals; $^{+}$ mean-centred.

D.3.3 Discussion

The first laboratory experiment provided initial evidence that the effects of real-life events important to fans of sports teams might not be replicable in a sterile laboratory setting. In contrast to study 1, I found no main effect of group performance on individuals' subjective well-being, nor the interaction between group performance and strength of attachment to the group on individuals' subjective well-being I previously observed in an ecological setting. In contrast, I did find a strong positive linear effect of the strength of attachment to the team on individuals' subjective well-being. That means that participants with higher attachment reported higher subjective well-being, regardless of whether they witnessed their team winning or losing the match.

D.4 Study 3: Replication of Laboratory Results

Study 2 raised first doubts that the effects I have consistently observed in ecological settings can be translated into laboratory settings. The main purpose of study 3

was therefore to attempt to replicate findings from my natural experiment in a randomised experiment using a different manipulation. Through this, I aimed to establish whether the results from study 2 represented merely an idiosyncrasy of the design or pointed to more wide-ranging issues between field studies and laboratory experiments. To these ends, I conducted a single-factorial (victory vs. defeat) experiment in the context of a contemporaneous real-life event – the 2018 Fédération Internationale de Football Association (FIFA) World Cup. The experiment was conducted prior to England's World Cup semi-final match and in it, participants read a scenario on the English national football team either winning or losing the 2018 FIFA World Cup final and were asked to imagine that this was happening (see Haimovitz & Dweck, 2016; Lee, Kesebir, & Pillutla, 2016). The timing contemporaneous to the tournament was chosen so as to make the reported outcomes (i.e. victory vs. defeat in the final) in both conditions more realistic (see Touré-Tillery & Fishbach, 2015) and hence increase the ecological validity of the experiment. Individuals regularly use their imagination to construct alternative outcomes for future and past events, often in the form of hypothetical scenarios (Taylor, Pham, Rivkin, & Armor, 1998). Such "mental simulations make events seem real" (Taylor et al., 1998, p. 430), most probably because the outcomes individuals conjure up tend to be realistic rather than illusory (Kahneman & Miller, 1986). In fact, prior research has shown that imagining events increases the belief that they will actually happen (see Koehler, 1991). The combined use of scenarios and individuals' imagination is therefore widespread in experimental research (e.g. Abelson, 1985; Cooney, Gilbert, & Wilson, 2017; Lerner & Miller, 1978; Oettingen, Mayer, & Portnow, 2016; Schaerer, Swaab, & Galinsky, 2015; Trope & Liberman, 2003; van den Bos, Lind, Vermunt, & Wilke, 1997). Moreover, mental simulations have previously been used to manipulate affective states (e.g. Larsen & Ketelaar, 1991; Morrow & Nolen-Hoeksema, 1990; Strack, Schwarz, & Gschneidinger, 1985; Wright & Mischel, 1982).

D.4.1 Method

D.4.1.1 Participants

I recruited 176 UK residents via Prolific (Palan & Schitter, 2018; Peer et al., 2017) to take part in this study. These respondents qualified for the study as they had previously indicated in a screener study that they were fans of the English national football team. Eighteen of the 176 respondents failed attention checks, a further three respondents misspecified the winner of the match they read about, and three respondents misspecified the score of the match they read about. I therefore analysed the responses from the remaining 152 participants (71.1% female) – 79 in the victory condition and 73 in the defeat condition.

I again based sample size calculations on the effect size from my pilot study and therefore aimed to recruit a minimum of 103 usable participants.

D.4.1.2 Procedure

The design of the study was largely similar to that of study 2. The study started with questions assessing individuals' imagination. These corresponded to the imagination facet of the Revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992) and were taken from the international personality item pool (IPIP; see Goldberg et al., 2006). Participants then stated whether they were a fan of the English national football team, followed by questions on the strength of their attachment to the team. Participants were then randomly allocated to one of two conditions (victory vs. defeat). In both conditions, they read a fictional scenario about the 2018 FIFA World Cup final and were asked to imagine that it was actually happening.

In the victory (defeat) condition, participants read about the English national football team winning (losing) the final[6]. After reading the scenario, participants were asked to assess how close ('Based on what you have just read, do you think it was a close match?', endpoints 'not at all close' and 'very close') and how important they thought the match was ('Do you think it was an important match?',

[6] For the entire scenario, please refer to appendix D-IV.

endpoints 'not at all important' and 'very important'). Participants then had to specify which team had won the match or whether it resulted in a draw, and to provide the final score. This was followed by the same subjective well-being questions used in studies 1 and 2.

In order to examine the effectiveness of my victory versus defeat manipulation, I included four manipulation check items for all participants. Two of these were focussed on victory versus defeat on a group level ('Do you feel like your national football team (England) lost?', 'Is your national football team (England) a successful team?'), while the other two assessed victory versus defeat perceptions on an individual level ('Do you feel like you lost?', 'Are you a successful person?'). After this, participants were debriefed.

D.4.2 Results

I first computed the composite subjective well-being index as in studies 1 and 2 (α = .93). Condition (0 = defeat, 1 = victory) and gender (0 = female, 1 = male) were dummy-coded and the continuous predictors (age, attachment, imagination, closeness of the match, importance of the match) were mean-centred. There were no differences between conditions in terms of gender, age, or attachment (see table D-7).

Table D-7. Study 3: Sample descriptive statistics

	Condition		
Parameters	Victory	Defeat	*p*
n	79	73	
M_{Age} (*SD*)	35.5 years (11.5)	35.4 years (10.3)	.959
Gender split	70.9% female	71.2% female	.962
$M_{\text{Imagination}}$ (*SD*)	6.38 (1.60)	6.84 (1.36)	.062
$M_{\text{Attachment}}$ (*SD*)	5.82 (2.77)	5.27 (2.55)	.204

D.4.2.1 Manipulation Checks

As expected, results revealed that those participants in the victory condition regarded themselves and their team as significantly more successful ($M_{\text{Victory}} = 8.07$, $SD_{\text{Victory}} = 1.63$) than those participants in the defeat condition ($M_{\text{Defeat}} = 7.29$, $SD_{\text{Defeat}} = 1.77$), $t(150) = 2.81$, $b = 0.775$, $p = .006$, $d = 0.46$, 95% CI = [0.23, 1.32]. This confirms the effectiveness of my victory versus defeat manipulation.

D.4.2.2 Main Effects

In line with the first randomised laboratory experiment (study 2), I again found no main effect of condition on subjective well-being ($M_{\text{Victory}} = 6.08$, $SD_{\text{Victory}} = 2.43$, $M_{\text{Defeat}} = 6.70$, $SD_{\text{Defeat}} = 2.23$, $t(150) = –1.64$, $b = –0.623$, $p = .103$, $d = 0.27$, 95% CI = [–1.37, 0.13]), but a main effect of strength of attachment to the team on subjective well-being, $t(150) = 2.52$, $b = 0.177$, $p = .013$, 95% CI = [0.04, 0.32].

D.4.2.3 Moderation

In contrast to study 1 and consistent with study 2, regressing subjective well-being on whether a participant supported the winning or losing team, the strength of their attachment to the team, and the interaction between these revealed that the impact of condition on participants' subjective well-being was not moderated by the strength of their attachment to the team ($t(148) = –0.04$, $b = –0.005$, $p = .971$, 95% CI = [–.29, .27]). For full results please refer to table D-8, model 3.

Table D-8. Study 3: Model results for subjective well-being

Predictors	*b*	*SE*	*t*	*p*	95% CI
Model 1					
Intercept	6.699	0.274	24.49	<.001	[6.16, 7.24]
Condition	–0.623	0.379	–1.64	.103	[–1.37, 0.13]
Model 2					
Intercept	6.375	0.187	34.03	<.001	[6.00, 6.75]
Attachment^{+}	0.177	0.070	2.52	.013	[0.04, 0.32]
Model 3					
Intercept	6.754	0.270	24.97	<.001	[6.22, 7.29]
Condition	–0.729	0.375	–1.94	.054	[–1.47, 0.01]
Attachment^{+}	0.194	0.106	1.83	.069	[–0.02, 0.40]
Condition × Attachment^{+}	–0.005	0.142	–0.04	.971	[–0.29, 0.27]
Model 4					
Intercept	6.264	0.262	23.94	<.001	[5.75, 6.78]
Attachment^{+}	0.194	0.076	2.57	.011	[0.04, 0.34]
Attachment^{+} (squared)	0.016	0.026	0.61	.542	[–0.04, 0.07]
Model 5					
Intercept	6.250	0.264	23.63	<.001	[5.73, 6.77]
Attachment^{+}	0.139	0.151	0.92	.358	[–0.16, 0.44]
Attachment^{+} (squared)	0.022	0.030	0.74	.463	[–0.04, 0.08]
Attachment^{+} (cubed)	0.004	0.009	0.42	.676	[–0.01, 0.02]
Model 6					
Intercept	6.519	0.227	28.66	<.001	[6.07, 6.97]
Attachment^{+}	0.179	0.075	2.37	.019	[0.03, 0.33]
Imagination^{+}	0.056	0.128	0.44	.664	[–0.20, 0.31]
Closeness^{+}	–0.008	0.089	–0.09	.932	[–0.18, 0.17]
Importance^{+}	0.129	0.180	0.72	.475	[–0.23, 0.49]
Gender	–0.496	0.436	–1.14	.258	[–1.36, 0.37]
Age^{+}	0.007	0.018	0.38	.706	[–0.03, 0.04]

Note. CI = confidence intervals; $^{+}$ mean-centred.

D.4.2.4 Checking for Nonlinearity

I again followed up the significant main effect of attachment on subjective well-being by checking for nonlinearity, but including quadratic and cubic terms (see table D-8, models 4 and 5) did not improve overall model fit.

D.4.2.5 Controls

The effect of attachment on subjective well-being holds when controlling for (a) participants' levels of imagination, participants' evaluation of how (b) close and (c) important the match was, as well as their (d) gender and (e) age, see table D-8, model 6.

D.4.3 Discussion

Using another manipulation (tapping into individuals' imagination with the help of a future-facing scenario), this study replicated the finding from my first experiment (study 2) that individuals higher in attachment to their team reported higher subjective well-being after imagining the outcome of the 2018 FIFA World Cup final, regardless of whether they had to imagine their team being victorious or defeated. This stands in stark contrast to the overall findings from another paper examining at length the impact of group performance on subjective well-being, contingent on individuals' strength of attachment to their team (Esch & Wilson, 2019).

D.5 General Discussion

Much of the behavioural sciences rely on randomised experiments in order to investigate phenomena and establish causation between selected variables. Such randomised experiments often necessitate an (at times substantial) abstraction from the real world in order to translate a phenomenon of interest into an experimental setting. This abstraction, more often than not, brings with it a deviation from the real world, which then puts into question whether studies conducted in real-world settings and studies conducted in the laboratory are testing the same thing. With this in mind, this article set out to explore whether findings from the field can be reliably replicated in an experimental setting; that is, whether or not similar results

are obtained across research designs. To this end, I devised three studies. In the ideal case, the findings from the follow-up randomised laboratory experiments (studies 2 and 3, abstractions from the real world) should mirror the conclusions from study 1 (a natural experiment in a real-world setting). I tested this hypothesis in the context of self-categorisation, more specifically by examining the subjective well-being of individuals who self-categorise themselves as fans of a team.

Study 1 was taken from Esch and Wilson (2019) and served as an example of a main effect and interaction effect that have been replicated across settings (see Esch & Wilson, 2019 for more details). Specifically, using a natural experiment in an ecological setting, I showed that a victory (defeat) of their football team leads fans to report higher (lower) levels of subjective well-being after the victory (defeat) relative to baseline levels. This main effect of victory versus defeat on subjective well-being is moderated by fans' strength of attachment to their team, with the subjective well-being of fans with higher levels of attachment being affected more strongly by the outcome – positive in the case of a victory, negative in the case of a defeat.

Study 2 was an initial attempt to replicate these findings in a randomised experiment. However, contrary to the findings of study 1, neither did the outcome (victory vs. defeat) affect fans' subjective well-being in study 2, nor was there an interaction effect of outcome with strength of attachment. Instead, there was a strong positive linear effect of strength of attachment on subjective well-being – that is, the higher a fan's attachment to their team, the higher their reported subjective well-being, irrespective of which experimental condition (victory vs. defeat) they were in. This puzzling finding and therewith the discrepancy between the findings from studies 1 and 2 caused initial concerns whether the abstraction and artificiality involved in randomised laboratory experiments changes the effects one observes.

In order to establish whether this discrepancy was merely an idiosyncrasy of the sample or the experimental manipulation used in study 2, I devised study 3 – another randomised experiment with a different experimental manipulation and a

fresh sample. This second randomised experiment replicated the findings from the first randomised laboratory experiment (study 2), and not the ones from the natural experiment (study 1), thus ruling out a potential idiosyncrasy of the sample used in study 2. Again, individuals with higher levels of attachment to their team also reported higher levels of subjective well-being, regardless of whether they were asked to imagine that their team had won or lost an important competition.

The differences in results between the natural experiment and the randomised laboratory experiments I conducted are startling. The finding that die-hard fans report higher subjective well-being (i.e. are happier and more satisfied with their life) after witnessing or imagining their team being defeated is counterintuitive at best and stands in diametrical opposition to what the majority of people will have either experienced themselves or witnessed in real life. In fact, most of us are probably familiar with the agony that such team defeats impart upon the team's followers, with those high in attachment (i.e. the die-hard fans) generally suffering more than those low in attachment (i.e. the fair-weather fans).

The question remains why higher subjective well-being after witnessing or imagining a failure was consistently observed in a laboratory setting. A possible explanation is that the somatic marker (Damasio, 1996) of being a fan overrode the experience of victory versus defeat. Damasio (1996) categorised "emotional changes under the umbrella term 'somatic state'" (p.1414) and hypothesised that specific emotions – due to repetition – become associated with certain stimuli, that is, individuals develop somatic markers. I posit that individuals develop positive somatic markers by self-categorising as part of a group (e.g. a fan of a particular team). Through this self-categorisation, individuals not only satisfy the fundamental human need to belong (Baumeister & Leary, 1995), but it also gives them the opportunity to build affiliation with fellow fans (Holt, 1995) and thereby gain access to a network of social support (S. Cohen & Wills, 1985). This is particularly important as such positive social relationships are among the core drivers of subjective well-being (Compton, 2005). Moreover, attachment, defined as an affective and cognitive connection between an individual and an attachment

object, usually results in a very accessible network of related memories (Escalas, 2004; Mikulincer & Shaver, 2007). The stronger this connection between individual and attachment object (Mikulincer, Hirschberger, Nachmias, & Gillath, 2001) – in my studies, the team – the more salient are positive memories related to the attachment object (N. L. Collins, 1996; Mikulincer, 1998). In fact, prior research has established that higher levels of attachment are usually associated with stronger emotions (cf. Aron & Westbay, 1996; Bowlby, 1979; N. L. Collins & Read, 1990; Fehr & Russell, 1991; Sternberg, 1987). This could explain why the artificial setting of a randomised experiment was ineffective in instilling the emotional reactions that were otherwise present in real-life situations. Instead, the manipulations employed in my two laboratory experiments primarily elicited the strong and positive emotions associated with being a fan of one's team. The presence of this positive mental state buffered individuals against potential negative emotions induced through the experimental defeat manipulation. As the defeats were artificially induced and either in the past (study 2: watching and reading about a defeat) or hypothetical (study 3: imaging a defeat), their anticipated negative impact did not materialise.

However, the key question remains why the results from an ecological setting (study 1) were not replicated in the sterile setting of the laboratory (studies 2 and 3).

Affect induction procedures are the established norm to experimentally elicit changes in individuals' affective states (e.g. Lench et al., 2011; Westermann et al., 1996; Zhang et al., 2014) and are therefore widely used. A review by Gerrards-Hesse et al. (1994) and a meta-analysis by Westermann et al. (1996), for example, established that while affect induction procedures utilising films and stories (such as the ones used studies 2 and 3) tend to be highly effective, differences exist in how effective such induction procedures are in generating both positive and negative affect. In general, stronger effects were observed when the aim of the affect induction procedures was to generate negative affect (Westermann et al., 1996). For these reasons, these particular procedures were regarded as most appropriate and therefore chosen for this research project. Nonetheless, these two procedures

are not without alternatives. Researchers have used a multitude of affect induction procedures (for reviews and comparisons, see e.g. Clark, 1983; Ferrer et al., 2015; Gerrards-Hesse et al., 1994; Goodwin & Williams, 1982; Isen & Gorgoglione, 1983; Lench et al., 2011; Nummenmaa & Niemi, 2004; Westermann et al., 1996; Zhang et al., 2014), so future studies should attempt to utilise different procedures to attempt a laboratory replication of the effects observed in an ecological setting. Among the many alternatives to elicit changes in individuals' affective states are the use of autobiographic recall (e.g. Brewer & Doughtie, 1980; Jallais & Gilet, 2010), the use of music (e.g. Baumgartner, Lutz, Schmidt, & Jäncke, 2006; Pignatiello, Camp, & Rasar, 1986), and the control and manipulation of individuals' facial expressions (e.g. Duclos et al., 1989; Schnall & Laird, 2003).

None of the affect induction procedures that researchers have used so far, however, are without fault, and several potential issues have been highlighted to date. Isen and Gorgoglione (1983), for example, found the effects of affect induction procedures to not be particularly long-lasting. Polivy (1981) added that it was hard to elicit specific emotions individually using affect induction procedures, with such procedures generally generating multiple emotions at once. Beyond this, Martin (1990) noted that for most affect induction procedures, participants might be able to infer the target affective state, thus potentially leading to demand effects, that is, participants responding in a way they assume to be in line with the expectations of the researcher. Lastly, Ferrer and colleagues (2015) tested the effectiveness of various affect induction procedures widely used in physical laboratory settings in order to establish whether these procedures could be translated into an online setting. The researchers found that while they were generally able to elicit positive and negative affect, they were not able to induce happiness using such procedures. Given that happiness (or subjective well-being to use the more technical term) has both affective and cognitive components, and no consensus yet exists on whether affect induction procedures can also impact cognition (for contrasting views, see Lench et al., 2011; Nummenmaa & Niemi, 2004), this – paired with the issues laid out above – might explain why the randomised laboratory experiments were not

successful in replicating the effects of victory vs. defeat. The null results might also reflect type II errors (Ferguson & Heene, 2012) and thus further evidence is required to conclusively rule out that the effects observed in an ecological setting are not replicable in a laboratory setting, rather than being a function of the procedures used.

This is particularly important because replication has been a hot topic in the social sciences for the past decade (e.g. Bonett, 2012; Brandt et al., 2014; Lindsay, 2015; Open Science Collaboration, 2015). While replication is not a new topic of discussion (see Epstein, 1980; Fishman & Neigher, 1982; Furchtgott, 1984; Lubin, 1957; Neher, 1967; Smith, 1970), surprisingly few replication studies have been conducted in the history of psychological science (Makel, Plucker, & Hegarty, 2012). Recent failed attempts to replicate various studies have led some to proclaim a replication crisis (e.g. Baker, 2016; Braver, Thoemmes, & Rosenthal, 2014; Coyne, 2016; Loken & Gelman, 2017; Pashler & Harris, 2012; Pashler & Wagenmakers, 2012; Tackett, Brandes, King, & Markon, 2019), although this notion is not without contention (e.g. Fanelli, 2018; Gilbert, King, Pettigrew, & Wilson, 2016; Maxwell, Lau, & Howard, 2015; Schmidt & Oh, 2016; Stroebe, 2016; Stroebe & Strack, 2014). Regardless of which side of debate one is on, the concern over these failed replication attempts is one of the main reasons for the recent push for reproducibility across disciplines (McNutt, 2014; Zwaan, Etz, Lucas, & Donnellan, 2018). Generally, one can distinguish between two types of replication – direct replication and conceptual replication (Fabrigar & Wegener, 2016; Zwaan et al., 2018). Direct replications try to stay as close as possible to the setup and protocol of the original study, while conceptual replications usually involve assessing the same phenomenon with a different manipulation of the independent variable and/or different measurement of the dependent variable (Fabrigar & Wegener, 2016; LeBel, Berger, Campbell, & Loving, 2017; Nosek & Errington, 2017). While there is disagreement in terms of what type of replication should be preferred, with some (e.g. Asendorpf et al., 2013; Simons, 2014) favouring direct replications and others (e.g. Crandall & Sherman, 2016; Lynch, Bradlow, Huber, & Lehmann, 2015) favouring conceptual replications,

replication is generally regarded as the gold standard for establishing confidence in research findings (Jasny, Chin, Chong, & Vignieri, 2011).

However, replication is not a silver bullet (Earp & Trafimow, 2015); that is, replication in and of itself is not sufficient. The two randomised experiments described above are a case in point. They represent conceptual replications of the same effect, an effect one might well term counterintuitive and which thus is in line with the preference of psychologists for counterintuitive findings (Love, 2013). Mere reliance on these randomised laboratory experiments, however, would have led one astray in my case – as the initial natural experiment shows. Given that the goal of the research[7] was to understand a naturally occurring phenomenon *(How do sports fans react to the victory and defeat of their team, contingent on their level of attachment?)*, the laboratory experiments did not contribute to an understanding of such real-life reactions. While some (e.g. Morales, Amir, & Lee, 2017) have highlighted that realism ought to be a key consideration in the design of experiments, with its importance hinging on the research goals of the project, such realism – if at all achievable – often does not go far enough to induce real-life effects. Shiv and Fedorikhin (1999), for example, have shown that hypotheticals which are widely used in experiments do not elicit the same intensity of affect as does reality. This is just one of the criticisms pointed at the ecological validity of laboratory manipulations and inductions of emotions (e.g. Kovacs et al., 2016; Nummenmaa & Niemi, 2004). Cialdini (2009) and Maner (2016), among others, have therefore strongly advocated for the increased use of field research into naturally occurring phenomena, not only to increase the appeal of research findings to the public, but also to better prove its real-world impact. In line with these calls, my research provides initial evidence that some effects or phenomena might be unsuitable for examination in the laboratory. While more research is needed to examine how far

[7] Morales, Amir and Lee (2017) have rightfully pointed out that the choice of research design should follow from the research goals. However, too often researchers overstate the impact of their findings and generalise beyond the sample or setting that was investigated (Simons et al., 2017), for example when they try to translate a theoretical contribution into an application in real-life settings.

reaching the problems I have documented here are, it points to necessary reconsiderations in the field's research and publication practices. I thus join in Finkel, Eastwick and Reis's (2017) call that the current discussion on good research practices needs to be broader. I propose that the ecological validity of research designs should be part of that discussion.

D.6 References

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D.7 Appendices

Appendix D-I: Measures

Subjective well-being (following Schwarz & Clore, 1983)

Items were anchored at 'not happy/not satisfied' (0) and 'very happy/very satisfied' (10)

- How happy are you about your life as a whole?
- How happy do you feel right now, at this moment?
- How satisfied are you with your life as a whole these days?

Strength of attachment to the group (following Park et al., 2010)

Items were anchored at 'not at all' (0) and 'completely' (10)

- To what extent are the (group name) part of you and who you are?
- To what extent do you feel that you are personally connected to (group name)?
- To what extent are your thoughts and feelings toward the (group name) often automatic, coming seemingly on their own?
- To what extent do your thoughts and feelings toward the (group name) come to you naturally and instantly?

Appendix D-II: Algorithm Used to Determine Competitor Teams for Study 2

The goal of the algorithm was to select the team that was closest to the focal team in the final league table (see table D-9) and against which the focal team had won one match and lost another in the 2016-2017 English Premier League season. In order to achieve this goal, at first the team that came out one place above the focal team (if possible) was examined. If this did not result in a hit, the team that came out one place below the focal team was examined, followed by the team that came out two places above the focal team, followed by the team that came out two places below the focal team, and so on until there was a hit. So for Arsenal F.C., for example, it was first checked whether the matches against Liverpool F.C. matched the criterion (one victory and one defeat in the season), then the matches against Manchester United F.C., then the matches against Manchester City F.C., and then finally the matches against Everton F.C. which resulted in a hit. For an overview of the competitor teams and matches that were selected for the four focal teams (Arsenal F.C., Chelsea F.C.. Liverpool F.C., Manchester United F.C.), please refer to table D-10.

Table D-9. Final league table of the 2016-2017 English Premier League season

Position	Team	Goal difference	Points
1	Chelsea F.C.	52	93
2	Tottenham Hotspur F.C.	60	86
3	Manchester City F.C.	41	78
4	Liverpool F.C.	36	76
5	Arsenal F.C.	33	75
6	Manchester United F.C.	25	69
7	Everton F.C.	18	61
8	Southampton F.C.	-7	46
9	A.F.C. Bournemouth	-12	46
10	West Bromwich Albion F.C.	-8	45
11	West Ham United F.C.	-17	45
12	Leicester City F.C.	-15	44
13	Stoke City F.C.	-15	44
14	Crystal Palace F.C.	-13	41
15	Swansea City A.F.C.	-25	41
16	Burnley F.C.	-16	40
17	Watford F.C.	-28	40
18	Hull City F.C.	-43	34
19	Middlesbrough F.C.	-26	28
20	Sunderland A.F.C.	-40	24

Table D-10. Matches selected based on algorithm

Team	Victory	Defeat	Selected competitor team
Arsenal F.C. (5)	3 – 1 21.05.2017	1 – 2 13.12.2016	Everton F.C. (7)
Chelsea F.C. (1)	2 – 1 26.11.2016	0 – 2 04.01.2017	Tottenham Hotspur F.C. (2)
Liverpool F.C. (4)	4 – 1 10.09.2016	1 – 3 27.02.2017	Leicester City F.C. (12)
Manchester United F.C. (6)	1 – 0 11.12.2016	1 – 2 14.05.2017	Tottenham Hotspur F.C. (2)

Note. Final league table position in parentheses.

Appendix D-III: Example Match Report Used in Study 2

Liverpool 4-1 Leicester City

Premier League, 5:30pm Saturday 10th September, Anfield

Liverpool: R Firmino (13, 89), S Mane (31), A Lallana (56)
Leicester City: J Vardy (38)

Two goals from Roberto Firmino helped Liverpool beat Leicester City 4-1 in the first game at the renovated Anfield.
An attendance of 53,075 - Liverpool's largest since 1977 - watched the hosts go in front after 13 minutes through the Brazilian, before Sadio Mane doubled their advantage in the 31st minute.
A disastrous error from Lucas Leiva allowed Jamie Vardy to cut the deficit, but Adam Lallana restored Liverpool's two-goal advantage with a stunning strike shortly after half-time.
Firmino then added further gloss to the scoreline in the 89th minuute, passing the ball into an empty net after Kasper Schmeichel mistimed his challenge on Mane.
Jurgen Klopp's side produced the perfect attacking performance to open the new £115m Main Stand, scoring four goals for the second time in four Premier League matches.
The result sees them climb to fifth in the table, while Leicester drop to 15th and turn their attention to a first Champions League fixture against Club Brugge on Wednesday.
Claudio Ranieri picked the same starting XI that beat Swansea, but they found themselves a goal down early on.
James Milner, in for Alberto Moreno at left-back, picked out Firmino and the Liverpool forward skipped inside Robert Huth and wrong-footed Schmeichel.
The hosts were well on top and could have extended their lead when Mane teed up Daniel Sturridge, but the England international saw his close-range effort expertly saved by the Foxes stopper.
It was a temporary reprieve for the visitors, though, as Mane latched onto Sturridge's audacious back-heel and chipped past Schmeichel.

It was no more than Liverpool deserved for their fast start, but a shocking mistake from Lucas gifted the visitors a route back into the match seven minutes before half-time.

A poor first touch from the Brazilian put him under pressure, and his attempted pass presented Vardy with the easiest of opportunities. There was a question mark over whether the goal should have stood, though, as Shinji Okazaki appeared to be in the 18-yard box before the ball had left the penalty area from Simon Mignolet's goal kick.

Despite being second best for much of the half, Leicester almost went in level as Robert Huth's looping header bounced off the crossbar and over.

Claudio Ranieri introduced Ahmed Musa at half-time as Leicester look to capitalise on their good fortune, but they soon slipped further behind as Lallana rifled into the top corner for Liverpool's third in the 56th minute.

Vardy squandered the chance for an immediate reply, blasting straight at Mignolet after a fine through ball by Riyad Mahrez.

The champions attempted to build pressure as the game wore on, but the better chances fell to their opponents as Jordan Henderson blazed over and Schmeichel denied Mane.

The Leicester goalkeeper was at fault for Liverpool's fourth in the closing stages, rushing out of his goal and missing his tackle on Mane, who teed up Firmino to grab his second goal of the season.

Player ratings

Liverpool: Mignolet (6), Clyne (7), Matip (7), Lucas (4), Milner (7), Wijnaldum (7), Henderson (7), Lallana (8), Mane (8), Firmino (8), Sturridge (7)

Subs used: Moreno (6), Stewart (6), Coutinho (6)

Leicester City: Schmeichel (7), Simpson (6), Huth (6), Morgan (6), Fuchs (6), Mahrez (5), Drinkwater (6), Amartey (6), Albrighton (5), Okazaki (5), Vardy (6)

Subs used: Hernandez (6), Musa (6), Ulloa (6)

Man of the match: Roberto Firmino

Appendix D-IV: Scenarios Used in Study 3

Participants in the victory *(defeat)* condition read the following scenario:

> It is the 15th of July 2018 and your national football team England is playing against France in the 2018 FIFA World Cup Final at Luzhniki Stadium in Moscow.
>
> After an intensive knockout-stage, you – like millions of other fans – are watching the final in a pub with fellow fans. The atmosphere is electric, with you and your fellow fans having eagerly awaited the match ever since England made it through to the final five days earlier.
>
> Despite it being a close-fought match, England *(France)* have the upper hand for most of the 90 minutes. You witness the English *(French)* team being solid at the back, quick on the ball, and continually putting France's *(England's)* goalkeeper under pressure, as though utterly determined to bring the trophy home.
> At 17:51, the referee blows the final whistle, confirming a clear 4-1 victory for England *(France)*.

E. Conclusions

E.1 Summary of Key Findings

This thesis advances our understanding of how the performance of social groups in settings with binary outcomes impacts individuals' subjective well-being and performance, as well as the methods used to examine such relationships. In this thesis, I therefore pursued the following three research objectives:

1) to examine whether and how victories and defeats of social groups can affect the subjective well-being of individuals self-categorising into these groups,
2) to establish for which individuals the performance of social groups affects their performance on cognitive tasks,
3) to investigate whether typical research procedures used in the behavioural sciences are appropriate to study effects relating to the performance of social groups.

Chapter B, 'We Won, Therefore I Won: How the Performance of Social Groups Affects Individuals' Subjective Well-Being', addressed research objective 1. Using experimental, archival, and longitudinal data with 3,470 unique respondents from the United Kingdom, Germany, Greece, and Portugal, I provide converging evidence that the performance (victory vs. defeat) of the social groups individuals self-categorise into impacts individuals' subjective well-being. Victories have a positive effect and defeats a negative effect on subjective well-being. I demonstrate this effect across different social identities, specifically sports, gender, and politics. I further find that this effect varies in magnitude depending on one individual difference factor (individuals' strength of attachment to their social group) and one contextual factor (the importance of the event). For those individuals high in attachment, the impact of event outcomes on subjective well-being is very pronounced. In contrast, for individuals low in attachment, neither victory nor defeat has an impact on their subjective well-being. A similar asymmetry is observed for the importance of the event: For important consequential events, the social group's performance exerts considerable influence on individuals' subjective

well-being, while the social group's performance at ordinary events does not impact individuals. Lastly, I pinpoint changes in self-esteem and self-efficacy as the underlying psychological mechanisms for the impact of the social group's performance on individuals' subjective well-being. Victories of their social groups lead individuals to more positively evaluate themselves (self-esteem) and their abilities (self-efficacy), while defeats have the opposite effect. These enhanced (resp. diminished) assessments of self-esteem and self-efficacy then positively (resp. negatively) influence individuals' subjective well-being.

Chapter C, 'The Effects of Vicarious Victories and Defeats on the Task Performance of Low- and High-Resilience Individuals', tackled research objective 2. Using two longitudinal studies carried out contemporaneously to important events in two contexts (sports, politics) with 387 unique UK residents, I show that the performance of the social group (victory vs. defeat) significantly impacts the task performance of individuals (who self-categorise into the group) in unrelated settings as a function of individuals' psychological resilience. In particular, I find diametrical effects of winning versus losing on individuals with low levels of resilience and those individuals with very high levels of resilience: For high-resilience individuals, vicarious defeats (relative to vicarious victories) significantly improve their performance in solving anagrams following a learned helplessness induction. For individuals with low levels of resilience, this effect switches – supporters of the winning group outperform supporters of the losing group. I provide evidence for this key interaction effect with binary outcomes of the social group's performance that vary in ambiguity (i.e. clear-cut vs. ambiguous victory or defeat). These findings lend support to people's expectations that the performance of social groups they self-categorise into will affect their performance, even in unrelated settings. My research findings are a first indication that prior studies might not have been able to establish this effect of social group performance on individuals' performance because it was masked by individual differences variables (such as psychological resilience).

Chapter D, 'Ecological Validity Revisited: A Tale of Failed Replications in the Laboratory', addressed research objective 3. Drawing on one natural experiment (one of the studies from chapter B) and two randomised laboratory experiments in a sports context with 681 UK residents overall, I test whether findings from ecological settings can be reliably replicated in experimental laboratory settings. This comparison showed a startling discrepancy between the natural and the randomised experiments. In the natural experiment, the victory (defeat) of one's social group had a positive (negative) impact on the subjective well-being of individuals self-categorising into the group. This effect was moderated by the strength of attachment, with low-attachment individuals not being affected by the event outcome, while the impact was quite profound for high-attachment individuals. In contrast, in the randomised laboratory experiments, the performance of the social group had no bearing on individuals' subjective well-being. Instead, there was a strong positive effect of individuals' strength of attachment on their subjective well-being, irrespective of which condition (victory vs. defeat) they were in. This means that individuals with higher attachment to their social group reported higher subjective well-being, regardless of whether they were asked to imagine or witness their sports team win or lose an important competition. These findings provide initial evidence that randomised laboratory experiments might not be suitable to examine certain effects or phenomena (due to the abstraction from the real world this method necessitates), particularly relating to the outcomes of the performance of social groups. They thus point to the need to combine research designs to study the phenomenon in order to have confidence in one's findings instead of relying on a single method for establishing and evaluating causal relationships.

E.2 Theoretical Contributions

As the domain-specific contributions to theory have been laid out in detail in the individual papers covered in this thesis, I only review the key theoretical contributions of my programme of research:

First, existing research on the effects of social groups on individuals has assumed that the status of social groups is predominantly stable. My research examines the dynamics at play when the performance of the social groups is entered into this equation. While prior research has already assessed the effects of winning and losing in a sports context (e.g. Hirt, Zillmann, Erickson, & Kennedy, 1992), my research tests the effects of social group performance across a wider range of social identities (sports, politics, gender). In addition, research in a sports context has shown that sports spectatorship can have adverse effects on people's post-game behaviour (e.g. Miller, McDonald, McKenzie, O'Brien, & Staiger, 2013; Redelmeier & Stewart, 2003) and health (e.g. Carroll, Ebrahim, Tilling, Macleod, & Smith, 2002; Witte, Bots, Hoes, & Grobbee, 2000). Even though the examined reactions to sports event outcomes were pronounced, they applied to only isolated individuals among the spectators. Besides utilising multiple social identities across my programme of research, I therefore focus on effects that are applicable to wider parts of the population in the hope of increasing the generalisability of my findings.

Second, I further examine individuals' task performance as an outcome variable. People hold the inherent belief that the performance of a social group they self-categorise into has an effect on them, but existing research has been unable to back up this lay people's assumption (e.g. Hirt et al., 1992). In contrast to previous findings, my research corroborates this assumption and shows that prior studies may have found null results because they did not account for key individual differences. I thus highlight differences in individuals' level of psychological resilience as one of the individual differences variables that may mask the overall effect of social group performance on individuals' task performance. More specifically, I show that low-resilience individuals self-categorising into the winning group experience a boost that causes them to perform better in an unrelated skill task. This victory transferal seems to buffer low-resilience individuals against threats to their self-worth (Creswell et al., 2005) initiated by everyday stressors (Seery & Quinton, 2016). In contrast to prior research (G. L. Cohen et al., 2007; Larsen, McGraw, Mellers, & Cacioppo, 2004; Levine, Prosser, Evans, & Reicher,

2005), these effects are irrespective of the salience of the social identity or of actual social group performance relative to individuals' expectations. Contrary to the results for low-resilience individuals, high-resilience individuals of the losing group outperform their counterparts self-categorising into the losing group. My findings suggest that such high-resilience individuals use their own performance (Crocker & Wolfe, 2001) as a way to dissociate from the group (Snyder, Lassegard, & Ford, 1986; Van Vugt & Hart, 2004), in order to counterbalance the identity threat caused by group defeats. I thus add further nuance to the existing literature linking identity threats to poorer performance (Spencer, Steele, & Quinn, 1999; Steele, 1997; Steele & Aronson, 1995).

Third, in the context of social groups, prior research has extensively studied the identification with other group members (termed "social identification" or "group identification", e.g. Doosje, Branscombe, Spears, & Manstead, 1998; Luhtanen & Crocker, 1992), but not the focal entity itself. While social identification is important to understand intergroup behaviour (Ellemers, Spears, & Doosje, 1997; Jetten, Spears, & Manstead, 1996; Mackie, 1986), my research shows that it is also worthwhile to examine individuals' relationship with the overall impersonal entity (which is the initiator of psychological group membership in the first place). Research on brands has already looked at such relationships (so-called brand attachment, e.g. Park, MacInnis, Priester, Eisingerich, & Iacobucci, 2010; Thomson, MacInnis, & Whan Park, 2005), but this is the first research to date that takes this understanding and conception of attachment beyond commercial settings.

Fourth, previous research has primarily focused on purely negative effects of social group performance. In light of the rising popularity of positive psychology (e.g. Seligman & Csikszentmihalyi, 2000), it is time to also shed light on positive ramifications of social group membership. Generally, individuals self-categorise into social groups in their quest for a positive self-image (Tajfel, 1981). Such improved self-image leads to a more frequent experience of positive affect (Gardner & Pierce, 2010). An increase in the frequency of positive affect, in turn, has been shown to have many desirable consequences, among them the formation of better social

relationships (e.g. Diener & Seligman, 2002), higher creativity and better problem-solving ability (e.g. Staw, Sutton, & Pelled, 1994), increased engagement in prosocial behaviour (e.g. Krueger, Hicks, & McGue, 2001), and improved health as measured by, among others, better cardiovascular function (e.g. Bacon et al., 2004) and reduced pain (e.g. Bruehl, Carlson, & McCubbin, 1993). Mere membership of social groups, it seems, might just have a positive impact on individuals' subjective well-being by fulfilling their need to belong (Baumeister & Leary, 1995) and providing them with a network of social support (S. Cohen & Wills, 1985) that makes coping easier (Thoits, 1986). Building on this research, my findings contribute to the literature that group membership can not only entail positive, but also negative consequences, contingent on the social group's performance.

Fifth, previous research has predominantly assessed the impact of major life events such as marriage, child birth, bereavement, or the onset of a disability (e.g. Anusic, Yap, & Lucas, 2014; Brickman, Coates, & Janoff-Bulman, 1978; Lucas, 2007; Luhmann, Hofmann, Eid, & Lucas, 2012). While such events are not uncommon in life, they occur rather infrequently. My research focuses on so-called minor life events, that is those events that are more frequent and common. While such minor life events generally carry fewer (long-term) implications for individual's overall life, they can have a significant effect on individuals' well-being in the short term.

Prior research has consistently found a negativity bias (i.e. bad is stronger than good; e.g. Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Rozin & Royzman, 2001; Vaish, Grossmann, & Woodward, 2008). My research indicates that this negativity bias might not be universal as the positive and negative events I examined led to positive and negative outcomes that were comparable in magnitude.

Moreover, my research is the first to holistically examine the impact of social group performance on subjective well-being via the social group's impact on self-esteem and self-efficacy. In addition, I corroborate research on self-evaluations that has shown that while self-esteem and self-efficacy are related (e.g. Judge & Bono, 2001;

Judge, Erez, Bono, & Thoresen, 2002), they are separate constructs that add unique explanatory power to a model (e.g. Chen, Gully, & Eden, 2001, 2004).

Beyond these substantive contributions to theory, my work also adds to existing literature on methodological considerations. In the recent reproducibility debate (e.g. Lindsay, 2015; McNutt, 2014; Open Science Collaboration, 2015; Zwaan, Etz, Lucas, & Donnellan, 2018), much discussion has focussed on a more widespread implementation of replication efforts to increase confidence in the causality established through research studies. Much of this debate has focussed on whether experiments (the default in the behavioural sciences) should be replicated as closely as possible (so-called direct replications, e.g. Asendorpf et al., 2013; Simons, 2014) or whether this should be complemented by an effort to extend existing findings (so-called conceptual replications, e.g. Crandall & Sherman, 2016; Lynch, Bradlow, Huber, & Lehmann, 2015). Building on a long list of eminent scholars that have called for more research in the field (e.g. Cialdini, 2009; Fiske, 2016; Shadish, 2002), my examination of the lack of ecological validity of randomised laboratory experiments brings another sense of urgency to their pleas: Randomised laboratory experiments might change the effects researchers observe, and thus the conclusions that are drawn from what is often supposed or at least meant to be not-too-distant abstraction from the real world. The results from my third paper (chapter D) indicate that, at least in the context of self-categorisation and when using affect induction procedures, researchers should be cautious of drawing conclusions based solely on evidence from randomised laboratory experiments.

E.3 Implications for Practice

Besides the social identities examined in my papers, individuals can construct a multitude of psychological group memberships in a variety of life contexts. Such social groups can be formalised in the sense that they might correspond to already existing organisations (e.g. companies, brand communities, political parties, sports teams, fan clubs, charities) or non-formalised (e.g. if an individual regards herself as a lover of books without being a formal member of a book club). In the following

section, I will focus my discussion of practical implications of my programme of research on formalised social groups as they can be actively managed by the individuals in charge of these organisations.

E.3.1 Individuals as Employees

As individuals spend large amounts of their life working (Caza & Wrzesniewski, 2013), their social identity that is constructed in the context of their workplace is often a key part of their self-concept (Hoelter, 1985). Over time, employees typically form close bonds with other fellow co-workers, and thus, the company they work for. This bond goes as far as individuals constructing nicknames to show their sense of belonging (e.g. 'Googlers' at Google, 'Tweeps' at Twitter) or wearing corporate-branded apparel even in their leisure time.

Prior research on self-categorisation in an organisational setting has found that self-categorisation impacts a variety of factors that directly or indirectly contribute to a company's bottom line. Findings include, for example, that social identity salience at work can increase the motivation of employees through a desire to positively impact social self-esteem (van Knippenberg, 2000). Companies should therefore implement measures to increase the salience of the organisational social identity, for example by creating open meeting places where employees can interact beyond their day-to-day responsibilities. Almost all companies host summer BBQ events, frequent after-work get-togethers, and Christmas parties, but the majority of companies (and their HR departments) goes beyond these standards and offers more events and benefits that make employees not only more satisfied and engaged at work, but also strengthens their social identity related to their employer and thus their organisational commitment (Dutton, Dukerich, & Harquail, 1994; Mael & Ashforth, 1992). In other words, companies that are able to inspire a strong social identity at work are those who are considered to have a positive organisational culture (Cornelissen, Haslam, & Balmer, 2007). Positive emotions elicited by a positive organisational culture can, in turn, improve employee well-being (Ashkanasy & Härtel, 2014; Ramlall, 2008).

Besides the social activities on offer, it is also important that companies foster a positive external image. Because individuals tend to self-categorise into high-status social groups (Tyler, Kramer, & John, 1999), employees who work for 'good' (i.e. responsible, ethical, and/or sustainable) companies are more likely to experience a sense of pride in their membership. It is thus important for companies to develop and market leading products and services that not only appeal to their potential customers, but that also instil a sense of pride in their employees. Pride is directly related to the status of the group and thus a contributor to a strong social identity (Blader & Tyler, 2009). The stronger and more salient the work-related social identity is, the more likely it is that a strong emotional bond between company and employee develop (i.e. high attachment).

Moreover, the findings of my first paper (chapter B) suggest that a product or service that is mediocre in comparison to a rival company's offering can cause high-attachment employees to become discouraged. In a similar vein, the employer's overall financial performance and success on the market can matter to individuals. Good news relating to the organisation (i.e. those that can be construed as a success or victory) will positively contribute to employees' subjective well-being. Negative news (i.e. those that employees will interpret as a failure or defeat), on the other hand, will detract from their subjective well-being. Organisations can thus leverage positive organisational outcomes (e.g. above average quarterly results) to positively influence their employees' subjective well-being. Performance that lacks behind expectations, on the other hand, requires careful management and communication.

A detour into the world of politics gives an indication as to what strategies organisations can use to alleviate the effects of underperformance: Those familiar with news reporting after (national) elections have probably heard of political 'spin doctors' (Gaber, 2000; Sumpter & Tankard, 1994), those members of the parties' press corps or affiliates that are sent out to interpret election results in their party's favour. They achieve this by reframing the arguments or shifting the comparison points ('Yes, we did not reach our national target, but we performed above expectations in these marginal seats.'). Such framing is an important factor in

decision-making (Tversky & Kahneman, 1981). Given that my findings indicate that the negative effects of defeats are as strong as the positive effects of victories, companies might want to use such a strategy in their internal communications when reporting results that are lacking behind strategic goals in order to alleviate their effects on employees' well-being. Employee well-being is a popular topic (Grant, Christianson, & Price, 2007), with many organisations such as Accenture, AXA, Microsoft, and UNICEF UK launching initiatives such as 'well-being at work' programmes (Agarwal, Bersin, Lahiri, Schwartz, & Volini, 2018). The careful management of internal communications on the performance of the organisation can complement such efforts.

Organisations have also recently started approaching expert institutions to help them with improving the resilience of their employees in the workplace. The fruit of these efforts are programmes like the Penn Resilience Program by the Positive Psychology Center of the University of Pennsylvania or the Resilience@Work (RAW) Mindfulness Program by the University of New South Wales. Such intervention programmes have been shown to be effective in reducing work-related stress (van der Klink, Blonk, Schene, & van Dijk, 2001). Stress at work is the number one stressor for 25% of employees according to the National Institute for Occupational Safety and Health (1999) and has been deemed a health epidemic by the World Health Organisation (Hesketh & Cooper, 2017), costing UK businesses and the state billions of pounds every year (Black & Frost, 2011). While the before mentioned programmes are important steps in helping employees cope with the stressors they face at work, the findings from my second paper (chapter C) indicate that these could be complemented in the short term through a strategic use of quarterly results presentations and other internal communications on company progress and performance. Given that my research has shown that the performance of the social group affects individuals' performance, with a positive performance (i.e. one that can be regarded as a victory or success) significantly improving people's performance, companies should schedule the publication and presentation of quarterly results accordingly. If the results are above expectations or the

company is on track with its objectives, scheduling the release and presentation at the beginning of the week will allow companies to benefit from a boost in employee performance as low-resilience individuals will be better able to cope with daily stressors. Losses or organisational performance that is lacking behind expectations are best announced before the weekend and accompanied by the previously described efforts to refocus attention on more positive aspects of business performance in order to mitigate the effects on employees.

E.3.2 Individuals as Consumers

While people spend a large amount of their waking time at work (Caza & Wrzesniewski, 2013), their leisure time can be regarded as a sequence of consuming. From the time they wake up and use various hygiene products during their daily morning routine, to the errands they run in either their personally owned method of transportation (e.g. car, bike etc.) or via public transport, to the time they spend enjoying a family evening watching the weekly comedy show or fanatically cheering their sports team on the TV or in the stadium. Consumption is an essential part of everyday life.

Yet, many products that people buy are replaceable. They buy them because they do not want to exert the effort to wade through a multitude of options every time they enter the supermarket (Schwartz, 2004), or they buy them because they are on offer (Mela, Gupta, & Lehmann, 1997). If products are unavailable, consumers switch to the next brand that will suffice (Dodson, Tybout, & Sternthal, 1978). Yet, a few brands stick to people's lives, because they manage to develop a relationship with their consumers (Alvarez & Fournier, 2016; Fournier, 1998), sometimes even an emotional bond (termed brand attachment) that might last a consumer's entire life (Malär, Krohmer, Hoyer, & Nyffenegger, 2011; Park et al., 2010; Thomson et al., 2005). Seeing Cadbury's Milk on supermarket shelves might take some UK adults back to their childhood days, while seeing the blue tub of Nivea cream resting in their bathroom might bring back memories for German adults of their parents' care when they were little. Some brands become an essential

part of people's lives. It is for the managers of such brands that my research is particularly relevant.

Recent history has seen an increased number of large conglomerates doing a spring clean of their brand portfolio, shedding many successful brands in the process. One of the primary advocates of such an approach is P&G. Under the tenure of former Chairman and CEO A.G. Lafley, P&G decided to focus on its superbrands – operationalised as those with a revenue upwards of 1 billion dollars ("The rise of the superbrands," 2005). Even Unilever, owner of more than 400 brands (Unilever, 2019) and a long-time proponent and champion of strong local brands (the kind of brands that are able to build relationships with the communities in which they are embedded), started consolidating its European ice cream business with a multitude of strong, local brands at the turn of this millennium (Ritson, 2003). For some of these brands, there is a happy ending, for example when German FMCG giant Henkel bought Right Guard, one of P&G's cast-out brands (Neff, 2006), which has thrived in its home market of the US and beyond ever since.

Often, though, brands get discontinued or die (Ewing, Jevons, & Khalil, 2009; Russell, Schau, & Bliese, 2019), depending on the perspective taken. Sometimes, consumers manage to keep brands alive without the former owner's involvement, as in the case of the Apple Newton (a personal digital assistant), which had a near-religious following and supportive community after its discontinuation in 1998 (Muñiz & Schau, 2005). But more often than not, there are no such safety nets. The results of my first two papers (chapters B and C) indicate that such brand discontinuations can have profound effects on consumers, both in terms of their subjective well-being but also their cognitive performance. While the effects on performance are clearly more short-term, the broken bond between brand and consumer might have longer-lasting effects on consumers' well-being, akin to bereavement. Managers should therefore take these aspects into consideration when making brand portfolio considerations and go beyond mere financial motivations. Depending on the company's brand architecture and thus the clarity of the link between corporate brand and discontinued product brand (Aaker &

Joachimsthaler, 2000), such bereavement might turn into resentment and lost business for the remaining or replacement brands. In the current environment, in which loyalty is both easier to foster (through online channels) and harder to achieve (through increased competition), nourishing and capitalising on consumer-brand relationships needs to take centre stage.

Companies have come up with several ways in which they can develop and foster such consumer-brand relationships. One particularly powerful way is through the development of brand communities (Muñiz & O'Guinn, 2001). Some of these, like the Harley Owners Group (HOG, see Schouten & McAlexander, 1995), are company-sponsored and thus allow companies to manage relationships, particularly in the context of unfavourable news, similar to the previously mentioned example of the refocussing efforts of political 'spin doctors'. Harley-Davidson, for example, recently announced the closure of one of its US plants (Singh & Vats, 2018). Given that its American Heritage is at the heart of the Harley-Davidson brand and one of the key pillars of its devoted following among HOG members (i.e. individuals who self-categorise into this group), such news are hard to digest for HOG members. A way for Harley-Davidson to manage this crisis in confidence would have been to underscore through its HOG channels that the company is committed to American production, investing in its York (Pennsylvania) plant into which the vehicle operations from the closing Kansas City (Missouri) plant were consolidated.

Another example context in which such strategies can be leveraged are in spectator sports. While most fan clubs of sports teams are consumer-driven, many clubs have invested in overarching fan departments within their corporate structure that act as liaison with the fan clubs. One of the most prominent examples of this approach is German *Bundesliga* football club Borussia Dortmund, who have distilled the relationship between fans and club down to a core brand statement: '*Echte Liebe*' (German for 'real love'). They have proactively built on their devoted following and have developed into a club for which winning – while still important – is not everything. What matters more is the effort that the team pours into every match. One would expect that due to this mentality, their fans should be better placed to

deal with the setbacks that spectator sports, regardless of how successful the team one supports, ultimately bring with them.

E.4 Limitations and Further Research

A detailed and specific evaluation of key limitations of each paper contained in this thesis can be found in the respective chapters. In this section, I highlight and summarize one limitation of this programme of research that relates to the measurement approach taken across the three papers and discuss avenues for further research.

Like much of behavioural science research (e.g. Mitchum, Kelley, & Fox, 2016; Podsakoff & Organ, 1986; Schwarz, 1999), my research largely relies on self-reports, that is the answers that respondents provide to questions regarding their own thoughts, feelings, and behaviours. Subjective well-being research, in general, is heavily reliant on self-reports to the degree that such self-reports constitute the standard in the field (Sandvik, Diener, & Seidlitz, 1993). As Lucas (2018) suggests, this measurement approach seems like a natural choice. After all, one of the hallmark features of subjective well-being research is that it regards individuals as the best judge of their own subjective well-being and therefore enables them to make this judgment based on their own criteria (Diener, 1984; Kesebir & Diener, 2008). This thinking is in line with Marcus Aurelius, who opined more than two millennia ago that "no man is happy who does not think himself so". In fact, research has shown that social indicators alone are not sufficient to evaluate quality of life (Diener & Suh, 1997). That is because "people react differently to the same circumstances, and they evaluate conditions based on their unique expectations, values, and previous experiences" (Diener, Suh, Lucas, & Smith, 1999 p.277). While self-report measures of subjective well-being have been shown to be valid (see e.g. Diener, 1994; Lucas, Diener, & Suh, 1996; Sandvik et al., 1993), such measures and their excessive use are not without their fair share of criticism (e.g. Baumeister, Vohs, & Funder, 2007; Spector, 1994).

Criticisms are often levied at the construction and phrasing of the questions and response options (e.g. Hinkin, 1995; Schwarz & Hippler, 1991; Schwarz, Knäuper, Hippler, Noelle-Neumann, & Clark, 1991; Winkielman, Knäuper, & Schwarz, 1998), but also at respondent's opportunity for misrepresentation (e.g. Jackson, 1971; Paulhus, 1984). Another problem with self-reports is that they can increase common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Podsakoff, MacKenzie, & Podsakoff, 2012), particularly if several constructs are measured through such an approach and relationships are established afterwards because this can lead to an inflation of the correlations (Lucas & Fujita, 2000).

Future research should therefore utilise, wherever possible, alternative ways of measuring the dependent variables, mediators, and moderators. While several measures have been taken throughout the research process to combat potential common method bias, even varying the self-report measures across the studies (e.g. by using different measures of subjective well-being in different studies) would further reduce common method variance. What would be preferable, however, would be the use of measures that do not rely on individuals self-reporting the answers. Luckily, for subjective well-being, prior research has established a multitude of alternatives. Among the non-invasive ones are the interpretation of affective states by coding individuals' facial expressions using the Facial Action Coding System (FACS; Ekman & Friesen, 1978; Ekman, Friesen, & Ancoli, 1980). Using FACS codes enables researchers to identify Duchenne smiles, or genuine smiles (Ekman, Davidson, & Friesen, 1990; Ekman, Friesen, & O'Sullivan, 1988).

Similarly, researchers can ask individuals close to the focal person to evaluate the focal person's subjective well-being, so-called peer or informant ratings (e.g. Koydemir & Schütz, 2012; L. Schneider & Schimmack, 2010; Zou, Schimmack, & Gere, 2013). The higher the number of informants, the higher its correspondence to typical self-report measures (Sandvik et al., 1993). While not all constructs can be measured with alternatives to self-reports, self-esteem is another construct for which multiple options exist, including the use of implicit association tests (Bosson,

Swann, & Pennebaker, 2000; Gebauer, Riketta, Broemer, & Maio, 2008; Greenwald & Farnham, 2000).

While the aim of my programme of research presented in this thesis was to advance our understanding of whether and how the performance of social groups influences the subjective well-being and performance of individuals self-categorising into these groups, future research could focus on how the insights gained into the processes and individual differences involved can be leveraged to further human flourishing. Researchers have recently turned to developing positive psychology interventions (Seligman, Steen, Park, & Peterson, 2005), testing various ways of advancing optimal human functioning and achieving long-term positive behavioural change (Cohn & Fredrickson, 2010) by running randomised controlled trials that are particularly common in the field of medicine. Across people's private lives (Lyubomirsky & Layous, 2013; Odou & Vella-Brodrick, 2013; Seear & Vella-Brodrick, 2013) and work lives (Kaplan et al., 2014; Waters, 2011), these interventions have been shown to be effective (Bolier et al., 2013; Sin & Lyubomirsky, 2009). While I have attempted to extrapolate in section E.3 how organisations can act on the insights from my papers, developing and empirically testing interventions designed to positively impact individuals' subjective well-being and performance would be a more robust way of equipping individuals and organisations with the tools to successfully navigate life's challenges.

E.5 Final Remarks

Social groups are a staple of people's lives. At their best, these groups provide belonging and support, a sense of pride, and a positive boost to individuals' self-image. While these benefits are without contention, this thesis provides a more rounded picture of the impact that these groups have on individuals, contingent on the group's performance. In fact, like most aspects of life, social groups bring with them a dark side, too. That is, their victories do not only push people to new heights, but at times their defeats also hinder people's flourishing.

Awareness of an issue is always the first step to positive social change. Therefore, an awareness of the effects of social group performance on our subjective well-being and performance will start the path to amplifying the positive sides and countering the negative ones.

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Glossary

Term	Definition
Attachment	A cognitive and affective connection between individual and attachment object
Core self-evaluations	A stable higher-order personality trait that is manifested in four specific traits – self-esteem, self-efficacy, locus of control, and neuroticism
Ecological validity	The extent to which findings reflect the real world
External validity	The extent to which findings apply to different persons, settings, and times
Learned helplessness	A state in which individuals have come to expect that nothing they can do has an impact on outcomes that are important to them
Life satisfaction	A global assessment of an individual's quality of life according to his/her chosen criteria
Negative affect	The extent to which an individual experiences (a range of) negative emotions
Positive affect	The extent to which an individual experiences (a range of) positive emotions
Resilience	A relatively stable personality trait that reflects individuals' capacity to quickly and effectively recover from adversity
Self-affirmation theory	Posits that individuals strive to maintain the integrity of the self and hence focusses on how individuals deal with threats to their self-concept

(continued)

Term	Definition
Self-categorisation theory	Describes the process through which individuals transition in their self-perception and self-conception from defining themselves as an individual to defining themselves in terms of a social identity
Self-efficacy	An individual's belief in his/her own abilities
Self-esteem	An individual's evaluation of his/her own self-worth
Self-expansion theory	Posits that individuals have a strong urge to include others in their self-concept
Social identity theory	States that social comparisons between social groups lead to a need for intergroup differentiation in order to achieve a positive self-evaluation based on that social group
Stress	Process by which environmental stressors can negatively impact individuals
Subjective well-being	An individual's affective and cognitive evaluations of his/her life