

Passionately Motivated Reasoning

by

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Abstract

At times, people can confront information that challenges their passions in life. The purpose of this research was to examine how passionate people react when confronted with information that threatens their passion, to determine if these responses were related to levels of harmonious and obsessive passion (Vallerand et al., 2003), and to test two mechanisms that might reduce biased processing. In Study 1, passionate Facebook users indicated their preferences towards a list of article titles, some of which either supported or opposed the use of Facebook. Before reporting their preferences, as a manipulation of self-affirmation, some participants affirmed a self-enhancement value and others affirmed a self-transcendent value. Study 2 was a replication of Study 1, but adopted an experimental design in which passion types were manipulated using a mindset induction. Participants in Study 3 were passionate hockey fans who, after undergoing the same self-affirmation procedure as Study 1, read an article arguing that their fan support contributed to concussions in the National Hockey League. Study 4 replicated Study 3; however, before reading the article, participants completed a task designed to deplete their ability to apply self-control. The results revealed that people's responses to these messages were predicted by passion type. In each study it was harmonious passion, not obsessive passion, that predicted biased information processing in terms of higher levels of exposure bias (Studies 1 and 2) and skepticism (Studies 3 and 4) towards passion-threatening messages. Affirming an important life value attenuated the positive association between harmonious passion and selective-exposure bias in Study 1, but the positive association between harmonious passion and skepticism was unaffected by prior self-affirmations (Study 3) or ego-depletion (Study 4). Although previous research has identified obsessive passion, and not harmonious passion, as being associated with

defensiveness (Vallerand, 2010), the current research demonstrates that in some situations an opposite pattern emerges. This raises the possibility that harmonious passion may be associated with defensiveness when the target of threat is the correctness of one's decision to engage in a passion, rather than one's ability or opportunity to pursue a passion-related goal.

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CHAPTER I: Introduction

A Great Folly

William Morris, the 19th century English artist, spent most of his life pursuing traditional forms of art such as painting, drawing, and writing poetry (MacCarthy, 1994). It was in his later years, however, when Morris' artistic interests shifted towards the medium for which he is now known: wallpaper. Prior to 1836, a special wallpaper tax had existed in England to capitalize on its increasing popularity (Krasner-Khait, 2001). The tax affected not only the popularity of wallpaper (when the tax was revoked, wallpaper sales increased from 1 million rolls 1830 to 30 million in 1870) but also the quality: To cope with the tax, wallpaper manufacturers began to mass-produce low-quality wallpaper to reduce costs, while homeowners bypassed the tax altogether by hanging blank wallpaper and then designing it by hand (Bryson, 2010; Krasner-Khait, 2001). The abolition of the tax allowed wallpaper to become more affordable, and for smaller designers, like Morris, to enter the wallpaper industry in hopes of creating wallpaper with higher quality.

Wallpaper design soon became Morris' passion. Designing wallpaper patterns allowed Morris to express a sense of rhythm, fluency, and growth that he was unable to express in his drawings or paintings (MacCarthy, 1994). But wallpaper designs also need colour, and creating these colours almost became a passion for Morris in and of itself (van der Post, 2003).

Wallpaper colours were created through the intricate process of dyeing, which involved extracting dyes from natural sources and then synthesizing them with different chemicals and compounds until the desired colour was produced (Mukherjee, 2010). Morris immersed himself in the dyeing process, even preferring to use the older organic dyeing techniques rather than new

synthetic methods that were being developed – he believed synthetic dyes produced colours that were harsh and without meaning (MacCarthy, 1994). To further improve his dyeing techniques and discover new colours, Morris moved to Leek, a small English town where the water quality was known for being ideal for dyeing. Morris began incorporating newer colours in his wallpaper designs, and his design firm soon began to create wallpapers that were known not only for their precise and flowing patterns, but also for their vivid colours (MacCarthy, 1994; van der Post, 2003). The firm, *Morris & Co.*, continues to produce his wallpaper designs to this day.

In 1885, after Morris had spent over two decades designing the finest wallpaper in Britain, his firm started to receive complaints. Customers were satisfied with the quality of Morris' wallpaper, but suspected that the chemicals that were being used in the dyeing process were making them sick. They were specifically concerned with the arsenic that was used in the dyeing process to create the colour green. Arsenic was known to cause serious health consequences in miners (Meharg, 2003), and Morris' customers suspected that the arsenic in their wallpaper could explain why they were feeling ill. They also believed that the arsenic in their wallpaper was the reason why their bedrooms were free of bedbugs and smelled like garlic – and also why they started to feel better when they followed their doctors' advice by getting more fresh air (Bryson, 2010).

One would expect that Morris would be particularly distressed by these accusations, especially since it was his beautiful colours – the colours that he had worked so hard in Leek to create – that were being blamed. But rather than express concern for his sick customers, Morris treated their complaints with disregard. One of the few times that Morris addressed these complaints was in a letter to Thomas Wardle, a colleague from his dyeing days in Leek (MacCarthy, 1994), when he discussed a concerned customer, Mr. Nicholson:

As to the arsenic scare a greater folly it is hardly possible to imagine: the doctors were bitten as people were bitten by the witch fever. I will see Warner next week to try to get to the bottom of the matter. My belief about it all is that doctors find their patients ailing don't know what's the matter with them, and in despair put it down to the wall papers when they probably ought to put it down to the water closet, which I believe to be the source of all illness. And by the by as Nicholson is a tea-totaller he probably imbibes more sewage than other people: though you musn't tell him I said so. (Kelvin, 1987, p. 463, W. Morris to T. Wardle, October 3, 1885)

In this response, Morris goes to great lengths to discount the legitimacy of Nicholson's allegations: He questions accuracy of the doctors' diagnoses, offers his own explanation for why his customers are feeling sick, and engages in victim blaming. The closest Morris comes to admitting that his wallpaper might be causing others harm is when he promises to raise the issue with Metford Warner, a director at *Morris & Co.* (MacCarthy, 1994). But in a second letter to Wardle, written only three days later, it appears as though Morris was not too intent on exploring the issue any further: "Of course it is proving too much to prove that the Nicholson's were poisoned by wall-papers: for if they were a great many other people would be in the same plight & we should be sure to hear of it" (Kelvin, 1987, p. 464, W. Morris to T. Wardle, October 6, 1885).

Life Passions

Most of us are fortunate enough to have a passion in life. For William Morris, his passion was creating wallpaper designs, many of which are still being produced today. Passions come in many forms, such as our careers (e.g., cooking), hobbies (e.g., playing hockey), or

causes (e.g., the anti-vaccination movement). We find joy and meaning by engaging in our passions. We move to faraway places to pursue our passions, as Morris did when he moved to Leek to develop his dyeing techniques. We even incorporate our passions into our identities – these are not simply activities in which we engage, but fundamental components of who we are.

As William Morris' story illustrates, people also defend their passions. There are many different challenges and obstacles that people face while pursuing their passion, and one obstacle that may be particularly testing is when these individuals are confronted with information that challenges the passion itself. Passionate chefs may read about the unethical treatment of farm animals, those with a passion for hockey might learn about the effects that concussions can have on physical and psychological well-being, and anti-vaccinators may hear that vaccines are effective at preventing outbreaks of disease. Morris encountered this situation when customers accused his wallpapers of making them sick. These types of messages not only threaten the activities that people hold so near and dear in their lives, but can threaten a part of their identities.

This dissertation focuses on the ways people respond to messages that threaten their passions. When initially exposed to such messages, people can choose to entertain these competing perspectives and arguments and give them a fair chance, or can choose to ignore and avoid these messages altogether. When challenging messages are unavoidable, people can treat them with an open mind and give them a balanced evaluation, or can attempt to repudiate the messages and downplay their importance. Morris' choice was evident in his letters to Thomas Wardle: he believed he was the victim of a witch hunt at the hands of incompetent doctors, whose patients were getting sick because of poor sanitation rather than his wallpaper. In fact, in

the first letter to Wardle, his hyperbolic opening statement revealed that he thought it was not even *possible to imagine* that his wallpaper could be causing others harm.

The research I conducted for this dissertation had two main purposes. The first purpose was to assess how people respond to messages that threaten their passion and determine if these responses are related to the *quality* of their passion. Passion has been conceptualized as a dualistic construct that comes in two types: harmonious passion and obsessive passion (Vallerand et al., 2003). As reviewed subsequently, each passion type describes a different relationship with an activity, with harmonious passion entailing an autonomous relationship with an activity and obsessive passion involving more controlled activity engagement (Vallerand, 2010, 2015). The first objective, therefore, was to assess if people's tendency to respond to threatening messages with either openness or defensiveness could be linked to their levels of harmony and obsession for their passion. A second purpose of this research was to identify situations in which passionate individuals would behave in more even-handed and balanced ways when confronted with threatening information. Two scenarios were tested in this research in which people were asked to respond to threatening passion-related messages after they had (a) affirmed an important life value, or (b) engaged in an exercise that depleted their ability to exert self-control. Based on previous self-affirmation and self-control research, both scenarios were predicted to cause people to be more open to messages that threatened a passion in their lives.

This research was comprised of four studies. Studies 1 and 2 focused on whether or not passionate individuals would choose to *attend to* information that was passion-threatening, with Study 1 testing if these responses were impacted by passion types or prior engagement in a self-affirmation exercise, and Study 2 testing a causal relationship between passion mindsets and selective exposure. Study 3 also assessed passion types and incorporated a manipulation of self-

affirmation, but focused instead on their impact on people's *evaluations of* messages that disparaged a passion in their lives. Study 4 replicated Study 3, but focused instead on the impact of self-control depletion on people's evaluations of passion-threatening messages.

CHAPTER II: Literature Review

Studying Passion

Although passion has only recently been studied within the context of intrapersonal goal pursuits (Vallerand et al., 2003), passion has a much longer history as a topic of philosophical discourse and in the context of interpersonal relationships. In philosophy, passion was treated as a synonym for emotion involving sensations that drive individuals to action. Passion emerged from the Latin word *passio*, meaning “to suffer”, and later came to represent not only suffering, but emotions in general (Charland, 2010; Fisher, 2002). The roots of passion as a reference to what we now call emotion made it a suitable term for contexts in which intense emotions are experienced, such as within romantic relationships. Interpersonal relationship research has conceptualized passion in different ways, including as a component of love (e.g., Sternberg, 1986) or a type of love (e.g., Berscheid & Walster, 1978; Lee, 1973). The different conceptualizations of passion share a number of themes, such as defining passion as an intense desire to be with another person, which can include experiencing intense emotions and physiological and sexual arousal (Hatfield, 1988).

Those who have studied passion have been forced to evaluate the value of experiencing passion. In philosophy, this debate has been pitted as a competition between passion and reason. As opposed to passion, reason is a logical, rational process that galvanizes people into action based on reasonable assumptions and sensible conclusions (Lazarus & Lazarus, 1994). This passion-reason debate was largely centered on the role that these two constructs have in human nature, and if it was more virtuous to have a world that valued passion, or one that promoted and celebrated the human ability to reason. Both sides of the passion-reason debate have had their

supporters. Aristotle (384 BCE – 322 BCE) famously asserted that, “Law is reason, free from passion”, and Benjamin Franklin (1706-1790) said that “If passion drives you, let reason hold the reins”. However, not all sentiments towards passion were negative. For instance, Hegel (1770-1831) stated that “Nothing great in the world has ever been accomplished without passion”. Others maintained that passion had both positive and negative qualities, such as Descartes (1596-1650) who claimed that “all the good and evil of this life depend on [the passions] alone” (Descartes, 1649/1989, p. 134).

The debate on the value of passion has persisted in the interpersonal relationship research. The most common viewpoint in this area is similar to Descartes’ view that passion involves both good and bad elements. In Lee’s (1973) analysis of love styles, he identified two styles that most closely approach what others (e.g., Hatfield, 1988) have categorized as passionate love. Erotic love (*eros*) is experienced upon initial attraction to another, and is motivated by an appreciation of beauty. This is the type of love that most closely resembles “love at first sight” or “passion” (Hendrick & Hendrick, 2009), and involves strong physiological reactions (such as sweating and increased heart rate) when an individual sees an attractive person. On the other hand, manic love (*mania*) involves experiencing many highs and lows in a relationship, which has led some to refer to this type of love as “stormy passion” (Hendrick & Hendrick, 2009, p. 450). Lee asserted that both erotic and manic loves are difficult to separate, and that the erotic lover is always at risk of slipping into mania. Others who study “passionate love” (Berscheid & Walster, 1978) identify passion as “...a wildly emotional state: tender and sexual feelings, elation and pain, anxiety and relief, altruism and jealousy coexist in a confusion of feelings” (p. 177). Passion has also been compared to an addiction that can lead to symptoms of withdrawal if the object of passion is removed (Sternberg, 1986). Although passion towards

another person may represent the exhilarating feelings of butterflies in the stomach or love at first sight, passion can involve more stormy experiences such as jealousy, anxiety, and obsession.

Passion towards Activities

In addition to feeling passion for other people, people can feel passion for activities that they like to do. Research on passion in this context was introduced by Robert Vallerand and his colleagues in the late 1990s (Vallerand, 2012). During this period, psychology began to focus more on the positive side of the human experience, including topics such as human strengths, hope, optimism, gratitude, well-being, and ultimately, the elements of life that make it worth living (Seligman & Csikszentmihalyi, 2000; Seligman, Steen, Park, & Peterson, 2005). Passion towards activities was proposed as one such concept that contributed to a purposeful, meaningful life. In 2003, Vallerand and his colleagues introduced their theory of passion for activities, the *dualistic model of passion* (DMP; Vallerand et al., 2003).

The dualistic model of passion. The first task that Vallerand and his colleagues faced was to define what it meant to be passionate for an activity, and to distinguish passionate motivation from other forms of motivation. This research was approached using *self-determination theory* (SDT), an organismic-dialectic meta-theory of human motivation (Deci & Ryan, 1985). According to SDT, motivation can come in two broad categories: *intrinsic motivation*, in which an activity is performed for the sake of performing the activity, and *extrinsic motivation*, in which one performs an activity to obtain some sort of reward or avoid some sort of punishment (Ryan & Deci, 2002). A main tenet of SDT, as outlined by organismic

integration theory (one of the five mini-theories that is part of SDT), is that the activities we perform can be internalized and become part of the self (Koestner & Losier, 2002).

Vallerand and colleagues believed that a characteristic of passion that distinguished it from other forms of motivation was the relationship that a passion has with a person's identity. According to the DMP, passions play prominent roles in people's lives and in people's sense of selves – the passion becomes part of who they are. For example, while some may be motivated (either intrinsically or extrinsically) to watch hockey on television, the passionate hockey fan would identify this activity as an important component of his life and would incorporate the activity into his identity (“I am a hockey fan”). This led Vallerand and colleagues (2003) to define passion as “a strong inclination toward an activity that people like, that they find important, and in which they invest time and energy” (p.757).

In developing their model of passion, Vallerand and colleagues were aware of the debate surrounding passion in the philosophical and interpersonal relationship literatures. Their position on the issue was that passion can involve both good and evil, and they aimed to capture this dualism in their model of passion.¹ The passion experienced by the hockey fan, for instance, can provide him with a sense of meaning in life, an opportunity to become completely immersed in an activity that he loves, and also a chance to share his passion with a community of other hockey fans. On the other hand, this passion can cause him to feel agony after a defeat, to become preoccupied by his passion at the expense of other life domains (e.g., work, family, school), and to lash out at others who may have their own passion for a rival team. The second

¹ This is the same position adopted by Descartes (1649/1989). In fact, Vallerand and colleagues incorporated the title of Descartes' work into the title of their seminal article on the dualistic model of passion (“Les passions de l'âme: On obsessive and harmonious passion”; Vallerand et al., 2003).

task faced by Vallerand and colleagues was to represent both peaceful and stormy forms of passion in their model. Based on internalization processes outlined in SDT, the DMP distinguishes between two types of passion.

A *harmonious passion* emerges when a passionate activity has been autonomously internalized into one's identity, meaning that the activity is congruent with one's personal values and is performed without any contingencies attached to it (Koestner, 2008; Ryan & Deci, 2002; Vallerand, 2010). With a harmonious passion, the activity is freely incorporated into one's identity and the individual engages in the activity without any pressure to do so. This allows the passion to become an important, but not overpowering, component of the individual that is in harmony with other aspects of the individual's life (Vallerand et al., 2003). An *obsessive passion* emerges when the activity has been internalized in a more controlled and less self-determined way, meaning that the activity is performed because of the external or internal contingencies that are connected with the activity (Ryan & Deci, 2002). With obsessive passion, the individual feels pressured to engage in the activity, which can lead to conflict between the passion activity and other life domains (Vallerand, 2010; Vallerand et al., 2003).

Consider the case of our hockey fan. If he enjoyed being a hockey fan, thought being a fan was an important part of his life, and spent a great deal of time supporting his favourite team, then according to the DMP, he would be a *passionate* hockey fan. This means that being a fan is an important component of his identity, and that he would likely identify as being a "hockey fan". If this activity was internalized in an autonomous way, then he would develop a harmonious passion. With a harmonious passion, his fandom would be an important part of his identity, but he would be able to disengage from the activity (e.g., skip a game) to pursue other goals (e.g., study for an exam). If being a hockey fan was internalized in a more controlled way,

then he would develop an obsessive passion. In this case, he would feel an overpowering urge to support his team and would be unlikely to skip a game to do other important activities. He might also have difficulty fully concentrating on the game he was watching, given that he was doing so at the expense of other activities (e.g., studying for the exam). In general, a harmonious passion involves a person having control over the activity, but with an obsessive passion, the activity is in control of the person.

Research with the dualistic model of passion. Since Vallerand and colleagues' (2003) seminal article on passion towards activities, research adopting the DMP has flourished (Vallerand, 2010, 2015). Recently, it was estimated that Vallerand's laboratory has been responsible for over 100 studies on passion (Vallerand & Verner-Filion, 2013). Reviews of this research are provided by Vallerand (2008, 2010, 2012, 2015) and by Vallerand and Verner-Filion (2013).

Vallerand and colleagues (2003) constructed a scale to assess harmonious and obsessive passion, the Passion Scale, and tested the reliability and validity of scores derived from this measure. Analyses of factor structure, test-retest reliability, and internal consistency supports that the Passion Scale assesses two types of passion (harmonious and obsessive passion), that levels of passion are relatively stable over time, and that the items assessing both passion types are significantly correlated, but not redundant, with one another (see Vallerand, 2010 and Vallerand & Verner-Filion, 2013). A recent investigation by Marsh and colleagues (2013) further supported the psychometric properties of the Passion Scale by finding evidence of convergent and discriminant validity of the harmonious and obsessive passion subscales, and also finding that the factor structure of the Passion Scale was invariant across language (English vs. French), gender, and activity types (see also Schellenberg, Gunnell, Mosewich, & Bailis,

2014 for a similar analysis amongst sport/exercise activities). It thus appears that scores derived from the Passion Scale demonstrate adequate psychometric properties, and that the Passion Scale can be used to assess passion types in a variety of contexts.

Research on passion has relied exclusively on this scale, and the results of this research have generally supported the DMP. Harmonious passion is undoubtedly a more adaptive form of passion that has been associated with outcomes such as positive affect and emotions (Mageau & Vallerand, 2007), psychological well-being (Philippe, Vallerand, & Lavigne, 2009; Schellenberg & Bailis, 2014), concentration during an activity (Vallerand et al., 2003), and positive interpersonal relationships (Philippe, Vallerand, Houliort, Lavigne, & Donahue, 2010). Obsessive passion, on the other hand, is typically unrelated with these positive outcomes, and is, at times, associated with maladaptive outcomes such as negative affect (Vallerand et al., 2003, Study 2), life conflict and burnout (Vallerand, Paquet, Philippe, & Charest, 2010), concentration difficulties (Vallerand et al., 2008), rigid behavioural persistence (Vallerand et al., 2003, Study 3) and acting aggressively towards others in frustrating situations (Donahue, Rip, & Vallerand, 2009; Philippe, Vallerand, Richer, Vallières, & Bergeron, 2009).

Passion and Adaptational Processes

Passionate people spend a significant amount of time and energy engaging in their favourite activities, and are thus likely to encounter obstacles, face threats, and be forced to deal with adversity while pursuing their passions. People have a seemingly endless number of ways to manage their thoughts and emotions in response to threat and adversity (Tesser, 2001; Skinner, Edge, Altman, & Sherwood, 2003; vanDellen, Campbell, Hoyle, & Bradfield, 2011). For example, if our hockey fan's favourite team goes on a losing streak, he could attempt to

excuse (“This is the tough part of my team’s schedule”), rationalize (“Losing forces my team to improve their weaknesses”), engage in downward social comparison (“At least we’re not in last place”), manage the problem directly (“I’m starting a petition to get a better coach”), or disengage from the problem entirely (“This season is hopeless, I’m going to start watching curling”).

The various ways that people can respond to threats have been referred to as *adaptational processes* (Cramer, 1998), and the types of adaptations that people make have been organized into two categories. When people respond to adversity by engaging in conscious, intentional responses that are intended to manage the demanding situation, they are engaging in *coping*. Coping has been defined as “the process through which the individual manages the demands of the person-environment relationship that are appraised as stressful and the emotions they generate” (Lazarus & Folkman, 1984, p. 19). Others have more generally defined coping as the ways people self-regulate – that is, how they manage behaviour, emotion, attention, and cognition – in stressful situations (Skinner & Zimmer-Gembeck, 2007). A key feature of coping is that these are deliberate, effortful actions that people engage in to deal with stressful encounters. A second category of adaptation that people can make in response to adversity occurs without conscious effort, awareness, and intentionality. These types of responses, *defense mechanisms*, serve the purpose of protecting the individual from anxiety and negative emotions that can result from various types of adversity (Cramer, 1998). Unlike coping, defensive responses often do not change objective circumstances but are designed to change one’s

perceptions and interpretations of a stressful encounter – that is, reality distortion (Vaillant, 1998).²

Passionate individuals are not immune to threats, failures, and setbacks while engaging in their favourite activities – in fact, since they spend a great deal of time pursuing their passions, they may be even more likely to encounter these obstacles compared to non-passionate individuals. In addition, because passions are incorporated into individuals' identities and are important parts of their lives, passionate people may experience more distress when faced with these setbacks compared to their non-passionate counterparts (Schellenberg, Bailis, & Crocker, 2013). However, the DMP predicts that the impact that these setbacks have on an individual depends not on the quantity of passion, but on the type of passion one has for an activity – that is, whether one's passion is more harmonious or obsessive.

An obsessive passion is posited to be associated with increased defensiveness when faced with threat (Vallerand, 2010). This prediction is supported by two lines of reasoning. First, passions occupy more dominant, overpowering roles in the identities of obsessively passionate individuals compared to those with a harmonious passion. This proposition has been supported by research examining the extent to which obsessively passionate individuals derive their identity from their passion (Mageau et al., 2009, Study 1; Rip, Vallerand, & Lafrenière, 2012,

² Although I have adopted Cramer's (1998) organization of adaptational processes into coping and defense mechanisms, it can be difficult to distinguish between these two processes. Some responses can be either coping or defensive responses, depending if the action was an effortful attempt to manage the problem, or occurred outside conscious awareness. In the example above, if the hockey fan were to use rationalization ("Losing forces my team to improve their weaknesses"), this could have been a response that occurred outside of conscious awareness, or could have been an active coping effort on his part to "look on the bright side". The only way we can determine if the fan's rationalization was an attempt to cope or was a defensive response would be to ask him if his statement was an effort to manage the situation (coping) or if he maintained that the losing streak was a blessing in disguise (defense mechanism).

Study 1; Rousseau, Vallerand, Ratelle, Mageau, & Provencher, 2002), the self-relevant outcomes that are contingent on performance in the passion activity (Lafrenière, St-Louis, Vallerand, & Donahue, 2012; Mageau, Carpentier, & Vallerand, 2011), and the finding that obsessively passionate individuals are more preoccupied and rigidly persist in their favourite activities compared to harmoniously passionate individuals (Rip, Fortin, & Vallerand, 2006; Vallerand et al., 2003, Study 3). Because of the role that passions play in the identities of harmonious and obsessive people, when faced with threatening and demanding situations, there would appear to be more at stake for people with an obsessive passion compared to those with a harmonious passion. The identities of obsessively passionate individuals rely more strongly on their passion, meaning that these individuals should be more inclined to engage in adaptational responses in situations that may threaten such a central component of their identities. Although passions are also important components of the identities of harmoniously passionate individuals, passions occupy a less dominant roles and, thus, these individuals should be less inclined to respond defensively when faced with adversity.

A second reason why obsessive passion should be related to higher levels of defensiveness compared to harmonious passion relates to how these two passions are connected with perceptions of ongoing experiences (Vallerand, 2010). In line with self-determination theory, a harmonious passion involves an authentic, integrated self and a secure sense of self-worth (Hodgins & Knee, 2002). In the case of a harmonious passion, because an activity is connected to a person's authentic self, people with this type of passion should be less threatened by novel experiences, and should approach new experiences with openness and low levels of defensiveness (Hodgins & Knee, 2002). On the other hand, an obsessive passion is associated with ego-invested self-structures, meaning that the activity is not authentically integrated into the

self and is performed because of contingencies that are attached to the activity. Unlike harmoniously passionate people whose self-worth is rooted in “being” in the moment, the self-worth of obsessively passionate people is contingent on performance in the activity, which should cause obsessive people to respond more defensively to experiences that may threaten the pursuit of passion-related goals (Hodgins & Knee, 2002; Vallerand, 2010).

Research has supported the predicted relationship between obsessive passion and responses to challenging situations, in that obsessive passion has been related to higher levels of defensive responses and threat perceptions. One way that people can protect themselves from threats is to lash out at the source of the attack. Research has found that this type of defensive response is more characteristic of obsessive passion compared to harmonious passion (Donahue et al., 2009; Philippe, Vallerand, Richer, et al., 2009; Rip et al., 2012). For example, Donahue and colleagues (2009, Study 2) asked high school basketball players to indicate the likelihood of responding aggressively in reaction to three hypothetical scenarios. In one scenario, a situation was described in which the participant was being pushed and held by an opposing player during an important basketball game. The results revealed that obsessive passion was related to higher aggression scores compared to harmonious passion. This relationship has also been found in research examining the extent to which individuals condone extreme and violent religious acts in response to comments that threaten their own religion (Rip et al., 2012), and in research studying how individuals with a passion for driving behave in challenging driving scenarios (Philippe, Vallerand, Richer, et al., 2009). In both these scenarios, obsessive passion, but not harmonious passion, predicted more aggressive responses.

Another way that people can respond defensively to threat is to attempt to improve performance. By allocating more resources towards goal attainment (such as effort, time,

energy, and attention), passionate individuals can redeem themselves following a threat and thus restore self-integrity. To test if obsessive and harmonious passion could be differentiated based on changes in performance following threat, Bélanger, Lafrenière, Vallerand, and Kruglanski (2013a) conducted a series of studies that examined performance in various domains in response to various types of threat. In all studies, obsessive passion was related to increases in performance, but only in conditions in which individuals were experiencing self-threat (for example, by being asked to outline two personal weaknesses). Harmonious passion was unrelated to changes in performance.

My own research has also supported the connection between obsessive passion and defensive responding. In one study, we examined if harmonious and obsessive passion were associated with different patterns of excuse making following a setback (Schellenberg, Bailis, & Thacher, 2012). Excusing transgressions or failures by attributing them to external, unstable, and specific factors is an effective way of removing blame for a failure (Thacher & Bailis, 2012), and we predicted that obsessive passion would be related to high levels of excuse making. In this study, we asked passionate exercisers and athletes to recall a time when they had planned to engage in their favourite sport/exercise activity but had failed to follow through on these plans. Participants were then given an opportunity to endorse a series of excuses for this lapse by denying personal obligation (e.g., "...because it was not really your personal goal"), goal clarity (e.g., "...because the goal itself was unclear, or you didn't know what to do"), or control over the activity (e.g., "...because of something you could not have predicted"; see Schlenker, Britt, Pennington, Murphy, & Doherty, 1994). In support of our hypotheses, obsessive passion was positively associated with obligation and clarity excuses, while harmonious passion was

negatively associated with both excuse types. Therefore, it appears as though harmonious and obsessive passion are related to distinct patterns of excuse making following a setback.³

Responding to threats with aggression (Donahue et al., 2009), improving one's performance (Bélanger et al., 2013a), or making excuses (Schellenberg et al., 2012), are responses that can occur without consciously appraising an event as demanding or stressful. However, coping is another adaptational process that involves purposeful, conscious actions designed to manage stressful situations (Cramer, 1998; Lazarus & Folkman, 1984). Research has started to investigate if harmonious and obsessive passions are uniquely related to distinct coping tendencies. Individuals with a harmonious passion tend to pursue goals by striving for mastery and attempting to reduce the discrepancy between actual and desired states (Vallerand et al., 2007). This means that, in potentially stressful situations, people with high levels of harmonious passion may be likely to direct thoughts and behaviours towards dealing with the problem or source of the stress in order to achieve their goals. People with high levels of obsessive passion tend to engage in goal pursuit with more ambivalence (Vallerand et al., 2007); on the one hand, goal achievement has the potential to have a positive impact on self-esteem and life satisfaction, but on the other hand, goal failure can have equally devastating outcomes (e.g., Mageau et al., 2011). In stressful situations, this may mean that people with an obsessive

³ Different results were obtained when control excuses were examined: control excuses were positively associated with harmonious passion, but unrelated to obsessive passion. Although both passion types followed the expected pattern of defensiveness when it came to denying obligation or clarity, these results suggest that denying control of the activity represented one exception to this pattern. We expect that there may be some defensive adaptations, such as relinquishing control over an activity, that individuals with obsessive passion may be unwilling, or perhaps unable, to use. Future research is needed to test the limits of the relationship between obsessive passion and defensiveness.

passion ignore or withdraw from demanding situations, in order to avoid events that may threaten future goal attainment.

Research examining the relationship between passion types and coping has supported these predictions. In research studying how dancers cope with injury, Rip et al. (2006) found that harmonious passion was associated with more active, problem-focused strategies such as information seeking and consulting a professor, while obsessive passion was associated with more avoidance and disengagement-oriented strategies, such as ignoring the injury. In a study that examined the relationship between passion and coping in a different context, my colleagues and I (Schellenberg, Gaudreau, & Crocker, 2013) assessed how collegiate-level volleyball players cope with training demands throughout a volleyball season. In support of the findings of Rip et al. (2006), harmonious passion measured at the start of the year was positively associated with task-oriented coping (involving strategies such as effort expenditure, seeking support, and thought control) at the end of the season, while obsessive passion was positively associated with disengagement-oriented coping (involving strategies such as venting unpleasant emotions and disengaging from the situation). Moreover, task-oriented coping was positively associated with changes in goal attainment and negatively associated with changes in burnout, while disengagement-oriented coping was negatively associated with changes in goal attainment and positively associated with changes in burnout. Therefore, not only were harmonious and obsessive passion associated with different coping styles, but these coping styles had an impact on the development of two important athlete outcomes, burnout and goal attainment, over the course of the season.

Recently, we conducted a study that examined the relationship between passion types and how individuals had been coping during the start of the 2012-2013 National Hockey League

(NHL) season, which was delayed by over 3 months due to a lockout (Schellenberg, Bailis et al., 2013). The lockout presented a rare case in which a large group of passionate hockey fans were unable to pursue their passion (watching hockey), and were uncertain when (or if) the NHL season would resume. During the lockout, we asked a group of passionate hockey fans to report how they had been appraising the lockout, coping with the lockout, and the extent to which they had been monitoring and avoiding information about the lockout in the news. In general, the results from this study revealed that the extent to which the lockout was perceived as a distressing situation depended on the extent to which one's passion for hockey was obsessive rather than harmonious. All forms of stress appraisals, including the extent to which the lockout was appraised as threatening, central to oneself, and stressful, were positively associated with obsessive passion but unrelated to harmonious passion. Obsessive passion was also positively related to a variety of coping strategies, including the use of substances such drugs and alcohol, while harmonious passion was related to only a few coping behaviours.⁴ Finally, in support of past research (Schellenberg, Gaudreau et al., 2013) we found that obsessive passion was positively associated with avoiding lockout-related information and negatively associated with monitoring lockout-related information. The opposite pattern of results was found with harmonious passion, such that harmonious passion was negatively and positively associated with avoiding and monitoring behaviour, respectively.

In sum, the way people respond when faced with adversity while engaging in their favourite activity appears to depend on the quality of their passion. On one hand, with an obsessive passion, challenges or demands may pose a significant threat to valued components of

⁴ Obsessive passion was negatively associated with only one coping strategy: accepting the situation.

one's identity, and thus result in adaptations that are designed to alleviate the threat. On the other hand, a harmonious passion involves a flexible, authentic relationship with an activity, which should allow an individual to interpret novel and potentially threatening experiences with openness and low levels of defensiveness. When a situation is appraised as stressful, the ways individuals choose to cope in these circumstances also appears to depend on passion types. Harmonious passion has been linked with coping strategies that aim to deal with the problem or source of stress, while obsessive passion has been linked with coping efforts that disengage from or avoid the stressful encounter (Schellenberg, 2014; Schellenberg & Bailis, in press-b; Schellenberg, Bailis et al., 2013; Schellenberg, Gaudreau et al., 2013).

Challenging Passion

The threats, setbacks, and challenges that passionate people face while pursuing their favourite activities can come in many forms. One type of challenge that passionate individuals can encounter involves messages that threaten their passion. The teenager with a passion for going on Facebook may devote his evenings to updating his profile and following his friends, but he may feel uneasy if told that going on Facebook can have negative consequences for his psychological well-being ("Why Facebook makes you feel bad about yourself"; Sifferlin, 2013). The office worker who is passionate for her job may look forward to each work day, but she may be bothered by learning that prolonged sedentary behaviour can have adverse health consequences ("Why sitting might kill you: And exercising won't necessarily save you"; Lunau, 2012). The football player may devote his life to his sport, but many argue that the repeated collisions involved with football can cause dementia-like symptoms in later adulthood ("Offensive play: How different are dogfighting and football?"; Gladwell, 2009). Even our

passionate hockey fan is not immune to these types of messages: many would argue that he supports a sport that, like football, causes many players to suffer irreversible brain damage (“Hockey concussions rampant: Early survey results show 46% in players 13-21”; Owen, 2012).

Engaging in certain activities can have negative consequences for the self or others. While some of the messages that passionate people encounter are purely speculation, others may communicate important information that should be given serious consideration. For example, although we now know that asbestos and lead paint can cause negative health outcomes, there was a time when people who worked for companies that manufactured these products were confronted with information regarding these health effects. The sooner these people were open to these messages and gave serious attention to their content, the sooner they were likely to stop distributing their harmful products. The decision to stop distributing these products may seem straightforward, especially given what we now know about their long-term side-effects, but this decision may have been more difficult for those who had a passion for these products.

Motivated Reasoning

The ways passionate people process threatening information is related to the literature on motivated reasoning (e.g., Kunda, 1990). A debate that existed in this literature for some time was whether people processed information with an underlying motivation to reach a *desired* conclusion or whether we act as naïve scientists that aim at reaching *accurate* conclusions (Kruglanski, 1999; Kunda, 1990; Molden & Higgins, 2005; Pyszczynski & Greenberg, 1987). For example, when presented with information about a failure (e.g., a failed exam), people tend to attribute the cause of the failure to external causes (e.g., “The exam was very difficult”) rather than internal causes (e.g., “I didn’t know the material very well”). This is known as the self-

serving bias (Shepperd, Malone, & Sweeny, 2008). Theorists who maintain that our motivations and desires shape our judgments believe that we interpret information in a self-serving way to achieve any number of self-related goals, such as protecting self-esteem or presenting ourselves to others in a certain way (Shepperd et al., 2008). Those who maintain that we act as naïve scientists argue that the self-serving bias is nothing more than an attempt, however inaccurate, to make an accurate attribution for the failure. People tend to experience more success than failure in their lives, and when failure is experienced, it is most likely to be due to external rather than internal factors (Miller & Ross, 1975; Nisbett & Ross, 1980). The advantage that this non-motivational, cognitive perspective had over the motivational perspective was parsimony – the cognitive perspective could explain behaviour without implicating an entirely separate motivational system (Nisbett & Ross, 1980; Tetlock & Levi, 1982).

Although the fiercest battles between cognitive and motivational explanations of behaviour have subsided, the debate of whether we aim for desired or accurate conclusions has not been definitively resolved (Kruglanski, 1999; 2001; Tetlock & Levi, 1982).⁵ Nevertheless, based on experimental paradigms and controls that were introduced to rule out various cognitive interpretations (Kunda, 1990), many agree that our goals and desires impact how we process information and make judgements (Dunning, 1999; Kunda, 1990), and that this is achieved by directing cognitive processes (Kunda, 1990; Molden & Higgins, 2005). Rather than debate whether motivational or cognitive processes explain our behaviour, researchers of a “second

⁵ Based on the flexibility of the cognitive perspective in interpreting phenomenon, and because of various methodological limitations inherent in research inspired by the motivational perspective, Tetlock and Levi (1982) argued that this debate can *never* be resolved.

generation” have focused on how motivation and cognition *interact* to influence our judgments (Molden & Higgins, 2005, p. 296; see Kunda, 1990).

In sum, rather than interpret information as a naïve scientist and base our decisions on prior knowledge, we tend to see the world through “rose-coloured glasses” (Dunning, 1999, p. 1) – people often hear what they want to hear, believe what they want to believe, and see what they want to see (Balcetis & Dunning, 2006; Dunning, 1999; Hastorf & Cantril, 1954; Molden & Higgins, 2005).⁶ This tendency to be motivated in our reasoning applies to two stages of the judgment-making process: the extent to which individuals expose themselves to information, and the extent to which individuals evaluate information (Pyszczynski & Greenberg, 1987).

Information exposure. People tend to prefer and seek out information that is consistent with their attitudes and desired conclusions and prefer to avoid information that threatens valued self-concepts (Sweeny, Melnyk, Miller, & Shepperd, 2010). This tendency has been referred to as *confirmatory information search* (Fischer et al., 2011), *confirmatory bias* (Jonas, Schulz-Hardt, Frey, & Thelen, 2001; Nickerson, 1988), *congeniality bias* (Hart et al., 2009) or *selective exposure to information* (Festinger, 1957; Frey, 1986). If our hockey fan believed that the issue of concussions in hockey was overblown, he may prefer to ignore information that outlined the impact that hockey concussions can have on the physical and psychological well-being of players. Moreover, he may prefer to attend to information that agrees with his attitudes about

⁶ People are of course not unlimited in their ability to interpret information in a desired fashion. Denying or avoiding certain types of information may put a person at risk of being perceived as an irrational, unintelligent person. For example, smokers who deny that smoking affects health may protect the self from the idea that they engage in maladaptive health behaviour, but this denial would put people at risk of being perceived by others as uninformed, irrational, and foolish. Terms such as the “illusion of objectivity (Pyszczynski & Greenberg, 1987, p. 302) and “reality constraints” (Molden & Higgins, 2005, p. 304) have been used to emphasize that motivated reasoning operates within the confines of reality – conclusions are reached in a way that could “persuade a dispassionate observer” (Kunda, 1990, pp. 482-483).

concussions in hockey. By avoiding threatening information and attending to congenial information, he would preserve his existing attitudes and avoid information that may potentially threaten his passion in life.

The standard paradigm for studying biased information exposure involves presenting participants with a list of article titles or theses, some of which are consistent and some of which are inconsistent with the participants' prior attitudes or decisions. Participants are then asked to rate the desirability of the articles or to select which articles they would like to read in the future. A measure of biased information exposure is computed by calculating the extent to which attitude- or decision-consistent information is preferred or selected compared to the extent to which attitude- or decision-inconsistent information is preferred or selected. Brannon, Tragler, and Eagly (2007, Experiment 1B), for example, presented participants with a series of article titles pertaining to abortion that were clearly either pro-choice or pro-life. Participants' decisions were influenced by their prior attitudes on abortion, in that pro-choice participants had a preference for pro-choice articles and pro-life participants preferred to read pro-life articles.

Using a decision paradigm, Fischer, Gretemeyer, and Frey (2008) gave participants some background information about a hypothetical store manager and asked the participants to decide whether or not to extend the manager's contract. After this decision, they were told that there were 12 additional pieces of information about the manager's performance, and summaries of this information were presented to the participants in the form of 12 thesis statements. Six statements portrayed the manager as a skilled, valuable worker, while six statements portrayed the manager as incompetent. When the participants were asked which information they would like to read further, they showed a strong preference towards decision-consistent information compared to decision-inconsistent information. That is, participants who decided to extend the

manager's contract preferred to read information extolling his abilities and virtues, while those who did not extend the contract preferred to read information portraying the manager as unqualified for the job. Other research using similar paradigms has obtained similar results (e.g., Fischer, Schulz-Hardt, & Frey, 2008; Jones et al., 2001; for reviews, see Frey, 1986; Hart et al., 2009). In general, when presented with information supporting both sides of an issue, people are biased in their attention towards this information – they prefer to expose themselves to congenial information and avoid information that is inconsistent with their prior attitudes, decisions, and beliefs.⁷

Information evaluation. Sometimes people do not have the luxury of choosing the information to which they are exposed. In these situations, when confronted with information that may threaten their prior decisions, attitudes, or beliefs, people appear to be remarkably capable of evaluating information in self-serving ways – in ways that support a belief, agree with a decision, or conform with an attitude (Kunda, 1990). After experiencing a failure, people are more likely to attribute the cause of the failure to external forces rather than their own incompetence (Lau & Russell, 1980). After making a choice between two equally appealing alternatives, people later rate the chosen option as more desirable and the option that was not chosen as less desirable (Brehm, 1956). When asked to rate the extent to which a football game between two rival schools was dirty and rough, participants' responses depended on the team they supported (Hastorf & Cantril, 1954). Countless examples exist of how motivation

⁷ Neurological evidence for this effect was found by Kessels, Ruiters, and Jansma (2010). The researchers presented smokers and non-smokers with disturbing smoking-related images and assessed if the images influenced the participants' event-related brain potentials (ERP). The ERP patterns revealed that smokers were more efficient at disengaging their attention from the disturbing images compared to the non-smokers.

influences reasoning (see Dunning, 1999; Kunda, 1990; Molden & Higgins, 2005; Pyszczynski & Greenberg, 1987).⁸

Extensive research on this topic has been conducted in the context of health messaging. People prefer to think of themselves as healthy and tend to discount or discredit evidence that says otherwise. Experiments testing this effect typically involve presenting participants with information about a disease to which they may or may not be predisposed, and afterwards asking them to evaluate the credibility of the information. Kunda (1987, Study 3), for example, presented participants with a newspaper article arguing that caffeine consumption caused fibrocystic disease in women. When participants evaluated the article, those who were both heavy caffeine consumers and female were more skeptical of the article compared to males and low caffeine consumers. Presumably, only the caffeine-consuming females were threatened by the content of the article, and were thus motivated to discount its credibility. Others who adopted this paradigm have found similar results – those who are personally threatened by health information tend to be less convinced by the information compared to individuals who are not

⁸ The idea that people “see what they want to see” has been supported in the most literal sense. In a series of studies by Balci and Dunning (2006), participants’ visual perceptions of environmental stimuli depended on desired outcomes. For example, when presented with an ambiguous image (an image that could be interpreted as either the letter “B” or the number “13”), participants were more likely to report seeing the option (either a “B” or a “13”) that they believed would result in them drinking a sweet beverage rather than a noxious-smelling beverage (Study 1). Four studies that followed replicated the finding that people truly see what they want to see.

threatened by the message (Harris & Napper, 2005; Liberman & Chaiken, 1992; Reed & Aspinwall, 1998; Sherman, Nelson, & Steele, 2000; see Sherman & Cohen, 2002, 2006).⁹

In another study designed to test the limits of this defensive processing, Ditto and Lopez (1992, Study 2) asked participants to administer a self-test for a fictitious health condition that was purported to be linked with health complications in later life (“TAA deficiency”). The test involved the participants rubbing their saliva on a strip of test paper, and the colour that the paper turned indicated whether or not they were deficient in this important enzyme. After participants administered this self-test, those who learned that they had TAA deficiency believed their condition was less serious and more common than those who believed that they did not have TAA deficiency. Most notably, for participants who learned that they had a TAA deficiency, these participants spent considerably more time evaluating the test, including repeating the self-test multiple times, compared to participants who believed they did not have a TAA deficiency. Congenial information, therefore, was accepted at face value, while the threatening information was treated with more scrutiny (see also Ditto, Munro, Apanovitch, Scepansky, & Lockhart, 2003 for a replication and extension of these findings). People are motivated to be skeptical of

⁹ Studies such as these are vulnerable to cognitive interpretations (e.g., Tetlock & Levi, 1984). For instance, the results obtained by Kunda (1987, Study 3) could have been due to pre-experimental differences in knowledge between women who did and did not consume caffeine. Those who consumed caffeine may have had more knowledge about caffeine, including its health effects, compared to those who did not consume caffeine. As discussed by Liberman and Chaiken (1992) there are two solutions to this problem. First, changes in attitudes could be computed by measuring pre-threat and post-threat attitudes towards an issue. Second, an unfamiliar (or even fictitious) topic could be used as the focus of the study. Kunda, for example, examined issues towards a fibrocystic disease and eliminated participants who had prior knowledge of this disease. She also included males as a control group – since the health messages specifically targeted females, male participants should not have been threatened and therefore not bias their interpretations of the information, regardless of their levels of caffeine consumption. This was indeed what she found.

information that threatens their image of being a healthy person, and this study demonstrated the lengths that people will go in order to preserve this self-image.

Passion and Motivated Reasoning

When passionate Facebook users, office workers, football players, or hockey fans are presented with information that challenges their passion, it is likely that they will attend to or evaluate the information in a way that will allow them to reach a desired conclusion. These passionate individuals may prefer to avoid information that threatens their relationship with their favourite activity, and if the information cannot be avoided, they may discount or downplay the seriousness of the message. The motivation to treat information in this biased way stems from the desire to see oneself as a rational, intelligent, worthy person (Kunda, 1990; Steele, 1988). Information that challenge these self-views is typically treated as a threat against the self and is greeted with bias and defensiveness (Sherman & Cohen, 2006; Steele, 1988).

However, as reviewed earlier, patterns of defensive responding differ depending on the extent to which one's passion is harmonious or obsessive. With an obsessive passion, the activity occupies a dominant role in an individual's identity which can cause important self-related outcomes to be dependent on the activity (Vallerand, 2010). Therefore, for people with high levels of obsessive passion, messages that challenge a passion should be appraised as highly threatening (e.g., Schellenberg, Bailis et al., 2013) and lead to higher levels of defensive action (e.g., Bélanger et al., 2013a). On the other hand, a harmonious passion involves a more authentic and flexible relationship with an activity, which should lead to more openness and less defensiveness when faced with threat (Vallerand, 2010). Overall, the tendency to show bias in

the way information is attended to or evaluated should be more pronounced to the extent that a passion is obsessive rather than harmonious.

Research has yet to focus directly on how passionate individuals respond to threatening passion-related messages. The study most directly related to this issue was the aforementioned lockout study (Schellenberg, Bailis et al., 2013) in which obsessive passion was associated with avoiding information related to the NHL lockout and negatively related to monitoring lockout-related information, while the opposite pattern of relationships was found with harmonious passion. Other studies have supported the relation between obsessive passion and disengagement from stressful or challenging situations (Rip et al., 2006; Schellenberg & Bailis, in press-b; Schellenberg, Gaudreau et al., 2013), suggesting that obsessive passion is associated with an increased tendency to shut out or avoid situations that may pose a threat to the passion.

The first aim of this research was to examine if harmonious and obsessive passions were related to different responses when faced with information that challenged a passion. This question was studied in both the information exposure and evaluation phases of the decision-making process (Pyszczynski & Greenberg, 1987). I predicted that obsessive passion, but not harmonious passion, would be associated with biased information processing of threatening passion-related information in both the information exposure and information evaluation phases.

Hypothesis 1. Obsessive passion, but not harmonious passion, will be positively associated with biased processing of activity-threatening information.

Attenuating Bias in Passionate Individuals

Although people can attend to and evaluate threatening information in self-serving ways, some have argued that they must do so by overriding the default response of accepting messages

at face value (Gilbert, 1991). As discussed in the motivated reasoning literature, people are quick to override this inclination when the information poses a threat to the self – they can easily avoid, ignore, downplay, or discount the message. However, there are situations in which people will not need or be able to override the default response of acceptance. This can occur when their sense of self is bolstered or fortified, which may reduce the threat that challenging messages pose to the self. In this situation, people will not need to treat incoming information with bias. Such situations can also occur when people’s ability to override the response of acceptance is impaired. When the ability to self-regulate and exhibit self-control is compromised, people may be unable to be critical and skeptical of incoming information, and may instead passively accept the content of the message. Therefore, although people are often biased in their treatment of threatening information, there may be certain situations in which people act with less bias and more openness to challenging messages.

In addition to differentiating between harmonious and obsessive passion and responses to challenging passion-related information, a second aim of this research was to test conditions that might attenuate the relationship between obsessive passion and biased information processing. Specifically, through manipulations of value affirmations (Steele, 1988) and ego-depletion (Baumeister, Bratslavsky, Muraven, & Tice, 1998), this research examined situations in which passionate individuals may be less biased and more open towards threatening information.

Self-Affirmation

Hearing or reading information that challenges a passion can threaten one’s self-concept. For the passionate hockey fan, reading about the effects of concussions can threaten his self-concept of being a good person. For the office worker, hearing about the relationship between

sedentary behaviour and chronic illness can threaten her belief that she is a healthy person. For the Facebook user, being told that going on Facebook can adversely affect his psychological well-being can threaten his belief of being an intelligent, rational person. In these scenarios, people may be motivated to protect the general integrity and worth of the self, and can do so by affirming another important component of their self-concept. The relationships between ego-threats, the self-system, and self-affirmations are outlined by self-affirmation theory (Steele, 1988).

Self-affirmation theory. A main tenet of self-affirmation theory is that people are motivated to protect self-worth and self-integrity. People prefer to view themselves as intelligent, rational, healthy, and morally good (Steele, 1988), and when these self-concepts are threatened, people aim to restore self-integrity. One way that this can be accomplished is by affirming other important components of the self-concept. For instance, if the passionate office worker were to affirm a valuable component of her self-concept (by reflecting on what it means to her to be a mother, a Mennonite, or a Maple Leafs fan), she would act less defensively and be more accepting of information that challenges her self-concept of being a healthy person. Self-affirmation theory posits that an “ego-protective system” is designed to protect one’s overall conception of self-integrity (Steele, 1998, p. 267). When faced with self-threat, people can react to the threat specifically, but they can also bolster other, unrelated aspects of their self-concept – both of these responses succeed in restoring self-integrity. Therefore, when affirmed, people should be less likely to respond to self-threat with defensiveness and be more accepting of information that challenges valued components of their self-concept (Steele, 1988; for reviews, see Sherman & Cohen, 2006; and Sherman & Hartson, 2011).

Self-affirmation and information exposure. Affirming valued components of the self has been related to lower levels of avoidance of threatening information. In a series of studies by Howell and Shepperd (2012), participants were asked to either affirm or not affirm an important value in their lives, and then were presented with information about a fictitious health disease. Those who had self-affirmed were less likely to avoid information about their lifetime risk of contracting the disease compared to those who had not self-affirmed. Similar findings were obtained by van Koningsbruggen and Das (2009), who found that participants who were at risk of developing type 2 diabetes were more likely to take an online risk test if they had previously self-affirmed an important value. Although people may be naturally inclined to avoid or ignore threatening information, such as information that suggests that they may be unhealthy or susceptible to a particular disease (e.g., Sweeny et al., 2010), the tendency to expose themselves to information in a biased way appears to be reduced or eliminated when they are able to self-affirm.

Self-affirmation and information evaluation. Considerably more attention has been devoted towards studying the effects of self-affirmation on the evaluation of threatening information. Overall, this research has found that affirming valued self-concepts allows people to interpret information in less self-serving ways. Sherman et al. (2000) replicated a study conducted by Kunda (1987, Study 3) in which female participants were presented with an article outlining the link between caffeine consumption and disease. However, the authors included a self-affirmation manipulation in which participants, after reading the article, were allowed to affirm a personal value that they reported was important in their lives. In the non-affirmation condition, the researchers replicated past research on motivated reasoning (Kunda, 1987; Liberman & Chaiken, 1992) and found that the caffeine-consuming participants were less

accepting of the article compared to the participants who did not consume caffeine. However, for those who had completed the self-affirmation exercise, the pattern of results was reversed: the caffeine-consuming participants were more accepting of the health message than the participants who were not caffeine consumers. By affirming a different, unrelated component of their self-concepts, participants who were directly threatened by the article (the caffeine-consumers) were more likely to be open to and accept the message.

Other studies have found evidence for the “de-biasing” effect of self-affirmation. For example, self-affirmation has been found to cause sexually active students to be more willing to purchase condoms after viewing a video about AIDS (Sherman et al., 2000, Study 2), to increase students’ intentions to reduce alcohol consumption after reading about the health effects of alcohol (Harris & Napper, 2005), and to cause proponents of capital punishment to be more accepting of information that challenges this stance (Cohen, Aronson, & Steele, 2000; see also Correll, Spencer, & Zanna, 2004; Reed & Aspinwall, 1998; Sherman & Cohen, 2006; Sherman & Hartson, 2011; van Koningsbruggen, Das, & Roskos-Ewoldsen, 2009).

Self-affirmation and passion. Manipulations of self-affirmation have emerged in studying passion types and defensive responding; overall, this research has found that affirming valued components of the self attenuates defensiveness in response to passion-related threats. In a study by Donahue et al. (2009, Study 2), basketball players with an obsessive passion reported stronger intentions to use aggression compared to harmoniously passionate players in response to a threatening basketball scenario. However, when players were given an opportunity to affirm a valued component of their self-concept (by describing five of their basketball strengths), the differences in aggressive intentions between harmoniously and obsessively passionate players disappeared. Similarly, Bélanger et al. (2013a) conducted four studies to examine the

performance of passionate individuals after experiencing success or failure. In conditions of failure (by being asked, for example, to reflect on two weaknesses related to their passion), obsessive passion was related to higher levels of performance in a variety of tasks (e.g., handgrip strength) compared to harmonious passion. However, when self-affirmed (by being asked, for example, to reflect on two strengths related to their passion), there were no differences between passion types. Presumably, passionate people can strive to improve their performance in order to restore self-integrity following a threat, but this response is unnecessary if one's self-integrity has already been bolstered through self-affirmation.

Self-affirmation, self-enhancement, and self-transcendence. Although reflecting on an important personal value or recalling a personal strength can allow a person to be more accepting of threatening messages, the reason why this occurs is not well known. Self-affirmation theory maintains that affirmations bolster the self-concept, allowing one to be better able to confront threats. However, there is little evidence that self-affirmations bolster one's self-esteem and cause more positive evaluations of the self (McQueen & Klein, 2006). To explain the link between self-affirmation and lowered defensiveness, researchers have suggested that what matters is the *type* of personal value that is affirmed (Burson, Crocker, & Mischkowski, 2012; Crocker, Niiya, & Mischkowski, 2008). Based on research that has identified the types of values that people endorse in their lives (e.g., Schwartz, 1992), researchers have distinguished between affirmations of values that enhance the self (*self-enhancement*) and those that transcend the self (*self-transcendence*; Burson et al., 2012; Crocker et al., 2008). In contrast to self-affirmation theory, which would predict that either type of value affirmation would succeed in lowering defensiveness, these researchers maintain that self-affirmation

manipulations are successful because they enable individuals to “transcend concerns about self-image or self-worth” (Crocker et al., 2008, p. 741).

Research has examined the relationship between both forms of value-affirmations and defensiveness. Crocker et al. (2008) conducted two studies and found that a standard affirmation manipulation caused participants to feel love, which accounted for (i.e., fully mediated) the relationship between an affirmation manipulation and the acceptance of a personally threatening message. Feeling loving, according to the authors, is an indication that participants were reminded of “people or things beyond themselves that they care about and that are more important than temporary feelings of self-threat” (p. 746). In their discussion of this finding, the authors asserted that the findings “call for a reconsideration of self-affirmation theory” (p. 745).

Burson et al. (2012) used a different paradigm to test the effect of self-transcendence on responses to self-threat. The researchers asked participants to write an essay about either a self-transcendent value, a self-enhancement value, or about their daily routine (as a control group).¹⁰ After this task, as a manipulation of self-threat, participants were led to believe that they had been excluded (threat condition) or had not been excluded (no threat condition) by another participant from participating in an experimental task. The researchers were interested in how experiencing a threat related to social exclusion influenced one’s ability to self-control; thus, the main dependent variable in this study was the ability of the participants to resist consuming

¹⁰ The procedure went as follows: participants were randomly assigned to rank in importance a list of self-enhancement values (power/status, wealth/possessions, appearing confident/independent, physical attractiveness, popularity/admiration/prestige, and appearing intelligent/competent) or self-transcendent values (empathy/compassion, being responsive and supportive to the needs of others as well as one’s own needs, creating or contributing to something larger than oneself, trust/openness, personal growth, and being in mutually supporting and caring relationships). Participants were then presented with the value that they ranked as most important and wrote an essay for 8 minutes about why the value was important to them. Those in the control condition wrote about their daily routine. The values that were listed were adapted from Schwartz (1992).

cookies that were presented to them at the end of the study. The results indicated that those in the control condition ate significantly more cookies than those in the self-enhancement group, meaning that affirming this type of value allowed individuals to be better able to manage the threat of being excluded by others. However, most importantly, those in the self-transcendence group ate significantly fewer cookies than those in the self-enhancement group. That is, through self-transcendence, participants were better able to manage self-threats compared to those who affirmed a self-enhancement value. This study corroborates the findings of Crocker et al. (2008), and suggests that affirming a value that allows people to transcend the self is a more effective strategy for reducing defensiveness than affirming a value that enhances the self.

While previous research has found that self-affirmation can reduce the defensiveness associated with obsessive passion (e.g., Donahue et al., 2009), manipulations of self-transcendence may be particularly effective for highly obsessive people. Obsessive passion entails a preoccupation and having one's identity inextricably linked with an activity (Vallerand, 2010). The relationship between obsessive passion and identity is such that important self-related outcomes, such as feelings of self-esteem and self-worth, become contingent on performance during the activity (e.g., Mageau et al., 2011). Reminders of values that are beyond themselves, such as the people they care about or the charities they support, may help highly obsessive people place their own favourite activities in a broader perspective and “uncouple” self-evaluations from their passion (Sherman & Hartson, 2011; Shnabel, Purdie-Vaughns, Cook, Garcia, & Cohen, 2013). This broadened mindset might allow activity-related threats to be perceived as less consequential and less threatening to their self-concept. While self-affirmations may in themselves be effective at lowering defensiveness (Bélanger et al., 2013a; Donahue et al., 2009), affirmations that succeed at transcending the self may be more effective at

allowing obsessive people to be more accepting of threatening messages compared to affirmations that enhance the self (Burson et al., 2012; Crocker et al., 2008).

An additional objective of this research was to test if affirming the self allowed obsessively passionate people to be less defensive in response to threatening passion-related information, and whether the effectiveness of these affirmations depended on the extent to which they were oriented towards enhancing the self or transcending the self. In this research, I predicted that affirmations that both enhanced and transcended the self would be effective at attenuating the defensiveness that is characteristic of obsessive passion, but that this attenuation effect would be more pronounced for self-transcendent compared to self-enhancement affirmations. I expected that these predictions would hold in both the information exposure and information evaluation phases. When faced with threat, I predicted that harmonious passion would be unrelated to biased information processing; thus, I anticipated that the relationship between harmonious passion and biased processing would remain null when self-affirmed and when not self-affirmed.

Hypothesis 2. Compared with not affirming any values, affirming values of any type will attenuate the positive association between obsessive passion and biased processing of activity-threatening information.

Hypothesis 3. Compared with affirming self-enhancement values, affirming self-transcendent values will further attenuate the positive association between obsessive passion and biased processing of activity-threatening information.

Self-Regulation

The tendency to discount or discredit information that challenges a passion might require a considerable amount of effort and diligence on the part of the message receiver – rather than passively accept the information at face value, to reduce the threat that these messages have to the self, people must dissect, re-analyze, and contest the content of the message (e.g., Ditto & Lopez, 1992; Ditto et al., 2003). What happens when people’s ability to engage in this effortful process is compromised? When internal resources are depleted, it is likely that people are unable to exercise self-control and regulate their thoughts and attention when confronted with challenging messages. For instance, after reading a threatening article, people with depleted resources may be less likely to develop counter-arguments, and consequently may be more likely to accept the content of the message. In this situation, people may resort to the default response of accepting the information that is presented to them (Gilbert, 1991). Extensive research in the area of self-control and resource depletion has been approached using a strength model of self-control (Baumeister et al., 1998).

Strength model of self-control. The strength model of self-control (Bauer & Baumeister, 2011; Baumeister et al., 1998; Muraven & Baumeister, 2000) posits that people have a limited ability to exert acts of self-control and other executive functions. According to the model, acts of self-control draw on a limited supply of resources that, once depleted, reduce one’s ability to engage in subsequent self-control behaviours. Just as a muscle tires with repeated use, so does the ability to control and regulate the self.¹¹ The major prediction derived from this model is that people will be less capable of engaging in self-control after having

¹¹ The terms self-control and self-regulation are quite similar and are often used interchangeably (Bauer & Baumeister, 2011; Carver & Scheier, 2011). Self-control typically refers to actions that aim at overriding an impulse in order to attain another goal, while self-regulation more broadly refers to actions aimed at controlling the self, either towards or away from goal representations (Carver & Scheier, 2011).

engaged in prior self-control actions. When the ability to control the self has been diminished, this is referred to as a state of *ego-depletion* (Baumeister et al., 1998).

Overwhelming support has been found for the strength model of self-control. Research on self-control and ego-depletion has typically used a *dual-task paradigm* in which participants perform two unrelated self-control tasks (Hagger, Wood, Stiff, & Chatzisarantis, 2010). Evidence of ego-depletion is obtained when performance in the first self-control task impairs performance in the second self-control task. This effect has been found in a variety of situations. Participants who were asked to resist the urge to eat chocolate chip cookies experienced reduced persistence on a problem-solving task compared to those who did not restrain their urges (Baumeister et al., 1998, Experiment 1). Participants who were asked to restrain themselves from expressing their emotions during an upsetting movie experienced reduced endurance when squeezing a handgrip compared to those who did not control their emotions (Muraven, Tice, & Baumeister, 1998, Study 1). Participants who were asked to avoid looking at words that were presented on a screen tended to act more aggressively after being insulted by an experimenter compared to those who did not avoid the words (DeWall, Baumeister, Stillman, & Gailliot, 2007, Experiment 2). After making decisions between consumer products, participants kept their arms submerged in unpleasantly cold water for less time compared to those who did not make these difficult decisions (Vohs et al., 2008, Experiment 2). In general, a state of ego-depletion is expected "...anytime an individual overrides, inhibits, stops, or changes a mood, urge, thought or behaviour..." (Muraven, 2012, p. 113).

Self-control and motivated reasoning. The strength model of self-control has been applied in situations in which people are faced with challenging messages. When exposed to threatening information, ego-strength may be required when evaluating the content of the

message. It may require a considerable amount of effort to process and refute threatening information (Fischer, Greitemeyer & Frey, 2008), and in a state of ego-depletion, one's ability to counter these arguments may be impaired. Wheeler, Briñol, and Hermann (2007) conducted a study to test this hypothesis. After either engaging or not engaging in a self-control task, undergraduate students were presented with an article that argued in favour of instituting mandatory comprehensive examinations at their university (presumably, all the students were vehemently opposed to this proposal). The results revealed that students who had engaged in the self-control task (and who were thus ego-depleted) were more accepting of this proposal compared to those who were not ego-depleted. Other studies examining the effects of ego-depletion on general decision making and logical processing have found that those who are ego-depleted tend to have impaired processing abilities and rely more on heuristic strategies when making decisions (Masicampo & Baumeister, 2008; Pocheptsova, Amir, Dhar, & Baumeister, 2009). To the extent that resisting and refuting threatening information may require ego-strength, depleted individuals may be unable to counter the content of these messages and be more likely to accept them at face value (Gilbert, 1991; Wheeler et al., 2007).

The final aim of this research was to test if self-control strength moderates the ways in which passionate individuals evaluate threatening messages. As previously outlined, I expected that obsessive passion would be associated with an increased tendency to interpret threatening passion-related messages in biased, self-serving ways. However, when depleted, people who would ordinarily react with bias and defensiveness may not have the resources needed to combat counter-attitudinal arguments. Therefore, I expected that ego-depletion would attenuate the relationship between obsessive passion and biased information evaluation. Harmonious passion

was expected to be unrelated to biased information evaluation, meaning that ego-depletion was expected to have no effect on this relationship.

Hypothesis 4. Ego-depletion will attenuate the positive association between obsessive passion and biased evaluation of activity-threatening information.

The Current Research

The aforementioned hypotheses were tested with four studies. Studies 1 and 2 focused on the relationship between passion types and *selective exposure* to threatening information, while Studies 3 and 4 concentrated on *selective evaluation*. In Study 1, participants were presented with a list of article titles and asked to indicate their desire to read each article. Some of the articles, however, blatantly criticised one of their life passions: using Facebook. Prior to reporting their preferences, participants reported their levels of harmonious and obsessive passion for Facebook and were given an opportunity to affirm a self-transcendent or self-enhancement value in order to determine if these passion types and value affirmations influenced their preferences. Study 2 adopted the same design as Study 1, but instead of reporting levels of passion for Facebook, participants were randomly assigned to engage in an activity designed to activate a particular passion mindset towards Facebook. This study, therefore, tested the causal relationship between particular types of passion and selective exposure to passion-threatening information. In Study 3, passionate hockey fans were asked to read and evaluate an article arguing that hockey fans contributed to concussions in the National Hockey League (NHL). As in Study 1, participants reported levels of harmonious and obsessive passion for the NHL and affirmed self-transcendent or self-enhancement values before reading the article and making their evaluations. Study 4 replicated Study 3, but rather than affirm a value, some participants

completed a task that was designed to deplete their self-control resources. This manipulation of ego-depletion was used to assess if biased evaluations of threatening information, which I predicted would be associated with obsessive passion, relied on limited self-control resources. A summary of the hypotheses that were tested in these four studies is presented in Table 2.1.

Table 2.1
Research hypotheses

Studies	Hypotheses
1, 2, 3, 4	1. Obsessive passion, but not harmonious passion, will be positively associated with biased processing of activity-threatening information.
1, 3	2. Compared with not affirming any values, affirming values of any type will attenuate the positive association between obsessive passion and biased processing of activity-threatening information.
1, 3	3. Compared with affirming self-enhancement values, affirming self-transcendent values will further attenuate the positive association between obsessive passion and biased processing of activity-threatening information.
4	4. Ego-depletion will attenuate the positive association between obsessive passion and biased processing of activity-threatening information.

Note. Hypotheses 1, 2 and 3 apply to how information is both attended to (information exposure) and assessed (information evaluation).

CHAPTER III: Research Studies

Study 1

The purpose of Study 1 was to test the hypothesis that obsessive passion is positively associated with biased information exposure to passion-threatening information (hypothesis 1). However, this relationship was expected to be moderated by value affirmation. When either self-transcendent or self-enhancement values were affirmed, the relationship between obsessive passion and biased information exposure was expected to weaken (hypothesis 2). Moreover, I expected that affirmations related to self-transcendent values would be more effective at attenuating the relationship between obsessive passion and biased information exposure compared to self-enhancement value affirmations (hypothesis 3). These hypotheses were tested using a paradigm that is commonly used in selective exposure research (e.g., Brannon et al., 2007) in which participants are presented with article titles that are consistent or inconsistent with the participants' prior beliefs, attitudes, or decisions, and are later asked to rate the articles on various characteristics such as desirability. For this study, this general design was adapted so that the article titles either endorsed (which I refer to as "pro-passion" titles) or criticised (which I refer to as "anti-passion" titles) one of the participants' passions.

Method

Pretesting. The article titles that were presented to participants were selected from a larger pool of titles. The purpose of pretesting was to ensure that (a) the pro- and anti-passion titles did not differ in how interesting, credible, or desirable they appeared, and (b) all the article titles were perceived to argue for the intended position (i.e., the pro-passion articles were rated as

being in favour of engaging in the passion, the anti-passion articles were rated as being opposed to engaging in the passion, and the neutral titles were rated as being neutral towards the passion).

Pretesting occurred in September, 2013, and was conducted using an online questionnaire (see Appendix A). Participants ($N = 40$) were recruited from the University of Manitoba Introductory Psychology participant pool ($M_{\text{age}} = 19.53$ years, $SD_{\text{age}} = 2.47$ years). One participant was excluded from analyses due to a large percentage of missing responses (28.13%). Participants who signed-up for this study were linked to an online questionnaire that presented them with an online consent form, a series of 16 article titles with accompanying rating scales, and finally a debriefing page. Ethics approval was obtained from the University of Manitoba Psychology/Sociology research ethics board before this study began and participants were required to provide their consent on the online consent form before proceeding to the titles and rating scales. Participants received one research participation credit in exchange for participation.

The article titles that were presented to the participants are outlined in Table 3.1. The participants who were recruited for the main study were those who enjoyed going on Facebook and reported going on Facebook on a regular basis. Facebook was the focus of this study because it has become a very popular way to spend free time – the official Facebook website reports that there are over one billion monthly active Facebook users (Facebook, 2013). Facebook is also particularly popular with university students, with one study finding that university students spend approximately 30 minutes per day on Facebook (Pempek, Yermolayeva, & Calvert, 2009). Also, our own research has shown that many undergraduate students report that one of their passions in life is using social media, including going on websites such as Facebook (Schellenberg & Bailis, 2014).

Table 3.1
 Study 1: Pretest article positions, titles, and summaries

Pro-Facebook

- *1. “Why going on Facebook is a really good thing”
This article presents scientific evidence that finds that going on Facebook can enhance your health and happiness.
- *2. “The inspiring effect of Facebook”
This article discusses why going on Facebook has an inspirational effect that can contribute to creativity.
- 3. “The secret benefits of going on Facebook”
This article explains how going on Facebook can improve intellectual performance.
- 4. “Social media and human achievement: Why Facebook helps you succeed in life.”
This article outlines how going on Facebook is a motivational tool that helps people achieve their goals in life.

Anti-Facebook

- *5. “Facebook makes people less happy”
This article presents scientific evidence that finds that going on Facebook reduces levels of happiness and overall life satisfaction.
- 6. “Facebook: The great time waster”
This article discusses why going on Facebook can negatively impact productivity and work performance.
- 7. “Why healthy people don’t go on Facebook”
This article outlines how going on Facebook can cause various diseases, which can cause increased rates of mortality among Facebook users.
- *8. “This is your brain on Facebook...and it doesn’t look good”
This article explains how going on Facebook reduces brain functioning and mental performance.

Neutral

- *9. “Facebook usage over the past 5 years”
This article presents data from a recent survey of Canadians about their Facebook usage over the past 5 years.
- 10. “The expanding social network: Facebook and worldwide domination”
This article explains how Facebook expanded from a student-oriented website to a worldwide phenomenon.
- *11. “The role of advertisements on Facebook”
This article outlines why advertisements are needed on Facebook and how advertisements make their way onto Facebook.
- *12. “The new media: Where does Facebook stand?”
This article discusses the role of Facebook in relation to other more traditional media sources, such as television.
- 13. “The future of Facebook”
This article explains what Facebook might look like in the near future, including what types of features will be available.
- *14. “The Facebook effect: How Facebook influences our economy”
This article outlines how our economy is influenced by Facebook activity.
- 15. “How does Facebook make money?”
This article explains how a website can be worth billions of dollars, even when it’s free to use.
- 16. “Facebook: You use it every day, but how does it work?”
This article explains how Facebook works, including how it knows the people that you know.

Note. Article numbers marked with asterisks are those that were selected for use in Study 1.

A total of 16 article titles were presented to the participants as part of the pretesting questionnaire, four of which were intended to represent pro-Facebook titles (e.g., “Why going on Facebook is a really good thing”), four of which were intended to represent anti-Facebook titles (e.g., “Facebook makes people less happy”) and eight of which were designed to be filler titles that were neither pro- or anti-Facebook (e.g., “Facebook usage over the past 5 years”). The goal of this pretesting was to select eight articles to use in the main study: two pro-Facebook titles, two anti-Facebook titles, and four filler titles.

After providing informed consent, participants were presented with 16 article titles along with one-sentence summaries of the article arguments. Summaries were provided in order to clarify the intended position of the articles (see Fischer, Schulz-Hardt, & Frey, 2008). Each article title was presented on its own page, and below each title participants were asked to make four ratings. Participants were asked to make their ratings in relation to how they thought the average person would find the article, regardless of their own position on the issue (see Brannon et al., 2007). The first three ratings assessed levels of interest, credibility, and desirability of the article on a scale from 1 (*not at all*) to 9 (*extremely*): “How interesting do you think the average person would find this article?”; “How credible do you think the average person would find this article?”; “To what extent do you think the average person would want to read this article?”. The final question asked participants to assess the stance that they believed the article took on Facebook on a scale from -4 (*opposed to going on Facebook*) to +4 (*in favour of going on Facebook*). Participants answered these four questions for each of the 16 article titles. The final page of the online questionnaire presented participants with a debriefing page that provided more information about the purpose of the study.

Pretest ratings were used to select titles for the main study. The first objective was to ensure that participants rated the pro- and anti-Facebook articles as arguing for the intended positions (i.e., in favour of and opposed to Facebook, respectively). One-sample *t*-tests indicated that the position ratings for all pro- and anti-Facebook articles differed significantly from zero (all *ps* < .001, one-tailed). The signs of the position ratings were all in the expected direction (see Table 3.2). Cohen's *d* values revealed that each difference represented a large effect (Cohen's *d* values ranged from 1.25 to 2.48). Therefore, all the pro- and anti-Facebook articles were recognized by participants as arguing for the intended positions.

The second objective was to select pro- and anti-Facebook titles that were similar on ratings of interest, credibility, and desirability. The correlations between ratings of interest and desirability for each article were quite high (correlations ranged from .62 to .92), and were aggregated as a measure of article *appeal*. A series of repeated measures ANOVAs was performed to assess differences in ratings of appeal and credibility between the eight article titles, with the ultimate goal being to find four article titles, with two being pro-Facebook titles and two being anti-Facebook titles, that did not differ from each other on ratings of appeal or credibility. A set of four articles was established that did not differ from each other on levels of appeal ($F [2.49, 94.56] = 1.161, p = .324, \eta_p^2 = .030^{12}$) or credibility ($F [3, 114] = 2.226, p = .089, \eta_p^2 = .055$). These pro- and anti-Facebook articles were therefore selected for use in the main study (see article titles marked with asterisks in Tables 3.1 and 3.2).

¹² Mauchley's test indicated that the assumption of sphericity was violated ($\chi^2 = 16.12, p = .007$), so results that used the Greenhouse-Geisser adjustment were interpreted.

The final step was to select four neutral titles to include in the main study. Given that the purpose of these article titles was to act as filler titles, it was not necessary to test if these titles differed from each other, or from the pro- or anti-Facebook articles, on ratings of appeal or credibility. However, it was necessary to ensure that the four neutral titles that were selected for the main study were identified by participants as being neutral, and not rated as taking a particular position (either pro- or anti-Facebook). One-sample *t*-tests were conducted with the four articles that were rated as closest to having a neutral stance (i.e., those with an average position rating closest to zero). These four articles are marked with asterisks in Tables 3.1 and 3.2. The position scores for three of the article titles did not differ significantly from zero (all *ps* > .05). However, the fourth article (Article #14: “The Facebook effect: How Facebook influences our economy”) was rated as being slightly pro-Facebook ($M = 0.51$, $SD = 1.275$, $t[38] = 2.512$, $p = .016$, $d = 0.40$). But given that the mean position rating was substantially less positive compared to the ratings of the pro-Facebook articles (with a mean rating of 0.51, compared to mean ratings of 2.59 and 2.36 for the two pro-Facebook articles), and given the small to medium effect size (compared to large effect sizes of the pro-Facebook article position ratings), this article was selected as the fourth neutral article.¹³ The final eight articles that were selected for inclusion in the main study are marked with asterisks in Tables 3.1 and 3.2.

¹³ To be conservative, no adjustments were made to the family-wise error rate for these analyses. If such an adjustment is made (e.g., Bonferroni correction), the mean position score of the fourth neutral article title is no longer statistically different from zero.

Table 3.2

Study 1: Pretest article ratings

Article #	Interest (Range: 1 to 9)		Desirability (Range: 1 to 9)		Appeal (Range: 1 to 9)		Credibility (Range: 1 to 9)		Position (Range: -4 to +4)		
	M	SD	M	SD	M	SD	M	SD	M	SD	
	<u>Pro-passion</u>										
*1.	5.74	1.89	5.33	2.14	5.54	1.86	4.21	1.92	2.59	1.60	
*2.	5.67	1.51	5.56	1.71	5.62	1.53	4.72	1.52	2.36	1.50	
3.	6.64	1.66	6.54	1.62	6.59	1.57	4.97	1.95	3.10	1.25	
4.	6.31	1.78	6.26	1.79	6.28	1.68	4.49	1.90	2.82	1.64	
	<u>Anti-passion</u>										
*5.	6.18	1.64	5.90	1.92	6.04	1.60	4.92	1.71	-2.49	1.96	
6.	5.64	1.87	5.21	2.08	5.42	1.83	5.26	1.92	-2.51	2.00	
7.	5.56	2.21	5.05	2.53	5.31	2.28	3.64	1.95	-2.51	2.01	
*8.	6.15	1.93	5.74	2.19	5.95	1.94	4.87	1.72	-2.72	1.86	
	<u>Neutral</u>										
*9.	5.36	2.05	5.08	1.98	5.22	1.94	5.92	1.93	0.28	0.97	
10.	5.95	1.88	5.41	2.04	5.68	1.90	5.69	1.82	1.15	1.57	
*11.	4.15	1.90	4.03	2.02	4.09	1.88	5.05	2.03	0.38	1.58	
*12.	5.15	2.05	4.54	1.88	4.85	1.82	5.56	1.73	0.28	1.00	
13.	6.85	1.37	6.64	1.51	6.74	1.30	6.00	1.79	1.82	1.45	
*14.	5.23	2.12	4.82	2.10	5.03	2.00	5.03	1.81	0.51	1.28	
15.	6.82	1.90	6.08	1.95	6.45	1.83	6.26	1.57	0.92	1.49	
16.	5.87	2.32	5.31	2.25	5.59	2.24	5.44	1.82	0.74	1.46	

Note. Article numbers marked with asterisks are those that were selected for use in Study 1.

Participant recruitment. Participants were recruited from the University of Manitoba Introductory Psychology participant pool. At the beginning of the academic year (September, 2013), most students enrolled in Introductory Psychology completed a mass testing survey. Two questions related to Facebook were included in this survey: “I like going on Facebook” and “I spend a lot of time going on Facebook”. These two items were obtained from the passion criteria subscale of the Passion Scale (Vallerand et al., 2003) and were scored on a scale from 1 (*not at*

all) to 10 (*very much*).¹⁴ Students who answered these items and who agreed to be contacted for future psychology studies were recruited for the current study. Students were contacted if they indicated that they were passionate for using Facebook, which was defined as scoring higher than the mid-point of the scale (i.e., a score higher than 5) on *each* of these two items (see Philippe, Vallerand, & Lavigne, 2009). This restriction was intended to exclude students who were not passionate for using Facebook, since items that assess harmonious and obsessive passion for using Facebook may not be applicable to these non-passionate individuals. Also, those who had participated in the pretesting phase of this research were not recruited for the main study.

Qualifying students were recruited by phone and/or email and asked to participate. In total, 165 students participated in this study (M age = 19.41, SD age = 3.32).¹⁵ There were more female ($n = 118$) than male ($n = 44$) participants in the study (three participants did not report their sex), and most reported having a White/European ethnic background (57.0%), followed by Filipino (15.2%). Participants received two research credits in exchange for participation.

Procedure. Students participated in groups of 13 to 28 in a computer laboratory on campus. Upon arrival at the computer laboratory, a researcher explained that the study examined

¹⁴ Items from the Passion Scale, as used in the four main studies of this research, are scored on a scale from 1 (*not agree at all*) to 7 (*very strongly agree*). However, in order to coordinate with other items that were included in the mass testing survey, it was necessary to score these items on a 10-point scale.

¹⁵ An a priori power analysis was computed to determine the sample size that was required for the current study (see Table 3.5 for the regression model that was tested). Using G*Power (version 3.1.5), the following parameters were entered into a power analysis for linear multiple regression (“Fixed model, R^2 increase”): effect size = .15 (a “medium” effect size, as defined by Cohen, 1988), $\alpha = .05$, power ($1-\beta$) = .80, number of tested predictors = 2, total number of predictors = 11 (see Fraul, Erdfelder, Buchner, & Lang, 2009). This analysis resulted in a total required sample size of 68. However, slight deviations in the input parameters had a profound effect on the required sample size. For instance, reducing the effect size to slightly weaker values of .08 and .06, yielded required sample sizes of 124 and 164, respectively. Therefore, I aimed to recruit 160 participants in order to have sufficient power to detect weaker-than-medium effect sizes.

attitudes and opinions towards Facebook. Participants were told that they would be asked various questions about their opinions and attitudes towards Facebook, and would be asked to read and analyze an article about Facebook. After this was explained to all the participants, they were asked to read and sign the informed consent form (Appendix B). The study instructions and measures were provided to the participants using an online computer program (Qualtrics) that was organized into five sections (see Appendix C).

Section 1: The Passion Scale. The first portion of the study asked participants to complete the Passion Scale (Vallerand et al., 2003). The Passion Scale consists of three subscales measuring harmonious passion (6 items; e.g., “Facebook is in harmony with the other activities in my life”), obsessive passion (6 items; e.g., “I have difficulties controlling my urge to go on Facebook”) and the passion criteria (4 items; e.g., “I like going on Facebook”). To make the items more specific to Facebook, the words “my activity” from the original scale were replaced with “Facebook”. Items were rated on a scale from 1 (*not agree at all*) to 7 (*very strongly agree*). Evidence for the validity (e.g., factor structure, item interrelationships, factor invariance) and reliability (e.g., test-retest reliability) of scores derived from the Passion Scale has been obtained in the context of a variety of activities with a variety of samples (Marsh et al., 2013; Rousseau et al., 2002; Schellenberg et al., 2014; Vallerand, 2010, 2015; Vallerand et al., 2003; Vallerand & Verner-Filion, 2013). Participants reported spending on average 9.27 hours per week using Facebook.¹⁶

¹⁶ The number of reported hours per week using Facebook was positively skewed (Skew = 6.193, SE = .189). The median number of hours using Facebook per week was 7.00 hours, and the mode was 10.00 hours.

Section 2: Affirmation manipulation. The next portion of the computer questionnaire was ostensibly designed as a warm-up exercise to prepare participants' analytical and cognitive functioning prior to reading the article. In fact, this portion of the study served as a manipulation of value affirmation. Affirmations are most effective when they operate outside of awareness (i.e., the individual does not know the true purpose of the affirmation exercise), and the affirmation exercise was disguised as a warm-up exercise in order to reduce the awareness that the participants may have about its true purpose (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998; Sherman & Cohen, 2006; Sherman & Hartson, 2011).

Participants engaged in a standard self-affirmation manipulation procedure (e.g., McQueen & Klein, 2006; Schmeichel & Vohs, 2009; Sherman, et al., 2000) that was recently adapted to assess differences between self-enhancement and self-transcendent value affirmations (Burson et al., 2012). Participants were randomly assigned into *self-transcendent*, *self-enhancement*, or *control* conditions. Participants in the self-transcendent condition were presented with a list of six transcendent values and asked to rank them from most important to least important in their lives: Empathy/compassion, being responsive and supportive to the needs of others as well as one's own needs, creating or contributing to something larger than oneself, trust/openness, personal growth, and being in mutually supportive and caring relationships. Participants in the self-enhancement condition were presented with the same instructions as those in the self-transcendent condition, but were presented with values that were oriented towards self-enhancement: power/status, wealth/possessions, appearing confident/independent, physical attractiveness, popularity/admiration/prestige, and appearing intelligent/competent (Burson et al., 2012). After the value-ranking exercise, participants in the self-transcendent and self-enhancement conditions were presented with the value that they rated as most important and

asked to write an essay for approximately 8 minutes about why this value was important and meaningful to them (Burson et al., 2012). Participants assigned to the control condition were not asked to rank any values, but instead were asked to write the essay about their daily routine (Burson et al., 2012). The values that were most often selected as most important in the self-transcendent and self-enhancement conditions are displayed in Table 3.3.

Table 3.3
Study 1: Most important reported self-transcendent and self-enhancement values.

<u>Self-transcendent Condition</u>		<u>Self-enhancement Condition</u>	
Value	%	Value	%
Trust/openness	32.73	Appearing intelligent/competent	41.07
Personal growth	20.00	Appearing confident/independent	26.79
Empathy/compassion	12.73	Popularity/admiration/prestige	10.71
Being in mutually supportive and caring relationships	12.73	Physical attractiveness	8.93
Being responsive and supportive to the needs of others as well as one's own needs	10.90	Wealth/possessions	7.14
Creating or contributing to something larger than oneself	10.90	Power/status	5.36

Section 3: Post-essay emotions. Following the essay exercise, all participants were asked to report their current feelings and emotions. On a scale from 1 (*not at all*) to 5 (*extremely*), participants were asked to rate the extent to which they were currently feeling the following emotions: loving, compassionate, connected, proud, strong, admirable, powerful, in control, humble, empathic, vulnerable, superior, fallible, victimized, weak, out of control, inferior, ashamed, and powerless (Burson et al., 2012; Crocker et al., 2008). This group of emotions was assessed because it is posited to capture self- and other-directed positive and negative emotions (D. Mischkowski, personal communication, April 3, 2013). I was particularly

interested in distinguishing between positive other-directed emotions (loving, compassionate, and connected) and positive self-directed emotions (proud, strong, and admirable), as the former class of emotions has been found to be uniquely affected by affirmations of self-transcendent values (Burson et al., 2012), which may mediate relationships with biased information processing (Crocker et al., 2008).

Section 4: Title preferences and rankings. Next, participants were reminded that they would be asked to read and analyze an article that would be randomly assigned to them. However, before being given the article, they were asked to rank the articles, based on their titles and one-sentence summaries, based on how much they were hoping to read each article. Participants were then presented with eight article titles and summaries, two representing pro-passion articles, two representing anti-passion articles, and four representing neutral, filler articles (as selected from pretesting). Participants were asked to “drag-and-drop” the article titles in an order from most desirable to least desirable. The initial ordering of these articles was randomly determined by the Qualtrics survey program. After they had completed this exercise, participants were asked to click a check box indicating that they are satisfied with the order of the titles.

In the next portion of this questionnaire, participants were presented with the article titles and asked to rate how much they would like to read each article on a scale from -4 (*I do NOT want to read this article*) to +4 (*I WANT to read this article*). After they had made these ratings, participants rated the extent to which they expected the content of the articles to be central to their sense of self. Levels of centrality were measured using two items from the centrality subscale of the stress appraisal measure (SAM; Peacock & Wong, 1990): “Will this article have important consequences for me?” and “How much will I be affected by the content of this

article?”¹⁷ These items were rated on a scale from 1 (*not at all*) to 5 (*extremely*). The original SAM was designed to assess stress appraisals of a specific situation, and to make the items more specific for the current study, the term “situation” was replaced with the term “article”. In addition, since the participants had not read the articles, the tense of the items was changed from present tense to future tense.

Finally, the computer presented all participants with the title of an article that they were told was randomly assigned to them to read. All participants, however, were presented with the article title that was rated in pretesting as being the most anti-passion: “This is your brain on Facebook...and it doesn’t look good”. To assess their reaction to this article assignment, participants were asked to rate their agreement with three statements on a scale from 1 (*not at all*) to 9 (*very much so*): “I plan to read this article very carefully”, “I am excited to read this article”, and “I expect that this article will be interesting”.

Section 5: Debriefing. In the final section of this study, participants were presented with a debriefing page that outlined the true purposes of the study, and explained why they were not presented with an article to read. Also, any questions that the participants had about this study were answered at that time. A paper version of the debriefing page was given to all participants for them to take home.

Subscale computation. Data were exported from Qualtrics to SPSS (version 22) in order to compute independent and dependent variables and to conduct statistical analyses. Harmonious and obsessive passion scores were computed by averaging scores from items

¹⁷ The original SAM assesses centrality with four items; however, in this study only two items were used in order to reduce participant burden. These two items were selected because they have loaded most strongly on the centrality factor in previous validation studies (Peacock & Wong, 1990, Study 2).

representing both scales (Vallerand et al., 2003). Cronbach's alpha levels for harmonious and obsessive subscales were .84 and .79, respectively. Scores for feelings of loving, compassionate, and connected were aggregated to create a composite score of positive other-directed emotions ($\alpha = .81$), and scores for feelings of proud, strong, and admirable were aggregated into a measure of positive self-directed emotions ($\alpha = .82$). A composite score representing the level of centrality that participants felt towards the pro-Facebook and anti-Facebook articles was created through a two-step procedure. First, for both SAM items, responses towards the pro- and anti-Facebook articles were averaged to represent the extent to which the pro- and anti-Facebook articles were perceived to affect (item 1) and have important consequences for (item 2) the participants. Second, these scores were averaged together to create an overall centrality score for the pro-Facebook and anti-Facebook articles.

The purpose of this study was to assess the degree of bias that participants had in favour of pro-passion titles compared to anti-passion titles, and bias was quantified in two ways. First, average ranking scores of the pro- and anti-Facebook titles were computed, and difference scores representing the amount of bias towards pro-Facebook articles were computed by subtracting the average pro-Facebook scores from the average anti-Facebook ratings (see Brannon et al., 2007; Fischer, Greitemeyer & Frey, 2008). Scores on this measure of ranking bias could range from -6 (representing low levels of bias) to +6 (representing high levels of bias).¹⁸ Second, a similar technique was used to calculate biases in the ratings of how much each participant was hoping to

¹⁸ To illustrate this procedure, a participant with high levels of bias would rank the articles in the following order, from most desirable (1) to least desirable (8): pro-Facebook title (1), pro-Facebook title (2), neutral title (3), neutral title (4), neutral title (5), neutral title (6), anti-Facebook title (7), anti-Facebook title (8). The ranking bias score would be computed by subtracting the average pro-Facebook ranking $[(1+2)/2 = 1.5]$ from the average anti-Facebook ranking $[(7+8)/2 = 7.5]$, which equals 6.0.

read each article: Scores obtained for the pro- and anti-Facebook articles were averaged, and the anti-Facebook average was subtracted from the pro-passion average to create a measure of rating bias. Scores on this measure of rating bias could range from -8 to +8, with higher scores again representing higher levels of bias towards the pro-Facebook article. Scores on both measures of article bias were positively correlated ($r = .631, p < .001$), and were therefore standardized and aggregated into a single measure of article bias.

A final set of dependent variables was the expectations of the anti-Facebook article that participants expected to read. Lower scores on the three items assessing expectations of the article represented more negative attitudes towards the article. Given the strong correlations between these three items (all $r_s > .70$), they were aggregated into an overall measure of article expectations ($\alpha = .90$).

Data screening. The data were screened using SPSS for missing data, outliers, assumption violation, and entry errors. A random sample of participant responses in SPSS were cross-referenced with original responses in Qualtrics to verify that all responses were imported accurately. As part of the computer survey, participants were prompted to respond to unanswered questions at the end of each section. Although they were not required to answer every question (the prompt allowed participants to “go back” to answer an unanswered item, or to “continue with the survey” and leave the unanswered item blank), this feature of the survey tended to help participants who overlooked or forgot to answer certain items. This resulted in only 7 missing data points (0.07%). Given the low percentage of missing data, subscales were computed while ignoring these missing data points (this procedure is equivalent to imputing the mean of the remaining items of a subscale).

For each analysis, as reported for each study of this research, data were checked for outliers and assumption violations. Assumptions of homoscedasticity, independence, multicollinearity, and normality were assessed by inspecting residual plots (e.g., histograms, q-q plots) and statistical tests provided by SPSS (e.g., Shapiro-Wilks test of normality, Durban-Watson test of independence, and tolerance levels). Particular attention was given to identifying potential outliers, as extreme cases can have a profound impact on regression analyses that include interaction terms (Cohen, Cohen, West, & Aiken, 2003). Outliers were identified by inspecting frequency distributions of standardized residuals and index plots of Cook's D values (Cohen et al., 2003). Participants whose values on these measures were clearly dissimilar from the other participants were identified as potential outliers. In addition, for any result that was particularly unusual or unexpected, *DFBETAS* for specific regression slopes were inspected to ensure that the result was not caused by an extreme case (Cohen et al., 2003). Any concerns with these assumptions are highlighted as part of each analysis, but in general there were very few extreme cases and no serious assumption violations.

The data screening procedure revealed two minor concerns. First, when reporting the average number of hours spent on Facebook per week, some participants entered a range of time (e.g., "8-10" hours). To resolve this issue, the mean response time was imputed (e.g., "9"). Second, the participants' affirmation essays were examined in order to verify that each participant (a) wrote an essay and, (b) wrote the essay on the assigned topic. This process identified 5 participants who either wrote sentence fragments less than 8 words ($n = 2$), wrote the essay about how they did not put effort into the task or forgot what the task was about ($n = 2$), or did not write an essay ($n = 1$). These participants were excluded from all analyses involving self-

affirmation conditions; this means that $n = 160$ for all analyses that include self-affirmation condition as an independent variable.

Contrast coding and regression models. Multiple regression was used for the main analysis in this study.¹⁹ The study design involved two continuous independent variables (harmonious and obsessive passion) and one categorical independent variable with three levels (self-transcendent group, self-enhancement group, and the control group). Because the categorical predictor had three levels, the groups were recoded into two dummy variables in order to represent the group effect in the regression model (Cohen et al., 2003). The most appropriate coding method, given the hypotheses in this study, was to use contrast coding in which each dummy variable represented a specific group comparison (Cohen et al., 2003). Unlike other coding options (such as dummy coding or effects coding), contrast coding allowed the hypotheses to be tested by interpreting certain regression coefficients in the model. The contrast codes that were used for the grouping variable in this analysis are outlined in Table 3.4.

The first dummy variable (c_1) compared the average of the two affirmation conditions with the control condition, which is directly relevant to hypothesis 2 (which predicted that value affirmations of any type would attenuate the positive association between obsessive passion and biased information processing). Therefore, this hypothesis was tested by examining the interaction between obsessive passion and this first dummy variable. The second dummy

¹⁹ All hypotheses were tested using $\alpha = .05$. In my discussion of the results, effects that produced a p -value $\leq .05$ were labeled as “significant”, while those with p -values that were very close to surpassing this .05 threshold were labeled with terms such as “marginally significant” or as “approaching significance”. The word “significance” in this context was not used to dub findings as either important, approaching importance, or unimportant, but rather in a statistical sense to label p -values into those that did or did not surpass the .05 threshold. All results are presented with effect sizes and confidence intervals in order to portray the magnitude and precision of the estimated effects (Cumming, 2013).

variable (c_2) compared the self-transcendence group with the self-enhancement group, which related to hypothesis 3 (which predicted that affirmations of self-transcendent values would have a more pronounced attenuation effect on the positive association between obsessive passion and biased information processing compared to affirmations of self-enhancement values). This hypothesis was tested by examining the interaction between obsessive passion and this second dummy variable. The full regression model is outlined in Table 3.5.

Table 3.4
Study 1: Contrast codes

Condition	Contrast Codes	
	c_1	c_2
Self-transcendence	+1/3	+1/2
Self-enhancement	+1/3	-1/2
Control	-2/3	0

Table 3.5
Study 1: Regression model

$$\hat{y} = b_0 + b_1(hp) + b_2(op) + b_3(c_1) + b_4(c_2) + b_5(hpXop) + b_6(hpXc_1) + b_7(hpXc_2) + b_8(opXc_1) + b_9(opXc_2) + b_{10}(hpXopXc_1) + b_{11}(hpXopXc_2)$$

Note. \hat{y} = predicted dependent variable; op = obsessive passion; hp = harmonious passion; c_1 = the first dummy variable; c_2 = the second dummy variable

A number of details of this model should be highlighted. First, the harmonious and obsessive passion scores were mean centered before being entered into the regression equation and computing product terms (Cohen, et al., 2003). Second, although the main coefficients of interest are the interactions between obsessive passion and the two contrast codes (i.e., b_8 and b_9), harmonious passion was also included in the model in order to determine the unique relationship between obsessive passion and biased information processing, controlling for harmonious

passion.²⁰ The model also included the interactions between harmonious passion and the two dummy variables in order to thoroughly control for the effect of harmonious passion (Yzerbyt, Muller, & Judd, 2004). Third, although the regression equation contained the interaction between harmonious and obsessive passion, along with three-way interactions between passion types and each contrast code, interactions between passion types were not anticipated as they are typically not found in the literature (Bélanger et al., 2013a). Given that there was no a priori hypothesis of a harmonious by obsessive passion interaction, and no theoretical grounds for anticipating such an interaction, the harmonious by obsessive passion interaction (and the three-way interactions between both passion types and each contrast code) was excluded from any regression analysis in which this interaction was not significant (Aiken & West, 1991; Bélanger et al., 2013a).²¹ Omitting these interactions allowed for more powerful tests of the remaining effects in the regression equation (Aiken & West, 1991; Cohen et al., 2003).

Finally, hypothesis 1 predicted that obsessive passion, but not harmonious passion, would be associated with biased information processing. This hypothesis was tested by examining the simple slope of obsessive passion within the control group. Simple slopes were tested by conducting additional regression analyses using dummy codes rather than contrast codes (Cohen et al., 2003). Using this coding system, the control group was coded as the reference group which allowed the main effect of obsessive passion (represented by the

²⁰ Obsessive and harmonious passion are usually positively correlated with one another, and research typically examines the relationship between one type of passion and a dependent variable while controlling for the other type of passion (Vallerand, 2010, 2015).

²¹ The hpXop interaction term and higher-order interaction terms (e.g., hpXopXc₁) were excluded using a stepwise procedure. First, a full model was tested that included all the terms identified in Table 3.5. If the higher-order hpXop interaction terms (e.g., hpXopXc₁) were not significant, a second model was analyzed that excluded these higher-order interactions but retained the hpXop two-way interaction. If the hpXop term was not significant in this second model, and final model was analyzed that excluded the hpXop term.

coefficient b_2 in the regression model outlined in Table 3.5) to be interpreted as the extent to which the slope of the control group differs from zero (see Aiken & West, 1991 and West, Aiken, & Krull, 1996 for a thorough description of this procedure). Dummy codes that specified different reference groups were used to calculate simple slopes within the other experimental conditions.

Supplemental analysis. It has been proposed that affirming self-transcendent values causes people to experience positive other-directed emotions such as love, compassion, and connectedness, which may mediate relationships with biased information processing (Burson et al., 2012; Crocker et al., 2008). To explore this possibility, I assessed if the interaction between obsessive passion and affirmation condition could be explained by certain emotional experiences. This question represents a case of *mediated moderation*, in which a fourth variable is expected to mediate a moderation effect (Muller, Judd, & Yzerbyt, 2005; Wu & Zumbo, 2008). In this case, the relationship between the interaction effect of obsessive passion (independent variable) and experimental group (moderator) and biased information processing (dependent variable) was expected to be explained by specific emotions (mediator). This analysis is not directly related to the study hypotheses, so it was treated as supplemental.

Analysis strategy. All four studies in this research assessed numerous outcome variables. Although including many dependent variables allows various attitudes, experiences, and behaviours to be assessed, it also raises some potential concerns. Statistically, increasing the number of hypothesis tests raises the probability of making a Type I error – that is, rejecting a true null hypothesis (Cohen et al., 2003). By running multiple regression analyses for many dependent variables, significant effects might be found simply by capitalizing on chance. In addition, including multiple dependent variables can complicate findings by producing

inconsistent results that are difficult to interpret (Cohen et al., 2003). For these reasons, all analyses were grouped into four phases: preliminary, focal, peripheral, and supplemental analyses.

Preliminary analyses involved initial assessments such as descriptive statistics and correlations, tests of sex differences, and examinations of the effects of any experimental manipulations. Hypotheses were tested as part of *focal analyses*, which concentrated on a limited number of dependent variables that were directly related to the research hypotheses. Some outcome variables assessed in this research, although informative, were less central to the main purpose of the study, and were analyzed as part of the *peripheral analyses*. Finally, *supplemental analyses* tested additional hypotheses of potential mediating and/or moderating effects. All tests of research hypotheses, interpretations, and conclusions were based on results conducted as part of the focal analyses. The focal analyses for each study report which dependent variables were analyzed, and why they pertain directly to the research hypothesis. In this way, interpretations and main conclusions were made based on a limited number of analyses, which helped reduce problems with inflated Type I error rates and the chance of obtaining inconsistent results (Cohen et al., 2003).

Results

Preliminary analysis. Sex differences were tested to determine if males and females differed on any of the measured variables in this study. This analysis revealed that males ($M = 3.53$, $SD = 0.76$) had higher levels of positive self-directed emotions following the essay exercise compared to females ($M = 3.14$, $SD = 0.87$; $t [160] = 2.562$, $p = .011$, $d = .453$). Males and females did not differ on any other variable such as levels of passion, attitudes towards the

articles, or reported levels of article centrality. Therefore, sex effects were ignored from all further analyses.

Descriptive statistics (Table 3.6) and correlations (Table 3.7) were computed for all study variables. The correlation matrix revealed a number of notable relationships that should be highlighted. First, previous research has found that the correlation between harmonious and obsessive passion varies substantially across studies (Carbonneau et al., 2008). In this study, although this relationship was quite strong ($r = .56, p < .01$), it was not so strong as to suggest that both passion types are redundant with one another. Second, the correlations between both passion types and the passion criteria were nearly identical, suggesting that overall passion for Facebook cannot be distinguished based on passion type. Finally, contrary to my hypothesis, article bias was positively associated with harmonious passion but unrelated to obsessive passion. In the focal analysis, I tested if this surprising relationship was present after controlling for obsessive passion, or was dependent on whether or not the participants wrote an essay affirming a self-enhancement or self-transcendent value.

Table 3.6
Study 1: Descriptive statistics

	Scale Range	<i>M</i>	<i>SD</i>	Skew ^a	Kurt ^b	α
Passion						
Harmonious passion	1 to 7	3.06	1.16	0.462	-0.082	.84
Obsessive passion	1 to 7	1.99	0.90	0.742	-0.495	.79
Passion criteria	1 to 7	3.12	1.16	0.425	0.035	.78
Facebook hours per week	---	9.27	11.84	6.193	54.686	---
Post-essay emotions						
Positive other-directed emotions	1 to 5	3.45	0.87	-0.651	0.391	.81
Positive self-directed emotions	1 to 5	3.23	0.86	-0.289	-0.091	.82
Article preferences						
Article ranking bias	-6 to +6	-1.25	2.62	0.485	0.022	---
Article rating bias	-8 to +8	-1.04	2.25	-0.599	1.132	---
Standardized article bias score	---	0.00	0.90	-0.139	0.187	---
Centrality: Pro-Facebook articles	1 to 5	2.60	1.08	0.029	-1.066	---
Centrality: Anti-Facebook articles	1 to 5	3.10	1.10	-0.349	-0.769	---
Anti-Facebook article expectations	1 to 9	6.77	1.68	-0.950	0.842	.90
Affirmation essay word count	---	175.63	86.29	0.629	0.356	---

Note. Higher bias scores indicate stronger bias towards pro-Facebook articles. *N* = 165. ^aSE = .189 ^bSE = .376

Table 3.7
Study 1: Correlations

	1	2	3	4	5	6	7	8	9	10
1 Harmonious passion										
2 Obsessive passion	.56**									
3 Passion criteria	.68**	.69**								
4 Article ranking bias	.33**	.08	.23**							
5 Article rating bias	.25**	.01	.22**	.63**						
6 Standardized article bias	.32**	.05	.25**	.90**	.90**					
7 Article expectations	.18*	.09	.12	-.04	-.08					
8 Pro-Facebook centrality	.50**	.30**	.37**	.39**	.40**	.44**	.24**			
9 Anti-Facebook centrality	.34**	.25**	.27**	-.04	-.11	-.09	.35**	.63**		
10 Positive other emotions	.06	.02	.07	.12	.09	.12	.14	.18*	.10	
11 Positive self emotions	.07	-.02	.06	.14	.14	.15	.10	.17*	-.04	.41**

Note. **p* < .05. ***p* < .01

Focal analysis. Using multiple regression, the focal analysis tested the moderating effect of affirmation condition on the relationship between passion types and biased information exposure. The dependent variable of interest in this analysis was the standardized measure of article bias, which represented the extent to which participants preferred to attend to the pro-Facebook article compared to the anti-Facebook article. Higher scores on this dependent variable represented higher levels of bias towards the pro-Facebook article. This model predicted article bias from levels of harmonious and obsessive passion, affirmation condition, and their interactions (see Table 3.4 for the contrast coefficients used to represent the three experimental conditions). The results of this analysis are displayed in Table 3.8. Contrary to my hypothesis, obsessive passion did not interact with any experimental condition contrasts. Unexpectedly, a significant interaction was found between *harmonious passion* and the contrast comparing the control group with both self-affirmation conditions, $b = -.474$, 95% CI [-.758, -.189], $p = .001$. This two-way interaction, however, was qualified by a significant three-way interaction between harmonious passion, obsessive passion, and the control versus both self-affirmation conditions contrast, $b = .300$, 95% CI [.060, .540], $p = .015$.²²

²² This analysis was repeated with one participant removed who had an extreme *DFBETA* score for the slope of the three-way interaction between harmonious passion, obsessive passion, and the control vs. both self-affirmation condition comparison. The effect of this three-way interaction with the potential outlier excluded from the analysis was comparable to the effect found in the original analysis, $b = .359$, 95% CI [.103, .615], $p = .006$. It is therefore unlikely that this result was caused by an extreme case.

Table 3.8

Study 1: Regression analyses predicting standardized composite article bias scores from passion types and affirmation condition.

Predictor	<i>b</i>	95% CI	<i>SE</i>	<i>p</i>
Intercept	-0.086	[-0.231, 0.058]	.073	.240
HP	0.300	[0.164, 0.436]	.069	<.001
OP	-0.257	[-0.440, -0.074]	.093	.006
Control vs. Both self-affirmation conditions	-0.144	[-0.446, 0.158]	.153	.347
Self-transcendent vs. Self-enhancement conditions	0.058	[-0.301, 0.417]	.182	.749
HP X OP	0.149	[0.031, 0.267]	.060	.013
HP X Control vs. Both self-affirmation conditions	-0.474	[-0.758, -0.189]	.144	.001
HP X Self-transcendent vs. Self-enhancement conditions	-0.096	[-0.434, 0.242]	.171	.575
OP X Control vs. Both self-affirmation conditions	0.260	[-0.126, 0.647]	.195	.185
OP X Self-transcendent vs. Self-enhancement conditions	-0.008	[-0.459, 0.444]	.228	.974
HP X OP X Control vs. Both self-affirmation conditions	0.300	[0.060, 0.540]	.121	.015
HP X OP X Self-transcendent vs. Self-enhancement conditions	0.102	[-0.197, 0.401]	.151	.502

Note. HP = harmonious passion, OP = obsessive passion.

This three-way interaction was interpreted by plotting simple slopes (Figures 3.1 and 3.2). Table 3.9 displays the results of this simple slopes analysis.²³ For those with high levels of OP (i.e., one standard deviation above the OP mean), there was a positive relationship between HP and bias for each affirmation condition (all $ps < .03$). However, for those with low levels of OP (i.e., one standard deviation below the OP mean), there was a strong relationship between HP and bias in the control group only, $b = .661$, 95% CI [.372, .951], $p < .001$.

²³ I followed recommendations provided by Aiken and West (1991, p. 54) and Jaccard and Turrisi (2003, p. 51) when testing simple slopes of three-way interactions. The procedure I used involved running a regression analysis for each simple slope in which the affirmation condition of interest was coded as the reference group and the values of the non-focal passion type were specified in a way that allowed the simple slope to be interpreted as the main effect of the focal passion type. For example, to assess the relationship between HP (the focal passion type) and bias within the control condition and for low OP scores, I conducted a regression analysis that was similar to the one specific in Table 3.5 but with two modifications: (a) dummy variables representing the three affirmation conditions were specified so that the reference group was the control condition, and (b) OP scores were re-coded by subtracting the conditional value of OP that was of interest, which in this case was one standard deviation below the centered mean of OP (in all simple slopes analyses, I used conditional values that were one standard deviation below or above centered means). All interaction terms in this model were computed using this dummy variable and the re-coded OP values. The main effect of HP in this regression analysis (b_1) represented the relationship between HP and bias in the control condition for low OP scores.

Figure 3.1: Relationship between harmonious passion, affirmation condition, and standardized bias score for those with low obsessive passion

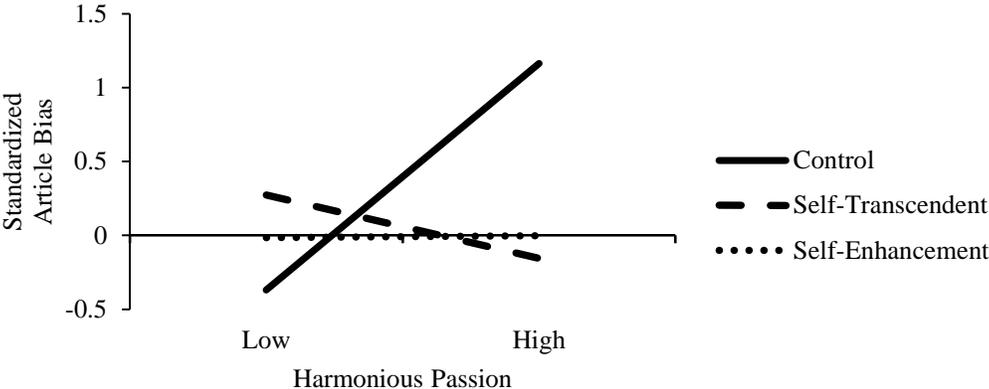


Figure 3.2: Relationship between harmonious passion, affirmation condition, and standardized bias score for those with high obsessive passion

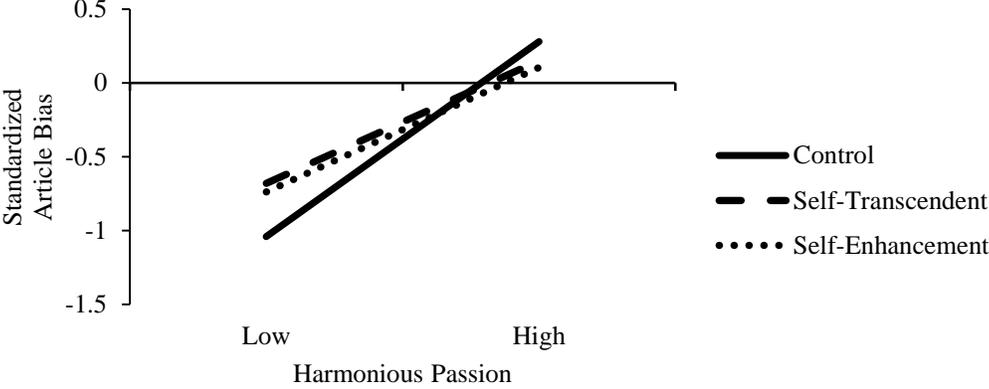


Table 3.9

Study 1: Simple slopes analysis of the HP X OP X Control vs. Both self-affirmation conditions interaction predicting article bias.

Simple Slope	<i>b</i>	95% CI	<i>SE</i>	<i>p</i>
Bias on HP				
within Control and Low OP	0.661	[0.372, 0.951]	.147	<.001
within Self-transcendent and Low OP	-0.178	[-0.472, 0.117]	.149	.235
within Self-enhancement and Low OP	0.010	[-0.322, 0.343]	.168	.951
within Control and High OP	0.569	[0.288, 0.851]	.142	<.001
within Self-transcendent and High OP	0.366	[0.102, 0.630]	.134	.007
within Self-enhancement and High OP	0.369	[0.040, 0.698]	.166	.028

Note. HP = harmonious passion, OP = obsessive passion.

Peripheral analysis. Additional outcome variables were assessed that, although not directly related to the focal outcome (i.e., article bias), nevertheless revealed how responses to unpleasant information might depend on passion types and affirmation condition. First, a model was tested that predicted the expectations of the anti-Facebook article that participants were told was randomly assigned to them to read (with more positive values representing more positive attitudes towards the anti-Facebook article) from passion types, affirmation conditions, and their interactions. The interaction between both passion types was removed from the analysis as it did not reach significance (Aiken & West, 1991). Table 3.10 displays the results of the final regression analysis. This analysis yielded an interaction between obsessive passion and the contrast comparing the control condition to both self-affirmation conditions that approached significance, $b = -.694$, 95% CI [-1.444, -0.056], $p = .070$. This analysis also identified an interaction between harmonious passion and the control versus both self-affirmation conditions contrast that also approached significance, $b = .545$, 95% CI [-0.020, 1.109], $p = .058$.

Table 3.10

Study 1: Regression analyses predicting expectations of the anti-Facebook article from passion types and affirmation condition.

Predictor	<i>b</i>	95% CI	<i>SE</i>	<i>p</i>
Intercept	6.821	[6.567, 7.074]	.128	<.001
HP	0.260	[-0.009, 0.530]	.136	.058
OP	-0.015	[-0.363, 0.334]	.176	.934
Control vs. Both self-affirmation conditions	-0.611	[-1.148, -0.074]	.272	.026
Self-transcendent vs. Self-enhancement conditions	-0.099	[-0.720, 0.522]	.314	.753
HP X Control vs. Both self-affirmation conditions	0.545	[-0.020, 1.109]	.286	.058
HP X Self-transcendent vs. Self-enhancement conditions	-0.387	[-1.055, 0.281]	.338	.254
OP X Control vs. Both self-affirmation conditions	-0.694	[-1.444, 0.056]	.380	.070
OP X Self-transcendent vs. Self-enhancement conditions	0.189	[-0.653, 1.030]	.426	.658

Note. HP = harmonious passion, OP = obsessive passion.

Both two-way interactions were probed by inspecting simple slopes (Figures 3.3 and 3.4). Table 3.11 displays the slopes for each passion type within each affirmation condition. For obsessive passion, although no individual simple slope was statistically significant, OP tended to be associated with more positive expectations of the anti-Facebook article in the control condition, but associated with less positive expectations of the anti-Facebook article in both self-affirmation conditions. For harmonious passion, a positive relationship emerged with article expectations in the self-enhancement condition only, $b = .635$, 95% CI [0.109, 1.162], $p = .018$.

Figure 3.3: Anti-Facebook article expectations of participants with low and high levels of obsessive passion.

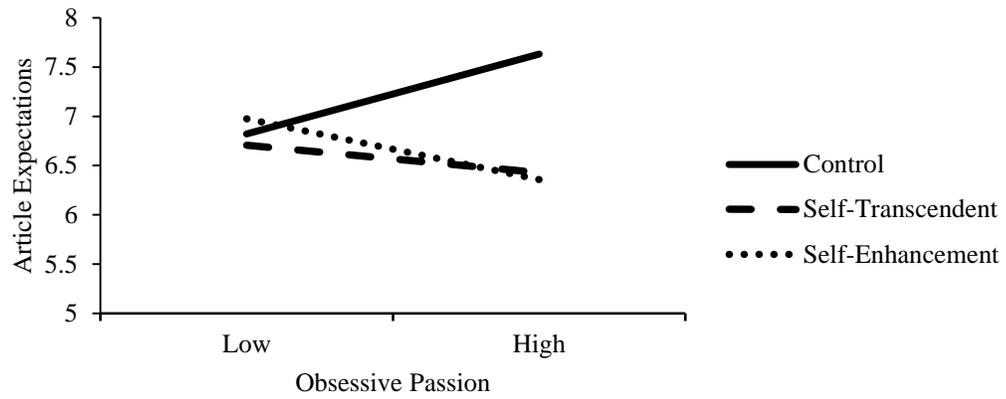


Figure 3.4: Anti-Facebook article expectations of participants with low and high levels of harmonious passion.



Table 3.11

Study 1: Simple slopes analysis of the HP X Control vs. Both self-affirmation conditions interaction and OP X Control vs. Both self-affirmation conditions interaction predicting article expectations.

Simple Slope	<i>b</i>	95% CI	<i>SE</i>	<i>p</i>
Expectations on OP				
within Control	.448	[-0.173, 1.069]	.314	.156
within Self-transcendent	-.152	[-0.655, 0.351]	.255	.552
within Self-enhancement	-.340	[-1.015, 0.334]	.341	.320
Expectations on HP				
within Control	-.103	[-0.557, 0.352]	.230	.656
within Self-transcendent	.248	[-0.163, 0.660]	.208	.235
within Self-enhancement	.635	[0.109, 1.162]	.267	.018

Note. HP = harmonious passion, OP = obsessive passion.

A final variable that was measured in this study was the degree to which the participants perceived the article titles to be central and relevant to themselves. Levels of centrality for the pro- and anti-Facebook titles were examined in separate regression analyses to assess relationships with each passion type, and also to test if these relationships were affected by the affirmation manipulation (see Table 3.5 for the regression equation used for each analysis).

The analysis of anti-Facebook ratings revealed two potential outliers that had extreme Cook's D values.²⁴ These two participants were removed from the analysis. This analysis also failed to find a significant interaction between both passion types, so this interaction was excluded from the analysis (Aiken & West, 1991). A main effect of obsessive passion was found for ratings of anti-Facebook centrality, such that higher levels of obsessive passion were associated with higher levels of anti-Facebook centrality, $b = 0.279$, 95% CI [0.052, 0.506], $p =$

²⁴ The two most extreme Cook's D values in this analysis were 0.757 and 0.646, while the next highest Cook's D value was 0.088.

.016. This main effect was qualified by a two-way interaction between obsessive passion and the contrast comparing both self-affirmation conditions to the control condition, $b = -0.663$, 95% CI $[-1.174, -0.152]$, $p = .011$. There was also a main effect for harmonious passion ($b = 0.180$, 95% CI $[0.003, 0.356]$, $p = .046$), and an interaction between harmonious passion and the contrast comparing both self-affirmation conditions to the control condition that was marginally significant, $b = 0.377$, 95% CI $[-0.012, 0.765]$, $p = .057$.

Interactions are displayed in Figure 3.5 and 3.6 and simple slopes are displayed in Table 3.12. The results with obsessive passion indicate that the positive relationship between obsessive passion and the centrality of anti-Facebook article titles was attenuated following both types of affirmation. With harmonious passion, a positive relationship with anti-Facebook centrality reached significance only in the self-transcendent condition.

Figure 3.5: Relationship between obsessive passion and ratings of anti-Facebook article centrality

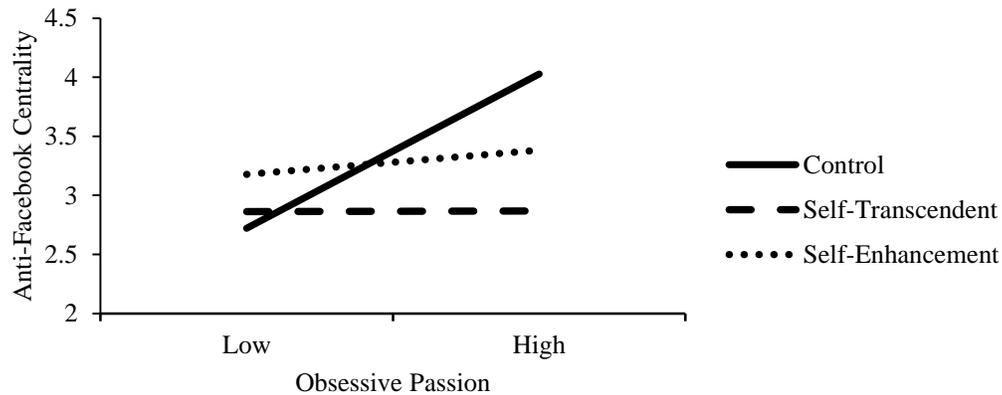


Figure 3.6: Relationship between harmonious passion and ratings of anti-Facebook article centrality

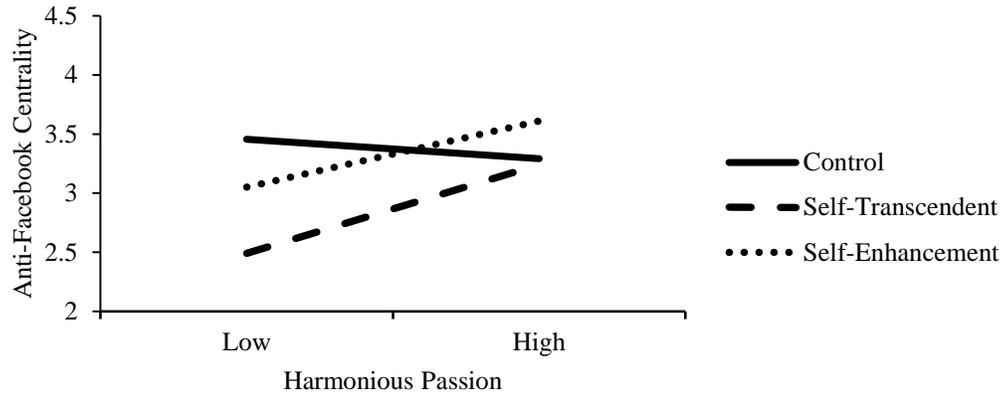


Table 3.12

Study 1: Simple slopes analyses of relationships between anti-Facebook centrality and both passion types within each self-affirmation condition.

	Simple Slope	<i>b</i>	95% CI	<i>SE</i>	<i>p</i>
Anti-Facebook Centrality on OP					
within Control		0.721	[0.281, 1.161]	.223	.001
within Self-transcendent		0.003	[-0.309, 0.315]	.158	.984
within Self-enhancement		0.113	[-0.305, 0.531]	.212	.595
Anti-Facebook Centrality on HP					
within Control		-0.072	[-0.400, 0.257]	.166	.668
within Self-transcendent		0.325	[0.069, 0.580]	.129	.013
within Self-enhancement		0.286	[-0.040, 0.613]	.165	.085

Note. HP = harmonious passion, OP = obsessive passion.

For ratings of pro-Facebook centrality, there was a significant main effect of harmonious passion, $b = .425$, 95% CI [0.268, 0.582], $p < .001$. This effect indicated that higher levels of harmonious passion were related to higher ratings of centrality for the pro-Facebook articles.

There was no relationship with obsessive passion and no interaction effects.

Supplemental analysis. A secondary purpose of this research was to test if any buffering effect of affirming a self-transcendent value could be explained by increases in positive

other-directed emotions (i.e., feelings of love, compassion, and connectedness). Prior to formally testing this mediated moderation hypothesis, I first tested the relationship between positive other-direct emotions and the standardized measure of article bias. If positive other-directed emotions were to mediate the relationship between the passion types - affirmation interaction and levels of bias, we should expect a significant negative relationship between bias (dependent variable) and positive other-direct emotions (mediator) - that is, higher levels of positive other-direct emotions should predict lower levels of bias. However, when I performed this regression analysis, no relationship emerged, $b = .103$, 95% CI $[-.062, .269]$, $p = .218$. Therefore, this null finding precluded any formal test of mediated moderation given that the proposed mediator (positive other-directed emotions) was unrelated to the dependent variable (article bias).

Discussion

The main hypothesis of this study was that obsessive passion would be positively associated with biased exposure to passion-threatening information; that is, a tendency to prefer pro-Facebook articles compared to anti-Facebook articles (hypothesis 1). Dependent on this hypothesis were two additional hypotheses predicting that the positive association between obsessive passion and biased exposure would attenuate following value affirmations of any type (hypothesis 2) and most prominently following affirmations of self-transcendent values (hypothesis 3). The results of this study did not find any support for hypothesis 1; as a result, hypotheses 2 and 3 were also not supported. However, an unexpected finding emerged: Harmonious passion, rather than obsessive passion, was positively associated with a tendency to prefer to read pro-Facebook articles compared to anti-Facebook articles. These results suggest

that the tendency to avoid messages that challenge a passion and attend to information that supports a passion is more characteristic of harmonious people rather than obsessive people.

The relationship between harmonious passion and biased information exposure was evident in the zero-order correlation between harmonious passion and article bias (see Table 3.7) and the main effect of harmonious passion in the focal regression analysis predicting article bias from passion types and affirmation condition (Table 3.8). These relationships are qualified by a three-way interaction between harmonious passion, obsessive passion, and affirmation condition (see Figures 3.1 and 3.2). With high obsessive passion, harmonious passion was positively associated with article bias, regardless of affirmation condition. However, studying these relationships with low obsessive passion had two effects: First, levels of article bias became more biased (i.e., scores were more positive), and second, the self-affirmation manipulation exerted an influence on the relationship between harmonious passion and article bias. For those in the self-enhancement or self-transcendent conditions, there was no relationship between harmonious passion and article bias amongst those with low levels of obsessive passion. However, a strong positive association between harmonious passion and article bias emerged amongst those in the control condition (see Figure 3.1). The magnitude of this effect also appeared quite strong: As levels of harmonious passion increased from one standard deviation below the mean to one standard deviation above the mean, levels of article bias increased by over one and a half standard deviations (Figure 3.1).

Another way to appreciate the findings of this study is to interpret the results from a person-centered approach. People with high levels of obsessive passion and low levels of harmonious passion could be considered as having “purely” obsessive passions for Facebook. As depicted in Figure 3.2, these participants generally preferred to read the anti-Facebook

articles, regardless of self-affirmation condition. On the other hand, people with pure harmonious passions for Facebook (i.e., high levels of harmonious passion and low levels of obsessive passion) preferred to read the pro-Facebook articles rather than the anti-Facebook articles in the control condition, but showed no preference in either self-affirmation condition. Not only does this mean that purely harmonious individuals were more likely to act with bias when choosing which information to attend to, but also that affirming an important value in life attenuated this effect. Given the effect of the self-affirmation manipulation, purely harmonious individuals may perceive messages that threaten a passion as being a threat to their self-integrity (Steele, 1988), allowing those who are affirmed to be more accepting of these challenging messages (Sherman & Cohen, 2006).

The self-affirmation manipulation also had an impact on the two peripheral outcomes in this study: expectations of an anti-Facebook article and the extent to which the anti-Facebook articles were central to the identities of the participants. In fact, visual comparisons of relationships with both peripheral outcome variables (i.e., Figure 3.3 vs. Figure 3.5, and Figure 3.4 vs. Figure 3.6) reveals similar relationships with both passion types. For both expectations of the anti-Facebook article (Figure 3.3) and levels of anti-Facebook centrality (Figure 3.5), positive relationships emerged with obsessive passion in the control condition. These patterns are in line with the results of the focal analysis, where obsessive passion was generally associated with a greater preference for reading anti-Facebook articles compared to pro-Facebook articles. But unlike the focal analysis, these positive associations were attenuated by manipulations of self-affirmation. By affirming other important life values, obsessive individuals may not feel as excited when told they will be reading an article that disparages their

passion in life, and may feel that these types of anti-passion articles are not as central to their self-concepts compared to times when their identities have not been affirmed.

With harmonious passion, relationships with peripheral outcome variables showed the reverse trend. Indeed, for individuals low and high on harmonious passion, levels anti-Facebook article expectations and anti-Facebook centrality appear quite similar to those with high and low levels of obsessive passion. People with low levels of harmonious passion were less excited to read an anti-Facebook article and reported that the anti-Facebook articles were less central to their identities following self-affirmation manipulations. Unlike the results of the focal analysis, those with high levels of harmonious passion appeared to be unaffected by manipulations of self-affirmation. It was as if the self-affirmation manipulation had the same impact on those who had high levels of obsessive passion as on those who has low levels of harmonious passion: it allowed the potency of the anti-Facebook articles to diminish, both in terms of their appeal and centrality. Two important points, however, should be considered when interpreting the results of the peripheral analyses: (a) most two-way interactions did not surpass the statistical threshold of $\alpha \leq .05$, and (b) most simple slopes did not differ significantly from zero.

A few other aspects of the present study deserve to be mentioned. First, no support was found for hypothesis 3, which predicted that self-enhancement and self-transcendent value affirmations would have differing effects on levels of article bias. In fact, the contrast coefficient comparing self-transcendent with self-enhancement values did not yield a main effect or interaction effect when predicting any outcomes in this study. Self-affirmation has been proposed to attenuate the impact of self-threats by allowing people to transcend their concerns about self-worth or self-image (Burson et al., 2012; Crocker et al., 2008), rather than by bolstering the self-concept (McQueen & Klein, 2006; Steele, 1998). The value of transcending

the self, rather than affirming the self more generally, was not evident in the current study. In general, any effects that emerged with self-affirmation manipulations emerged for both self-transcendent and self-enhancement manipulations. This null finding also ruled out an analysis of the mediating effect of positive other-directed emotions in the hypothesised relationship between self-transcendent values affirmations and article bias. Another notable finding was the overall preference to attend to anti-Facebook articles compared to pro-Facebook articles. Although preferring to read information that disparages a passion may seem counterintuitive, it is in line with past research showing that negative stimuli have a more powerful impact compared to positive stimuli, an effect known as *negativity bias* (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Ito, Larsen, Smith, & Cacioppo, 1998). In the mass media, this effect is reflected in the saying “if it bleeds, it leads”.

Conclusion

Although support for the study hypotheses was not attained, the results of this first study revealed an intriguing finding: harmonious passion, not obsessive passion, predicted attending to passion-threatening messages with bias. The dualistic model of passion describes obsessive passion as being the more ego-invested and defensive form of passion, and harmonious passion as the more open, authentic, non-defensive type of passion (Vallerand, 2010). Previous research (Bélanger et al., 2013a; Donahue et al., 2009; Philippe, Vallerand, Richer et al., 2009; Rip et al., 2012; Schellenberg et al., 2012) has supported these descriptions. In the case of selective exposure, different rules might apply. This study, however, adopted a regression-based approach, meaning that the results do not allow us to conclude that having high levels of harmonious passion *causes* one to act with bias when confronted with passion-threatening

messages. The aim of Study 2 was to determine if such a causal relationship could be established.

Study 2

The purpose of Study 2 was to build on the surprising results obtained in Study 1 by testing if a causal relationship existed between passion types and biased information exposure. This study focused exclusively on hypothesis 1, which predicted that obsessive passion would be positively associated with biased information exposure. This study was a replication of Study 1 with three main changes: (a) it was administered via an online survey, allowing participants to complete the study wherever they had access to the internet; (b) it did not include a self-affirmation exercise or assessments of emotion, article centrality, or expectations of a specific anti-Facebook article, and (c) rather than treat passion types as measured variables, it included an exercise designed to activate distinct passion mindsets. Most passion research has relied on correlational methods to establish relationships between passion types and outcomes (Vallerand, 2010, 2015). To test if specific varieties of passion have *causal* effects on these outcomes, passion researchers have started to manipulate specific varieties of passion as situational mindsets (e.g., Bélanger, Lafrenière, Vallerand, & Kruglanski, 2013b). The manipulation used in these procedures involves asking participants to write about a time when they engaged in their passion in either a harmonious or obsessive way (Bélanger et al., 2013b). Evidence for a causal relationship between passion types and a specific outcome can be obtained by randomly assigning participants to engage in either a harmonious or obsessive exercise. This general design was adopted in the current study.

Method

Participant recruitment. At the beginning of the academic year, a large number of undergraduate students completed an online survey in which they were asked the same two recruitment questions as used in Study 1: “I like going on Facebook” and “I spend a lot of time going on Facebook”. In line with the scoring procedures of the Passion Scale (Vallerand et al., 2003), both items were scored on a scale from 1 (*not at all*) to 7 (*very much*). Participants qualified for this study if they scored at the mid-point or higher (i.e., a score of 4 or greater) on each of these two items. Those who qualified were automatically presented with an invitation code that allowed them to access a second online survey that was used for this study.

In total, 130 undergraduates (98 females, 32 males; $M_{\text{age}} = 20.21$, $SD_{\text{age}} = 4.99$) participated in this study and received one research credit for doing so. Most participants identified as having a White/European ethnic background (50.0%), followed by Filipino (23.1%).

Procedure. Participants completed the online survey wherever they had access to the internet. After reading an informed consent page and indicating that they agreed to participate in this study (this consent page was almost identical to the consent form used in Study 1; see Appendix B), participants completed an online survey that was organized into five sections.

Section 1: Passion manipulation. First, all participants were asked to engage in a brief writing exercise about their day-to-day experiences as a student. Participants were randomly assigned (random assignment was done automatically by the Qualtrics survey program) to follow one of three sets of instructions. Those randomly assigned to the *harmonious passion condition* read the following instructions:

For this task, please write for 5 minutes about a time when Facebook was in harmony with other things that are part of you and you felt that Facebook allowed you to live a

variety of experiences. Recall this event vividly and include as much details as you can to relive the experience.

Those randomly assigned to the *obsessive passion condition* read the following:

For this task, please write for 5 minutes about a time when you had difficulties controlling your urge to go on Facebook and you felt that Facebook was the only thing that really turned you on. Recall this event vividly and include as much details as you can to relieve the experience.

Finally, those randomly assigned to the *control condition* were instructed to write for 5 minutes about a time when they had to borrow a book from the library. These three sets of instructions were adapted directly from Bélanger et al. (2013b, Study 3).

Section 2: Title preferences and rankings. After engaging in the writing exercise, participants completed the same article ranking and rating tasks as in Study 1: After being reminded that they would be asked to read and analyze an article related to Facebook, participants were presented with a list of eight Facebook-related articles and asked to rank (i.e., “drag-and-drop” from most desirable to least desirable) and rate (on a scale from -4 to +4) the extent to which they were hoping to read each one. The eight article titles that participants ranked and rated were identical to those presented in Study 1.

Section 3: The Passion Scale. Next, participants completed the same version of the Passion Scale (Vallerand et al., 2003) that was administered in Study 1. Participants answered the items while thinking of their usage of Facebook in order to assess levels of harmonious and obsessive passion for Facebook. The Passion Scale was administered at this time in order to determine if the relationships found in Study 1 could be replicated among those assigned to the control condition (see Bélanger et al., 2013b).

Section 4: Demographics. The next section of the online survey asked participants to report demographic information such as their age, sex, and ethnicity.

Section 5: Debriefing. Finally, participants were presented with a page that fully debriefed them about the true purpose of the study.

Subscale computation. Computation of harmonious and obsessive passion scales and bias scores followed the same procedures used in Study 1. Harmonious ($\alpha = .85$) and obsessive ($\alpha = .88$) passion scores were computed by averaging scores from items representing both scales. Bias ranking and rating scores were computed by calculating the difference between the average pro-Facebook and anti-Facebook scores. Scores on both measures of article bias were once again positively correlated ($r = .710, p < .001$), and were therefore standardized and aggregated into a single measure of article bias.

Data screening. Survey responses were exported to SPSS to screen for missing data, outliers, and assumption violation. As in Study 1, participants were prompted to answer any unanswered items, and as a result, only one response was missing (one participant did not report the average number of hours he/she spent on Facebook each week). Outlying responses and other assumptions were inspected as part of each analysis, but in general there were few extreme cases and no serious assumption violations. Lastly, each passion essay was inspected to ensure that all participants wrote an essay and followed the instructions properly. This procedure revealed two participants who did not write an essay as part of this exercise. These participants were excluded from all analyses involving the passion conditions, meaning that $n = 128$ for all analyses involving passion groups.

Analysis strategy. Unlike Study 1 which treated passion types as observed variables, this study randomly assigned participants into either a harmonious passion, obsessive passion, or

control condition. Therefore, rather than adopt a regression approach, this study used analysis of variance (ANOVA) to test if standardized bias scores differed between the three groups. Given that hypothesis 1 predicted that obsessive passion would predict higher levels of bias compared to harmonious passion, pre-planned contrasts were used to compare the means of those randomly assigned to the harmonious condition and obsessive condition. In addition, to replicate the correlational analyses conducted in Study 1, partial correlations were computed between a specific passion type (controlling for the other passion type) and bias score within the control group only.

Results

Preliminary analyses. Descriptive statistics were computed and are displayed in Table 3.13. Sex differences were also analyzed, but males and females did not differ on any variables assessed in this study (all $ps > .15$).

Table 3.13
Study 2: Descriptive statistics

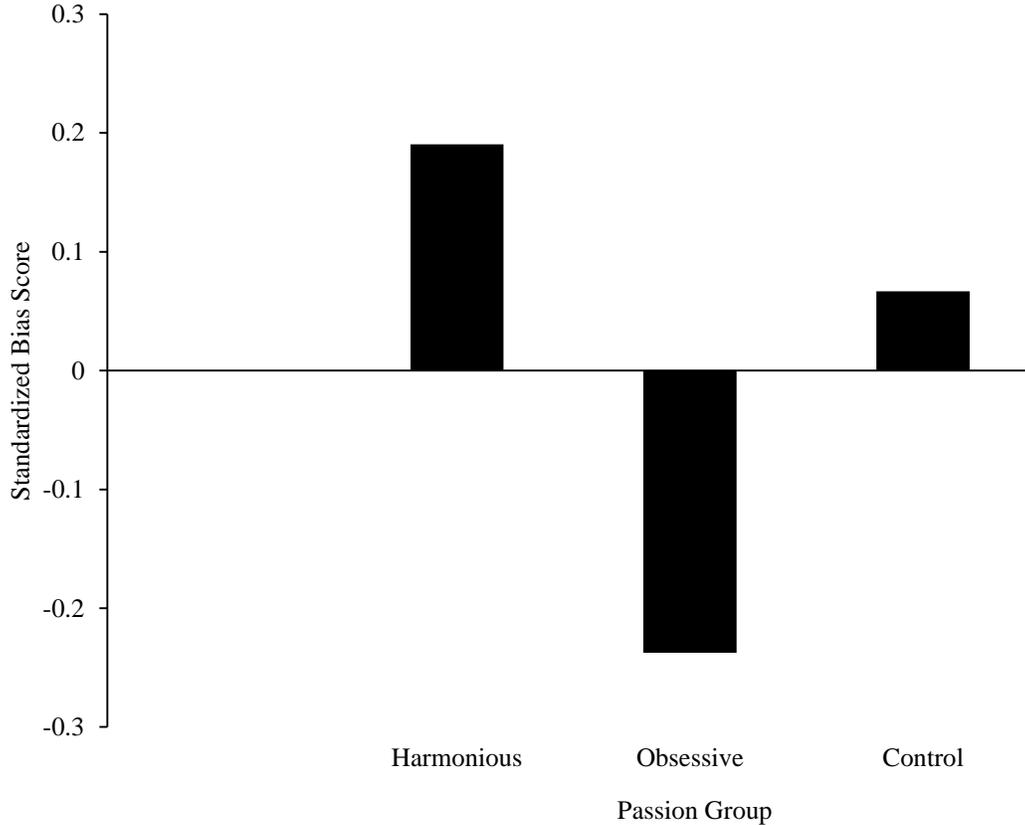
	Scale Range	<i>M</i>	<i>SD</i>	Skew ^a	Kurt ^b	α
Article Preferences						
Article ranking bias	-6 to +6	-0.55	2.80	0.397	-0.402	---
Article rating bias	-8 to +8	-0.50	2.47	0.162	1.242	---
Standardized article bias score	---	0.00	0.92	0.251	0.225	---
Passion						
Harmonious passion	1 to 7	3.13	1.24	0.324	-0.157	.85
Obsessive passion	1 to 7	2.03	1.16	1.282	0.892	.88
Passion criteria	1 to 7	3.13	1.38	0.733	-0.121	.85
Facebook hours per week	---	7.16	8.01	2.848	10.078	---

Note. Higher bias scores indicate stronger bias towards pro-Facebook articles. $N = 130$. ^aSE = .212 ^bSE = .422

Focal analyses. The main analysis in this study tested if bias scores differed as a function of passion condition. An ANOVA revealed that differences between the means of the harmonious ($M = 0.19$, 95% CI [-0.06, 0.44], $SD = 0.81$), obsessive ($M = -0.24$, 95% CI [-0.54, 0.07], $SD = 1.02$), and control conditions ($M = 0.07$, 95% CI [-0.23, 0.36], $SD = 0.92$) approached statistical significance, $F(2, 125) = 2.525$, $p = .084$, $\eta_p^2 = .039$. However, pre-planned contrasts comparing the means of the harmonious and obsessive groups revealed a significant difference, $t(125) = -2.18$, $p = .031$, $d = .466$.²⁵ Those randomly assigned to the harmonious passion condition reported higher levels of bias towards the articles compared to those randomly assigned to the obsessive passion condition. The means of the three experimental conditions in this study are displayed in Figure 3.7. No other pairwise differences were statistically significant.

²⁵ Cohen's d was calculated using a pooled standardizer (Cumming, 2013).

Figure 3.7: Standardized bias scores for each passion group



In addition, partial correlations were computed to determine if harmonious and obsessive passion scores, as assessed with the Passion Scale at the end of the online survey, predicted levels of bias among those assigned to the control condition only. This analysis revealed that obsessive passion (while controlling for harmonious passion) was negatively associated with article bias ($r = -.373, p = .019$), whereas harmonious passion (while controlling for obsessive passion), was positively associated with article bias ($r = .394, p = .013$). These results conceptually replicate the results obtained with the experimental manipulation in the current study, and also the regression-based analysis adopted in Study 1.

Discussion

Once again, this study failed to find support for hypothesis 1, which predicted obsessive passion would predict biased information exposure. Contrary to this hypothesis, but in support of the findings obtained from Study 1, harmonious passion predicted higher levels of bias towards the Facebook articles. On the other hand, obsessive passion predicted lower levels of selective exposure bias. These findings were obtained using an experimental manipulation of passion mindsets, and also by examining partial correlations with harmonious and obsessive passion scores among those who were randomly assigned to the control condition.

A limitation of this study that should be noted is that, although both passion groups were significantly different from one another, both passion groups did not differ significantly from the control group. One potential reason for this is that the effect size for the difference between the two passion groups is likely stronger than the size of the effect for the difference between each passion group from the control group. Therefore, to detect differences from the control group, a study with greater statistical power is needed.

Conclusion

The results from this second study support a causal relationship between distinct passion types and selective exposure bias. Specifically, participants randomly assigned to engage in a task designed to activate a harmonious passion mindset responded with higher levels of selective exposure bias towards passion-threatening messages compared to those who engaged in a task in which an obsessive passion mindset was activated. These results replicate the results of Study 1, which also found evidence that harmonious passion, rather than obsessive passion, predicts bias towards messages that threaten a passion. However, there are times when passionate individuals

are not able to selectively attend to messages that threaten a passion – they can be confronted with challenging messages that they are not able to avoid or ignore. In scenarios when people are required to *evaluate* information that threatens their passion, does obsessive passion, as originally hypothesised, predict defensiveness, or does harmonious passion once again emerge as an unanticipated predictor of bias? This question was the focus of the final two studies of this dissertation.

Study 3

The purpose of Study 3 was to test the hypothesis predicting that obsessive passion would be positively associated with biased information processing (hypothesis 1); however, unlike Studies 1 and 2, which assessed biases in how information was selected and attended to, Study 3 assessed biases in how information was evaluated. Once again, these relationships were expected to be moderated by value affirmations. When either self-transcendent or self-enhancement values were affirmed, the relationship between obsessive passion and biased information evaluation was expected to weaken (hypothesis 2). Moreover, I expected that affirmations related to self-transcendent values would be more effective at attenuating the relationship between obsessive passion and biased information evaluation compared to self-enhancement value affirmations (hypothesis 3). These hypotheses were tested using a paradigm that is commonly used in research studying motivated reasoning (e.g., Kunda, 1987, Study 2; Liberman & Chaiken, 1992). Participants were asked to read articles that were inconsistent with their prior beliefs and attitudes, and were later asked to rate the articles on various characteristics such as credibility and skepticism.

Method

Participant recruitment. As in Study 1, students were recruited from the University of Manitoba Introductory Psychology participant pool. Students were recruited based on their responses to one item on the mass testing survey: “To what extent would you consider yourself a fan of the National Hockey League (NHL)?” Participants were asked to answer this question on a scale from 1 (*not at all*) to 10 (*very much so*). Students who answered this item and who agreed to be contacted for future psychology studies were recruited for the current study. Students were *not* contacted if they indicated that they were not a fan of the NHL, which was defined as scoring lower than the mid-point on the 10-point scale (i.e., a score lower than 5). This restriction was intended to exclude participants who were not passionate for watching hockey, since items that assessed harmonious and obsessive passion for watching hockey may not have been applicable to these people. Students were also not contacted if they were over 25 years old. As will be explained, this final restriction was needed to ensure that the manipulation of article threat was appropriate for all participants in this study. Also, those who had participated in Study 1 were not contacted for the current study.

Participants who qualified for this study were recruited by phone and/or email and asked to participate. A total of 140 students participated in this study (M age = 18.64, SD age = 1.38). There were more female ($n = 77$) than male ($n = 62$) participants in the study (sex was not reported by one participant), and most reported having a White/European ethnic background (79.3%). Each participant received three research credits as compensation.²⁶

²⁶ As in Study 1, G*Power (version 3.1.5) was used to conduct an a priori power analysis. The same parameters were entered as in Study 1, with the exception of the total number of predictors which was 21 in this study (see Table 3.14 for the regression model that was tested). This analysis resulted in a total sample size of 68. However, in order to have sufficient power to detect weaker-than-medium effect sizes, 140 participants were recruited.

Procedure. Similar to Study 1, the experimental sessions occurred in groups of 19 to 25 participants in a computer laboratory on campus. After all participants had arrived, a researcher explained that the study examined opinions about concussions in the NHL. Participants were told that they would be asked various questions about their opinions and attitudes towards the NHL, and asked to read and analyze an article about concussions in the NHL. After this had been explained, the participants were asked to read and sign the informed consent form (Appendix D). As in Study 1, the study instructions and measures were provided to the participants using an online computer program (Qualtrics) that was organized into five sections (see Appendix E).

Section 1: The passion scale. The first portion of the study followed the procedure used in Study 1 and asked participants to complete the harmonious and obsessive passion subscales from the Passion Scale (Vallerand et al., 2003). In this study, the term “activity” from the original passion scale was changed to read “watching the NHL” (e.g., “Watching the NHL is in harmony with the other activities in my life”; Schellenberg, Bailis et al., 2013). Participants also reported how many hours they spent watching hockey on television over the past 7 days and on average each week. After completing the Passion Scale, participants indicated how seriously they took the issue of concussions in the NHL on a scale from 1 (*not seriously at all*) to 9 (*extremely seriously*). This question was used to assess participants’ initial attitudes towards the issue of concussions in the NHL.

Section 2: Affirmation manipulation. The second portion of the questionnaire was identical to the second portion of Study 1. Participants were randomly assigned into self-transcendent, self-enhancement, and control conditions and engaged in an exercise in which they were asked to rank and write an essay about either their most important self-transcendent or self-

enhancement value. Those in the control group did not rank any values but instead wrote an essay about their daily routine (Burson et al., 2012). The values that were most often selected as most important in the self-transcendent and self-enhancement conditions are displayed in Table 3.14.

Table 3.14
Study 3: Most important reported self-transcendent and self-enhancement values.

Rank	<u>Self-transcendent Condition</u>		<u>Self-enhancement Condition</u>	
	Value	%	Value	%
1	Trust/openness	32.61	Appearing confident/independent	36.73
2	Empathy/compassion	23.91	Appearing intelligent/competent	36.73
3	Personal growth	15.22	Power/status	16.33
4	Being in mutually supportive and caring relationships	10.87	Physical attractiveness	6.12
5	Being responsive and supportive to the needs of others as well as one's own needs	10.87	Popularity/admiration/prestige	4.08
6	Creating or contributing to something larger than oneself	6.52	Wealth/possessions	0.00

Section 3: Post-essay emotions. Following the essay exercise, participants rated their current emotions from the same list of emotions assessed in Study 1 (Crocker et al., 2008). As in Study 1, these emotions were assessed in order to test if the interaction between obsessive passion and experimental group was mediated by distinct post-essay emotions (Crocker et al., 2008).

Section 4: The article. Participants were asked to read and analyze an article about concussions in the NHL that was presented to them on the computer. The article that participants read was titled “Current issues in sport: Are fans to blame for NHL concussions?” which was designed to look as though it had been published in an online edition of the Ottawa

Citizen newspaper (see Appendix E). The main argument of the article was that fan support contributes to the prevalence of concussions in the NHL. The author of the article (“Jeffery L. Davey”) argued that NHL executives have the power make the game safer for players (for example, by abolishing fighting or increasing sanctions for overly aggressive acts), but will not do so as long as television ratings, and therefore revenue from advertisers, remains stable. The article emphasized that the prevalence of concussions in the NHL could be reduced if hockey fans “reduce, or even eliminate completely, the amount of NHL games that they watch on television”. The article was intended to pose a threat to hockey fans, as it argued that they engage in an activity that is causing deleterious health outcomes for others. The article was fairly brief and contained 914 words.

Participants were randomly assigned to receive one of two versions of this article. In the *high-threat* condition, the article argued that television ratings contributed to violence and concussions in the NHL, and that the viewing habits of fans who were *under 25 years old* had a particularly strong effect. Participants in the *low-threat* condition read the same article, except that the article argued that the viewing habits of fans who were *over 40 years old* had a particularly strong influence on the concussion rate in the NHL. This control group was included in order to test the hypothesis that obsessive passion is associated with biased evaluation of *threatening* information, and to rule out the alternate explanation that obsessive passion is generally associated with biased evaluation regardless of the threat that the information might pose.

Section 5: Ratings and evaluations. After participants read the article, they were guided through a series of questions that assessed the dependent variables of the study. The first dependent variable was the amount of time that the participants spent reading the article, which

was automatically recorded by the Qualtrics survey program. Participants who were threatened by the content of the message could react by either spending *less* time reading the article in order to avoid the threatening arguments of the article, or by spending *more* time reading the article in order to find faults and weaknesses in the arguments that were presented. Assessing reading time allowed this research to address this question and determine if these strategies depend on levels of harmonious and obsessive passion for hockey.

The first set of questions assessed the emotions of the participants after reading the article. Participants were asked to answer six items from the negative affect subscale of the positive and negative affect schedule (PANAS; Watson, Clark, & Tellegen, 1988). The items asked the participants to “indicate to what extent you feel this way right now, that is, at the present moment” on a scale from 1 (*very slightly or not at all*) to 5 (*extremely*) for the following six emotions: distressed, upset, guilty, hostile, irritable, and ashamed. These six emotions were selected because they appeared to represent the items of the negative affect subscale that were most appropriate for the purpose of this study (other items measuring negative affect, such as feeling scared and jittery, did not appear appropriate for the present purposes). One additional emotion, anger, was included to the list of emotions in order to assess if reading threatening information regarding a passion would arouse feelings of anger in some participants.

The next series of questions asked participants to report their attitudes towards the issue of concussions in the NHL, their opinions of the article itself, their intentions to change their NHL viewing habits, and the amount of effort they put into reading the article. A set of eight items was presented to the participants that were rated on a scale from 1 (*not at all*) to 9 (*very much so*). The first two questions assessed the participants’ opinions regarding the issue of concussions in the NHL: “To what extent do you agree that hockey fans’ TV viewing habits

influence concussions in the NHL?” and “How important do YOU think it is that NHL fans reduce the amount of NHL that they watch on television in order to influence the number of concussions in the NHL?” The next three questions assessed attitudes towards the article itself: “How skeptical did you feel while reading the article?”, “How knowledgeable would you consider the author, Jeffrey L. Davey, to be about the NHL?”, and “To what extent did you find the article convincing?” Participants also reported their intentions to change their TV viewing habits: “To what extent do you think that you, personally, SHOULD reduce the amount of NHL that you watch on television?” Next, one item asked participants “To what extent would you consider yourself a ‘fan’ of NHL hockey?” Finally, one item assessed the amount of effort they devoted towards the article: “To what extent did you exert effort into trying to understand and think about the author’s argument while reading the article?”

Three additional items were presented to participants as measures of television viewing intentions and attitudes towards the article. First, participants were asked to respond (yes or no) to the following question: “Do you think you WILL reduce the amount of NHL that you watch on television?” For participants who responded “yes”, a follow-up question asked them to report how many hours (per week) they expected to reduce the amount of NHL that they watch on television. Next, participants were presented with an image of a horizontal slider scale with the value of 0% on the leftmost point and the value of 100% on the rightmost point. The following instructions were presented:

Estimate the percentage of people that you think will REDUCE the amount of NHL hockey they watch on television after reading this article. 0% indicates that NOBODY will reduce the amount of NHL they watch, while 100% indicates that EVERYBODY

will reduce the amount of NHL they watch. Move the slider below to select a percentage.

The slider was able to move along the scale in any direction in 1% increments. This item was intended to assess the impact that the participants believed the article would have on others, which is indicative of the article's perceived persuasiveness and credibility. Finally, participants were asked to rank the quality of the article using a star-rating system. Participants were shown a set of 10 stars presented horizontally, and were asked to give the article a rating from 1 star (*very poor*) to 10 stars (*excellent*).

Section 6: Thought-listing exercise. The next portion of the study asked participants to complete a thought-listing exercise (see Cacioppo & Petty, 1981; Wheeler et al., 2007). The following instructions, as adopted from Cacioppo and Petty (1981, p. 318) were presented:

We are now interested in what you were thinking about while reading the article. You might have had ideas all favourable to the argument in the article, all opposed, all irrelevant to the content of the article, or a mixture of the three. Any case is fine; simply list what it was that you were thinking while reading the article. The next page of this computer survey contains a form we have prepared for you to use to record your thoughts and ideas. Simply write down the first idea you had in the first text box, the second idea in the second box, etc. Please put only one idea or thought in a text box. You should try to record only those ideas that you were thinking *during* the article. Please state your thoughts and ideas as concisely as possible...one sentence is sufficient. IGNORE SPELLING, GRAMMAR, AND PUNCTUATION. You will have 2.5 minutes to write your thoughts. We have deliberately provided more space than we think most people will need to insure that everyone will have plenty of room to write the ideas they had while

reading the article. So don't worry if you don't fill every space. Just write down whatever your thoughts were while reading the article. Please be completely honest and list all of the thoughts that you had.

The following page of the computer survey contained a brief version of the above instructions, along with 20 blank text boxes in which participant recorded their thoughts. After they had listed all their thoughts, participants were instructed to continue to the next page of the survey. This next page displayed each distinct thought that the participants had listed, and asked them to indicate whether the thought was in support of, opposed to, or neutral towards the argument of the article (see Wheeler et al., 2007).

Section 7: Joining the debate. The following portion of the online survey was intended to assess the extent to which participants were either open and accepting, or defensive and hostile, towards competing opinions about the relationship between television viewing habits and NHL concussions. To assess levels of hostility towards competing perspectives, participants were asked to "Join the debate!" and respond to a comment that was ostensibly made by another participant in this study. Similar to comments sections that follow many online newspaper articles, participants were presented with a comment that they were told was made by another participant in an earlier session of the study. Participants were told that the purpose of this portion of the survey was to assemble a "chain" of comments about the issue of NHL concussions, and to present these comments to the participants after the study had finished. It was emphasized that all of these comments would be anonymous. All participants in this study were presented with a textbox and asked to respond to the following comment:

Comment #27: I think I agree with what he is saying in the article. All bettman cares about is money and if people stopped watching hockey he would have to ask why and try to do

something about it. I would consider myself a hockey “fan”, but it’s not worth having players like Crosby and Lindros and other like that suffer concussions and memory loss just so I can watch hockey. It’s not worth it I’m seriously going to stop watching as many games on tv to do my part.

Section 8: Manipulation check. The final portion of the computer survey presented participants with two multiple-choice questions: “Please select the argument that was made in the article about how the concussion rate in the NHL can be reduced” (correct answer: Hockey fans should reduce the amount of hockey they watch on television), and “According to the article, which of the following groups has the most power to influence concussions in hockey” (the correct answer : Fans under 25 years old [high-threat condition] or fans over 40 years old [low-threat condition]). The purpose of these two questions was to ensure that participants understood the argument of the message, and that the perceived argument was appropriate for the experimental condition to which participants were assigned (i.e., participants perceived that the article argued that the group with the most power to influence concussions in hockey was either hockey fans under 25 years old [high-threat condition] or hockey fans over 40 years old [low-threat condition]).

After participants had completed the computer survey, they were told that the first part of the study was over, and that the researchers would contact them in one week to ask a few more questions about their reactions to the article. They were then thanked and excused from the session.

Section 9: Follow-up. Approximately 7 days after participants completed the computer survey, they were contacted by phone to answer four follow-up questions (Appendix F). First, participants reported how many hours they spent watching the NHL on television over the past 7

days. I also predicted that people who were more accepting of the message of the article may disassociate themselves from the NHL to such a degree that this may impact the amount of NHL-related clothing that they wear. To assess this possibility, participants were asked a second question: “Could you tell me, right now, if you are currently wearing any NHL clothing or apparel (like an NHL hat or t-shirt)?” Next, to assess changes in attitudes towards the issue of concussions in the NHL, participants indicated how seriously they took the issue of concussions in the NHL on a scale from 1 (*not seriously at all*) to 9 (*extremely seriously*). Finally, participants were asked to report all the details of the concussion article that they could remember (participants were prompted until they remembered no further details of the article). After participants had answered these four questions, they were fully debriefed over the phone about the true purposes of the study (Appendix F).

Subscale computation. Subscale computation followed the same procedure as used in Study 1. Average scores were computed for harmonious ($\alpha = .88$) and obsessive passion ($\alpha = .88$), and positive other-directed ($\alpha = .79$) and self-directed emotions ($\alpha = .83$). Items assessing negative affect following the article were also aggregated ($\alpha = .80$). Correlations between items that assessed attitudes towards the article (e.g., “How skeptical did you feel while reading the article?”) were used to determine if any combination of items were strongly correlated and could therefore be aggregated into a single measure. The following three items were strongly correlated with one another (all $r_s > .62$, $p_s < .001$) and were aggregated into a single measure representing *article favourability*: “To what extent do you agree that hockey fans’ TV viewing habits influence concussions in the NHL?”, “How important do YOU think it is that NHL fans reduce the amount of NHL that they watch on television in order to influence the number of concussions in the NHL?”, and “To what extent did you find the article convincing?” ($\alpha = .85$).

The responses from the thought-listing exercises were organized into a *thought favourability index*, which was computed by calculating the difference between the number of favourable and unfavourable thoughts towards the article, divided by the total number of thoughts (Wheeler et al., 2007). Positive scores on this index represent more favourable thoughts towards the article.

Participants answered three questions before and after they read the article: the extent to which they were a fan of the NHL, how serious they took the issue of concussions in the NHL, and how many hours they spent watching the NHL (over the past 7 days). To calculate the difference in these responses between the two time-points, difference scores were computed in which responses to these items after reading the article were subtracted from responses to these items before reading the article. Responses for the items that asked participants the extent to which they were fans of the NHL were standardized before difference scores were computed because different scales were used at the two time-points.

Response coding. Response from both the join-the-debate exercise and the follow-up phase of the study were coded by three independent coders. The join-the-debate exercise was coded for two qualities (see Appendix G). First, each coder rated whether or not the participant acknowledged or responded to the comment that they read (yes or no). Second, each coder was instructed to estimate, based on the comment, the star rating that each participant gave to the article after reading it on a scale from 1 (*very poor*) to 10 (*excellent*). The inter-rater reliability for the star rating was .87, and therefore the ratings were aggregated into a single measure of the participants' estimated star ratings.

The details of the article that the participants recalled during the follow-up phase were first coded for three qualities (see Appendix H): whether or not the participants recalled the main argument of the article (i.e., fans should stop watching the NHL on television to reduce

concussions), the target group (i.e., older fans over 40 years old or younger fans under 25 years old), and any details about the source of the article (i.e., an economist from the University of Ottawa). Responses from these three recall items were summed to represent how much detail of the article the participants could remember. The follow-up responses were also judged based on whether or not participants restated their opinion of the article (yes or no), or if they misremembered any details of the article (yes or no; e.g., the target group was *men* over 40 years old). Differences between the coders for these ratings were resolved through discussion. The coding sheets that were used for the debate and follow-up responses are presented in Appendices G and H, respectively.

Data screening. As in Study 1, the data were screened for missing data, outliers, assumption violation, and entry errors. Once again, given that only a very small percentage of data were missing (0.07%), subscales were computed while ignoring missing responses. For participants who reported a time range when estimating hours spent watching hockey on television (e.g., “8-10” hours), mean response times were imputed (e.g., “9”). Three participants were excluded from all analyses involving self-affirmation conditions because they did not write a self-affirmation essay, meaning that $n = 137$ for all analyses that include self-affirmation condition as an independent variable. Raw data were cross-referenced with original responses in Qualtrics to verify that all responses were imported accurately.

Contrast coding and regression models. The analyses for this study mirrored the analyses described in Study 1. However, the difference in the current study was an added grouping variable, which represented the two threat conditions (high-threat and low-threat). Because this grouping variable had only two levels, they were coded as 1 (low-threat condition) and 2 (high-threat condition). The affirmation grouping variable was coded using the same

contrast codes as in Study 1 (see Table 3.4). I expected obsessive passion to be associated with biased information evaluations in the high-threat condition only, meaning that a three-way interaction was anticipated. With the added independent variable (threat condition), the regression model that was tested was slightly more saturated than the model that was tested in Study 1. This model is outlined in Table 3.15.

Table 3.15

Study 3: Regression model

$$\hat{y} = b_0 + b_1(op) + b_2(hp) + b_3(c_1) + b_4(c_2) + b_5(threat) + b_6(opXthreat) + b_7(opXc_1) + b_8(c_1Xthreat) + b_9(opXc_1Xthreat) + b_{10}(opXc_2) + b_{11}(c_2Xthreat) + b_{12}(opXc_2Xthreat) + b_{13}(hpXthreat) + b_{14}(hpXc_1) + b_{15}(hpXc_1Xthreat) + b_{16}(hpXc_2) + b_{17}(hpXc_2Xthreat) + b_{18}(hpXop) + b_{19}(hpXopXthreat) + b_{20}(hpXopXthreatXc_1) + b_{21}(hpXopXthreatXc_2)$$

Note. \hat{y} = predicted dependent variable; *op* = obsessive passion; *hp* = harmonious passion; *c*₁ = the first dummy variable; *c*₂ = the second dummy variable; *threat* = threat condition (1 = low threat, 2 = high threat).

Supplemental analysis. As in Study 1, I assessed if the three-way interaction between obsessive passion, affirmation condition, and threat condition was explained by certain emotional experiences (Burson et al., 2012; Crocker et al., 2008). Once again, this analysis was treated as exploratory and supplemental to the main analyses.

Results

Preliminary analyses. Descriptive statistics and correlations between all study variables are reported in Appendix I. As a preliminary step, data were analyzed to (a) test for differences between those who were and were not contacted for the follow-up phase of the study, (b) examine responses to the two manipulation-check items that asked participants to report the main argument of the article (answer: “Hockey fans should reduce the amount of hockey they watch

on television”) and to report the group that was argued to have the most power to influence concussions in the NHL (answer: Fans under 25 years old [high-threat condition] or fans over 40 years old [low-threat condition]), (c) test for differences between the two threat conditions, and (d) test for sex differences.

A total of 11 participants could not be contacted for the follow-up telephone survey, but these participants did not differ significantly (all $ps > .05$) from those who completed both phases of the study on any of the variables assessed on the computer survey (e.g., passion types, article attitudes). Of the 129 participants who were contacted, 107 participants were contacted exactly 7 days after their participation in the computer session, while 20 additional participants were contacted within 14 days. The final two participants were contacted 24 and 27 days after their participation in the computer session.

The first manipulation-check item tested if participants could correctly identify the main argument of the article. In total, 33 participants did not correctly identify that the main argument of the article was that hockey fans should reduce the amount of hockey they watch on television. One explanation for this could be that the other response options included as part of the multiple-choice format, although not representing the main argument of the article, were mentioned in the article as solutions to the NHL concussion problem. The participants had three other (incorrect) choices for this question: “Gary Bettman should ban fighting” ($n = 2$), “The NHL should increase fines for aggressive hits” ($n = 15$), and “The NHL should increase mandatory time off for concussed players” ($n = 16$). Each of these options was discussed in the article as a potential solution to the concussion problem, which may have caused some participants to erroneously choose them as the main argument of the article. Although the article was clear in its position that all solutions depended on the amount of NHL that is watched by hockey fans on television,

some participants may have interpreted all response options as being argued in the article. A second explanation could be that these participants truly did not read the article carefully and therefore did not understand what the article was about. However, there was no significant difference between those who did and did not identify the main argument of the article in the amount of time spent reading the article ($t [138] = -0.717, p = .474, d = -.143$), and the amount of effort the participants exerted trying to understand the article ($t [138] = -1.911, p = .058, d = -.381$). For the second manipulation-check item, 14 participants did not correctly identify the group that was argued to have the most power to influence concussions in the NHL. Although the article was again clear that hockey fans had ultimate control over concussions, participants may have selected incorrect responses for this question because the other multiple-choice options were mentioned in the article as having some influence over concussions. The two incorrect options that participants could select for this question were “NHL Executives” ($n = 8$) and “NHL Officials” ($n = 6$). There was no significant difference between those who did and did not respond correctly to this manipulation-check item in the amount of time spent reading the article ($t [138] = -0.222, p = .825, d = -.063$), and the amount of effort the participants exerted trying to understand the article ($t [14.508] = -1.744, p = .102, d = -.491^{27}$).

The purpose of both manipulation-check items was to identify participants who did not recognize the main argument from the article: hockey fans were responsible for concussions in the NHL. Although both multiple-choice questions included incorrect responses that were “somewhat” correct, participants who failed one manipulation-check item but passed the other

²⁷ The equal variance assumption was violated for this analysis (Levene’s $F = 4.596, p = .034$). Results were interpreted that did not assume equal variances.

nevertheless correctly identified the main argument from the article on one of the questions. Those who failed *both* manipulation-check items, however, could not identify the main argument from the article even when given two opportunities to do so. Therefore, it is likely that these participants did not understand or recognize the article's main argument. In total, 11 participants failed both manipulation-check items. Although reading time ($t [138] = .205, p = .838, d = .065$) and levels of exerted effort ($t [138] = -1.892, p = .061, d = -.599$) did not differ between those who did and did not fail both manipulation-check items, those who failed both manipulation-check items were excluded from all analyses.²⁸

Two threat conditions were included in this study in order to test if the relationship between passion types and biased information evaluation only applied to threatening information, or if passion types impacted information evaluation regardless of the threat that the information posed. Those in the high-threat condition, who read that fans of their age were particularly responsible for concussions in the NHL, were expected to be more distressed and skeptical towards the article compared to those in the low-threat condition, who read that they were in a demographic that had little control over NHL concussions. However, results of independent sample *t*-tests, excluding those who failed the threat manipulation-check ($n = 14$), revealed that participants in the two threat conditions did not differ on levels of negative affect after reading the article, skepticism towards or agreement with the article, or any other evaluation

²⁸ An alternative explanation is that these 11 participants failed both manipulation-check items because they were the most defensive of all – they refused to accept that they might be contributing to concussions in the NHL. If this was the case, these participants should have responded with less favourability and more skepticism towards the article compared to those who had passed both manipulation-check items. However, there was no differences in favourability and skepticism between the two groups (both $ps > .14$). In addition, a logistic regression analysis was conducted that predicted whether or not participants passed both manipulation-check items from passion types and self-affirmation conditions. No significant relationships emerged, suggesting that responses to the manipulation-check items were not systematically related to passion types or self-affirmation conditions.

of the article assessed in the study (e.g., reading time, reading effort, rating of article quality, etc.; all $ps > .18$).²⁹ This suggests that the threat manipulation did not have the intended consequence of causing participants in the high-threat condition to feel more negativity towards the article compared to participants in the low-threat condition. Given that negative affect and article attitudes were not influenced by the threat manipulation, the threat condition was excluded from the analyses. Omitting the threat condition from the analyses had the advantage of reducing the regression equation by 11 terms (see Table 3.15). Reducing the number of terms in this regression equation increased the power of significance tests of the remaining terms (Cohen et al., 2003).

The final step of the preliminary analyses tested if males and females differed on any of the measured variables in this study. This analysis revealed that there were sex differences on a number of variables, which are reported in Table 3.16. In general, males reported higher levels of passion for watching NHL (as reflected in levels of passion, hours of NHL watched, and the extent to which they identified as being fans of the NHL), while females reported being more accepting of the message in the article. Sex differences were not anticipated in this study given that sex effects have not been found in previous passion research (Vallerand, 2010). To account for these sex differences, each regression analysis was repeated while including sex as an additional predictor (Jaccard & Turrisi, 2003). As part of each analysis, any influence of controlling for sex differences will be reported, but in general controlling for sex did not alter the results in any meaningful way.

²⁹ The specific emotions that comprised the negative affect subscale (distressed, upset, guilty, hostile, irritable, ashamed, and angry) were also compared between the two threat conditions, but no significant differences emerged (all $ps > .20$).

Table 3.16
Study 3: Sex differences

Variable	Mean		<i>t</i>	<i>df</i>	<i>p</i>	95% Difference CI	Cohen's <i>d</i> ^a
	Males	Females					
Harmonious passion	3.78	3.12	2.943	123	.004	[0.216, 1.102]	0.531
Passion criteria	4.38	3.72	2.618	123	.010	[0.160, 1.153]	0.473
T1: NHL hours over past 7 days	4.64	3.44	2.416	123	.017	[0.216, 2.174]	0.436
Positive other-directed emotions	3.25	3.61	-2.365	123	.020	[-0.647, -0.057]	-0.427
Negative affect	1.72	2.14	-3.816	123	<.001	[-0.629, -0.200]	-0.689
Importance of issue	2.54	3.73	-3.139 ^b	122	.002	[-1.949, -0.441]	-0.567
Article favourability	3.34	4.28	-2.675	123	.008	[-1.639, -0.245]	-0.483
Obligation to reduce viewership	1.78	2.58	-2.718 ^b	123	.008	[-1.382, -0.217]	-0.491
Fandom for NHL	7.24	6.49	2.309	123	.023	[0.107, 1.389]	0.417
Convincingness of article	3.57	5.03	-3.680	123	<.001	[-2.236, -0.672]	-0.664
% who will reduce NHL viewership	12.56	18.13	-2.468 ^b	122	.015	[-10.039, -1.103]	-0.446
T2: NHL hours over past 7 days	4.15	2.47	3.004	113	.003	[0.569, 2.777]	-0.564

Note. Only differences that differ at the $p < .05$ level are displayed. Analyses excluded participants who failed both manipulation-check items. T1 = Time 1; T2 = Time 2.

^a Cohen's *d* values were calculated using a pooled standardizer.

^b Equal variances were not assumed due to heterogeneous variances.

Focal analyses. Hypothesis 1 predicted that obsessive, but not harmonious, passion would be positively associated with evaluating the article in a biased way, while hypotheses 2

and 3 predicted that this bias would be attenuated when values of any type (hypothesis 2), and self-transcendent values specifically (hypothesis 3), were affirmed. The focal analyses in this study concentrated on two dependent variables that were directly related to these hypotheses: participants' levels of favourability and skepticism towards the article. Participants who reacted to the article with bias were expected to be less favourable and more skeptical towards the article, whereas those who were more accepting of the article were expected to report high levels of favourability and low levels of skepticism. In terms of the study hypotheses, obsessive, but not harmonious, passion was predicted to be negatively associated with favourability and positively associated with skepticism (hypothesis 1), and these relationships were predicted to be attenuated by affirmations of any type (hypothesis 2), and self-transcendent affirmations specifically (hypothesis 3). Although levels of favourability towards the article and skepticism were significantly correlated with one another ($r = -.321, p < .001$), the size of the correlation suggested that both responses were sufficiently distinct to be considered unique outcome variables.

Article favourability. A regression analysis was conducted predicting the composite measure of article favourability (which combined participant' ratings of agreement with article, importance of the concussion issue, and the extent to which they were convinced by the article) from passion types and self-affirmation condition (see Table 3.15, but note that the terms representing the threat conditions were excluded). There were no interaction effects between both passion types, so terms that included this interaction effect were excluded from the final regression model (Aiken & West, 1991). Results of the final regression model are displayed in Table 3.17. Data inspection did not reveal any concerns with assumption violation and outlying responses. Contrary to hypothesis 1, there was a negative association between harmonious

passion and article favourability, $b = -0.529$, 95% CI [-0.915, -0.143], $p = .008$. Obsessive passion was unrelated to article favourability, and there were no interactions between passion types and self-affirmation condition.

Table 3.17
Study 3: Regression analyses predicting article favourability from passion types and affirmation condition.

Predictor	<i>b</i>	95% CI	<i>SE</i>	<i>p</i>
Intercept	3.920	[3.562, 4.278]	.181	<.001
HP	-0.529	[-0.915, -0.143]	.195	.008
OP	0.271	[-0.330, 0.871]	.303	.375
Control vs. Both self-affirmation conditions	-0.163	[-0.940, 0.615]	.393	.679
Self-transcendent vs. Self-enhancement conditions	0.165	[-0.692, 1.023]	.433	.703
HP X Control vs. Both self-affirmation conditions	0.214	[-0.651, 1.079]	.437	.625
HP X Self-transcendent vs. Self-enhancement conditions	0.103	[-0.797, 0.993]	.449	.819
OP X Control vs. Both self-affirmation conditions	-0.195	[-1.680, 1.290]	.750	.795
OP X Self-transcendent vs. Self-enhancement conditions	0.080	[-1.100, 1.260]	.596	.894

Note. HP = harmonious passion, OP = obsessive passion.

Article skepticism. A similar process was conducted to examine relationships with article skepticism. Regression diagnostics revealed some concerns with outlying responses: a visual plot of Cook's D values identified five participants who had a disproportionate influence on the regression equation. These participants were removed from the analysis. Effects containing the harmonious passion by obsessive passion interaction were also removed from the regression model as they did not reach significance (Aiken & West, 1991). The results of the final regression model are displayed in Table 3.18. A main effect was found with harmonious passion, $b = 0.773$, 95% CI [0.366, 1.180], $p < .001$, such that harmonious passion was positively associated with skepticism. Once again, there was no main effect of obsessive passion and no interaction with self-affirmation.

Table 3.18

Study 3: Regression analyses predicting article skepticism from passion types and affirmation condition.

Predictor	<i>b</i>	95% CI	<i>SE</i>	<i>p</i>
Intercept	5.778	[5.411, 6.145]	.185	<.001
HP	0.773	[0.366, 1.180]	.205	<.001
OP	-0.439	[-1.111, 0.234]	.339	.199
Control vs. Both self-affirmation conditions	0.143	[-0.645, 0.931]	.398	.719
Self-transcendent vs. Self-enhancement conditions	-0.288	[-1.177, 0.601]	.449	.522
HP X Control vs. Both self-affirmation conditions	0.579	[-0.309, 1.466]	.448	.199
HP X Self-transcendent vs. Self-enhancement conditions	-0.058	[-1.026, 0.910]	.489	.906
OP X Control vs. Both self-affirmation conditions	-0.819	[-2.374, 0.737]	.785	.299
OP X Self-transcendent vs. Self-enhancement conditions	0.197	[-1.286, 1.681]	.749	.793

Note. HP = harmonious passion, OP = obsessive passion.

Peripheral analyses. As in Study 1, additional outcome variables were assessed that were not directly related to ratings of article favourability and skepticism, the two focal outcomes of this study. A complete list of outcome variables that were peripheral to the main focus of the study are presented in Appendix J. Regression analyses were conducted with each peripheral outcome variable using the same procedure used with the focal outcome variables, and noteworthy results from these analyses are highlighted in Appendix J.

A selection of these findings complement the results from the focal analyses and deserve special mention. First, the extent to which participants exerted effort trying to understand the argument of the article was positively associated with harmonious passion, $b = 0.416$, 95% CI [0.008, 0.823], $p = .046$. A negative association between exerted effort and obsessive passion approached significance, $b = -0.569$, 95% CI [-1.215, 0.077], $p = .084$. This indicates that, in addition to being less agreeable with the content of the article, participants with strong levels of harmonious passion also exerted more energy into reading and scrutinizing the content of the article. There was also an interaction between both passion types when predicting the extent that

participants felt that they were obligated to reduce their viewership of the NHL based on the article, such that the odds of feeling obligated to reduce viewership decreased as levels of harmonious passion increased; this decrease was most prominent for individuals with high levels of obsessive passion, $OR = 0.463$, 95% CI [0.240, 0.894], $p = .022$. Finally, there was a significant interaction between both passion types when predicting estimates of the percentage of people who would reduce their viewership based on the article, $b = -2.605$, 95% CI [-4.813, -0.398], $p = .021$, such that the highest percentage estimates were provided by those with low levels of harmonious passion and high levels of obsessive passion. These findings complement the results from the focal analyses by revealing that harmonious passion was related to exerting more effort into scrutinizing the article, feeling less obligated to reduce viewership after reading the article, and believing that fewer people would be influenced by the article.

Lastly, results related to the thought listing and debate exercises deserve special mention due to effort required by the participants (and researchers) to complete (and score) both tasks. Although harmonious passion was associated with less favourability and more skepticism towards the article, these sentiments were not reflected by the thoughts listed by the participants: no significant effects emerged when predicting thought favourability indices. With the debate exercise, significant effects emerged when predicting whether or not participants acknowledged the comment to which they were asked to respond. Both harmonious ($OR = 0.280$, 95% CI [0.101, 0.777], $p = .014$) and obsessive passion ($OR = 9.407$, 95% CI [1.348, 65.629], $p = .024$) interacted with the contrast that compared both self-affirmation groups to the control group. For harmonious passion, those in the control condition were most likely to acknowledge the debate comment in their response ($OR = 2.148$, 95% CI [0.866, 5.211], $p = .091$), whereas obsessive passion was associated with lower likelihood of comment acknowledgement in the control

condition ($OR = 0.192$, 95% CI [0.034, 1.092], $p = .063$). Both effects attenuated in the self-affirmation conditions.

Supplemental analyses. As in Study 1, a secondary purpose of this research was to test if any buffering effect of the self-transcendent value affirmation could be explained by increases in positive other-directed emotions (i.e., feelings of love, compassion, and connectedness). As a first step in this analysis, two regression analyses were conducted that predicted the two focal dependent variables, article favourability and skepticism, from levels of positive other-directed emotions (the proposed mediator). The results revealed a significant relationship between positive-other directed emotions and favourability towards the article ($b = 0.507$, 95% CI [0.095, 0.919], $p = .016$), but no relationship was found with article skepticism ($b = -0.107$, 95% CI [-0.559, 0.345], $p = .640$). However, formal tests of this hypothesised mediated moderation effect were not pursued for several reasons. Most notably, the results of the focal analysis failed to find support for hypothesis 3, which predicted that affirming self-transcendent values would attenuate a positive association between obsessive passion and biased information evaluation. In fact, the focal analysis found a positive association between harmonious passion and biased information evaluation, which was unaffected by value affirmations of any type. In addition, a regression analysis predicting positive other-directed emotions from passion types and interactions with self-affirmation conditions failed to find any significant relationship (all $ps > .12$). Therefore, given that passion types did not interact with the self-affirmation condition to predict article favourability, article skepticism (outcome variables), or positive other-directed emotions (the proposed mediator), no formal tests of mediation were conducted.

Discussion

The hypotheses tested in this study specified that obsessive passion would predict biased article evaluation, reflected by high levels of skepticism and low levels of favourability towards the article (hypothesis 1), and that these relationships would attenuate following value affirmations of any type (hypothesis 2) and most prominently following affirmations of self-transcendent values (hypothesis 3). Overall, no support was found for these hypotheses. In fact, harmonious passion, rather than obsessive passion, was positively related to evaluating the article with high levels of skepticism and low levels of favourability. Obsessive passion showed opposite trends with article skepticism and favourability, although both relationships were not statistically significant. The general tendency for harmonious passion to be linked with biased article evaluation was further supported by the peripheral analyses, which linked harmonious passion with high levels of effort evaluating the article and low levels of obligation to reduce viewing behaviour. Conversely, obsessive passion was linked with higher levels of obligation to reduce NHL viewership and higher perceptions that others would reduce viewership based on the article. Rather than treat the article with bias, these findings suggest that obsessive hockey fans were more accepting and influenced by the content of the article.

In Studies 1 and 2, harmonious passion was linked with attending to threatening passion-related information with bias. The results of the current study extend this pattern to the way information is evaluated. The dualistic model of passion (Vallerand, 2010) describes harmonious passion as being a non-defensive, authentic and open variety of passion, and obsessive passion as being an ego-invested and defensive passion type. The results of the current study challenge these descriptions, and portray harmonious and obsessive passions as following reverse defensive tendencies. At this point, to cope with the discrepancy between the results of the current study and those found in support of Vallerand's (2010) descriptions, I encourage the

reader to consider the differences between the threats studied in previous research (e.g., Philippe et al., 2009) and those studied in the current research. The current study focused on messages that threaten one's choice to pursue a passion, while previous research has in general focused on threats that emerge while pursuing passion-related goals (Vallerand, 2010, 2015). Such a distinction (threats to activity selection vs. threats to goal pursuit) foreshadows a theme that will be considered as part of the general discussion.

This study also failed to find support for hypotheses 2 and 3, which predicted that manipulations of self-enhancement and self-transcendent values would attenuate biased information evaluation. Both self-affirmation manipulations did not have any influence on the focal outcome variables (i.e., article skepticism and favourability), and effects with peripheral outcome variables were generally minimal and inconsistent. These null findings can be interpreted in two ways. First, the strength of the relationship between harmonious passion and both skepticism and favourability could have been so strong and robust that manipulations of self-enhancement or self-transcendent values could not have had any bearing on the effect. However, another way to interpret these findings is that the self-affirmation manipulation could have been weak and ineffective. The second interpretation is unlikely, given that the same manipulation was effective in moderating the results of Study 1 and previous research (Burson et al., 2012). Therefore, failing to find support for the attenuating effect of either self-affirmation manipulation underscores the main findings of this study: harmonious passion was positively associated with article skepticism and negatively associated with article favourability, even amongst those who had previously affirmed an important value in their life.

Conclusion

Despite failing to find support for the study hypotheses, the results of this third study revealed that harmonious passion, not obsessive passion, predicted biased evaluations of passion-threatening information. This relationship was found when predicting levels of skepticism and favourability towards the article, and emerged regardless of whether or not an important life value had been previously affirmed. The results of Studies 1 and 2 found that the tendency for harmonious and obsessive passions to predict low and high levels of defensiveness, respectively (Vallerand, 2010), does not apply when predicting biases in the way information is attended to. The results of the current study extend these findings to the way information is evaluated; once again, harmonious passion emerged as an unexpected predictor of bias. In the final study of this dissertation, the procedure of the current study was replicated with a slight modification: rather than ask participants to affirm important life values, participants engaged in a task designed to deplete their ability to engage in self-control.

Study 4

The purpose of Study 4 was to test the final set of hypotheses examining the moderating effect of ego-depletion in the relationship between passion types and biased information evaluation. In an ego-depleted state, I expected that a positive association between obsessive passion and biased evaluations of passion-threatening information would weaken (hypothesis 4). I did not expect ego-depletion to influence the relationship between harmonious passion and information evaluation. The general design of Study 4 was identical to that of Study 3: Passionate hockey fans were asked to evaluate low- and high-threat versions of an article arguing that the viewing habits of NHL fans contribute to concussions in hockey. Participants were given the same instructions, asked to read the same article, and responded to the same questions

as in Study 3. The major distinguishing feature of Study 4 was that, rather than affirming self-transcendent or self-enhancement values, some participants completed a task designed to deplete their self-control resources.

Method

Participant recruitment. Participant recruitment was identical to that of Study 3: hockey fans were recruited via a mass testing survey and asked to take part in the study (see Appendix K for the consent form). A total of 124 students participated in this study, and each received three research credits in exchange for participation.³⁰

Procedure. The experimental procedure occurred in groups of 10 to 20 participants in a computer laboratory. Unlike Study 3, participants were given manila envelopes as they arrived for the study, which were used for the ego-depletion manipulation. As in Study 3, the study was organized into five sections.

Section 1: *The passion scale.* The first portion of the study was identical to the first portion of Study 3, and asked participants to complete the harmonious and obsessive passion subscales from the Passion Scale in relation to “watching the NHL” (Vallerand et al., 2003). Participants were also asked to report how many hours they spent watching hockey on television over the past 7 days and on average each week. They also reported how seriously they took the issue of concussions in the NHL on a scale from 1 (*not seriously at all*) to 9 (*extremely seriously*).

³⁰ A power analysis using G*Power (version 3.1.5) was conducted that yielded a total sample size of 56 (total predictors = 15, number of tested predictors = 1). Once again, in order to have sufficient power to detect weaker-than-medium effect sizes, 124 participants were recruited.

Section 2: Ego-depletion manipulation. The second portion of the study was unique in that it manipulated whether participants engaged in a task designed to deplete their self-control resources (*ego-depletion condition*) or engaged in a mundane task that was not expected to be ego-depleting (*control condition*). After participants completed the harmonious and obsessive passion subscales, they were instructed to open the manila envelope and follow the instructions provided in the envelope. For all participants, the envelope contained a booklet with five pages (Appendix L). The first page contained instructions for an exercise that was ostensibly designed to warm-up the participants' mental processing and concentration abilities in order to help them prepare for the questions that were presented to them later in the study.³¹ Participants were asked to complete a *crossing-out-letters exercise* (e.g., Baumeister et al., 1998; Hagger et al., 2010) in which they read a passage of text and crossed-out all instances of the letter *e*. The second page of the booklet presented a page of text from an advanced statistics textbook that was used for the crossing-out-letters exercise.³²

The third page of the booklet contained a second set of instructions, the content of which depended on the group to which each participant was randomly assigned. For those assigned to the control group, participants were instructed to complete the same crossing-out-letters exercise as before. Thus, the final page of the booklet for participants in the control condition contained a

³¹ In a meta-analysis of the ego-depletion literature, Hagger et al. (2010) did not find any significant differences in the effect size of ego-depletion manipulations in situations where the manipulation was presented as a task that was either related ($d^+ = 0.58$) or unrelated ($d^+ = 0.71$) to the other components of the experiment. However, to keep the instructions for the experimental manipulation consistent with Studies 1 and 3, the ego-depletion manipulation was framed as an unrelated warm-up task.

³² The two passages of text used in the ego-depletion manipulation were copied from an article on advanced statistics (Stapleton, 2008, pp. 184 and 186). The purpose of selecting text from an advanced statistics article was so that the undergraduate participants would not be interested or even understand the content of the text, but would focus exclusively on the letters themselves (Baumeister et al., 1998, Study 4).

different passage from the same statistics textbook, and they were asked to cross-out all instances of the letter *e* as they did previously. For those in the ego-depletion condition, participants were instructed to again cross-out all instances of the letter *e* while following two added rules: (a) an *e* was not to be crossed out if it was followed by a vowel (e.g., read), and (b) an *e* was not to be crossed out if it appeared in a word with a vowel appearing two letters before the *e* (e.g., take; see DeWall et al., 2007). These two added rules were intended to force the participants in the ego-depletion condition to override the well-learned response of crossing-out all instances of the letter *e*.³³ The final page of the booklet for participants in the ego-depletion condition consisted of the same text as presented to those in the control condition, except that these participants were required to follow the two additional rules when crossing-out instances of the letter *e*. After participants had completed this exercise, they were instructed to follow the instructions on the computer for the remainder of the study.

Sections 3 – 8. The remainder of this study was identical to that of Study 3 (with the one exception that participants were not asked to report their emotions following the ego-depletion exercise, as had been done in Study 3 following the self-affirmation exercise). Participants read the same article discussing concussions in the NHL (either a high-threat or low-threat version), reported their emotions and rated their attitudes towards the article, engaged in the thought-listing and join-the-debate exercises, and completed the same manipulation-check items. All participants received a follow-up phone call seven days after the experimental session and were asked to report their NHL viewing behaviour, whether or not they were wearing NHL clothing,

³³ This *crossing-out-letters* exercise is one of the most popular techniques that researchers have used to manipulate ego-strength (Hagger et al., 2010). In fact, a meta-analysis conducted by Hagger et al. (2010) found that manipulations using this technique resulted in a moderate-to-large effect size (averaged corrected standardized difference effect size = 0.77).

their attitudes towards concussions in the NHL, and the details that they remembered from the article that they had read seven days earlier. After answering these follow-up questions, participants were fully debriefed.

Data analysis and subscale computation. As in Studies 1 and 3, data analyses proceeded through preliminary, focal, and peripheral stages. Supplemental analyses were not performed for this study as there were no hypotheses regarding a mediating effect of emotions. Subscales were computed using the same procedures as used in Study 3. Average scores were computed for harmonious ($\alpha = .86$) and obsessive passion ($\alpha = .81$), negative affect ($\alpha = .85$), and article favourability ($\alpha = .81$). A thought favourability index and differences scores for ratings of concussion seriousness, hours spent watching the NHL, and levels of NHL fandom were also computed using the same procedures described as part of Study 3. Independent coders rated the responses from the join-the-debate exercise (the inter-rater reliability for the debate star rating was once again .87) and follow-up phase of the study on the same dimensions used in Study 3.

Data screening. Data were screened for missing data, outliers, assumption violation, and entry errors. There was only one missing response: One participant did not report an estimated percentage of people who would reduce NHL viewership based on the article. For participants who reported a time range when estimating hours spent watching hockey on television (e.g., “8-10” hours), mean response times were imputed (e.g., “9”). Responses to the ego-depletion exercise were examined to ensure that all participants followed the exercise instructions. Three participants did not complete the ego-depletion exercise properly, either because they failed to fully complete both parts of the exercise ($n = 2$) or did not follow the exercise instructions ($n = 1$). These participants were excluded from all analyses that tested the effects of the ego-

depletion exercise. Raw data were cross-referenced with original responses in Qualtrics to verify that all responses were imported accurately.

Regression models. The analyses for this study mirrored the analyses described in Study 3. A major difference was that, in Study 3, the experimental condition (value affirmation) had three levels, while the experimental condition in this study (ego-depletion) had just two. This meant that the experimental condition in this study could be represented by a single variable, which simplified the regression model and analysis. The ego-depletion groups were dummy coded as either 1 (ego-depletion group) or 0 (control group). The threat conditions were coded as 1 (high-threat group) and 0 (low-threat group). The regression model is outlined in Table 3.19.

Table 3.19

Study 4: Regression model

$$\hat{y} = b_0 + b_1(op) + b_2(hp) + b_3(depletion) + b_4(threat) + b_5(hpXdepletion) + b_6(hpXthreat) + b_7(opXdepletion) + b_8(opXthreat) + b_9(hpXop) + b_{10}(depletionXthreat) + b_{11}(hpXdepletionXthreat) + b_{12}(opXdepletionXthreat) + b_{13}(hpXopXdepletion) + b_{14}(hpXopXthreat) + b_{15}(hpXopXdepletionXthreat)$$

Note. \hat{y} = predicted dependent variable; *op* = obsessive passion; *hp* = harmonious passion; depletion = ego-depletion condition (1 = depletion group, 0 = control group); threat = threat condition (1 = high threat, 0 = low threat).

Results

Preliminary analyses. Descriptive statistics and correlations between all study variables are reported in Appendix M. In the preliminary phase of analysis, data were analysed to test for differences between those who were and were not contacted for the follow-up phase of the study, examine responses to the manipulation-check items, test for differences between the two threat conditions, and to test for sex differences.

A total of 11 participants could not be contacted for the follow-up telephone survey. These participants differed from those who completed both phases of the study on two variables: obsessive passion ($t [24.45] = -3.559, p = .002, d = -1.13$) and time spent reading the article ($t [122] = -2.103, p = .037, d = -0.67$), such that those who completed both phases reported higher levels of obsessive passion and slower reading times. Given the substantial variation in group sizes, interpretations of these differences should be made with caution.

Manipulation-check items were included to assess if participants could identify the main argument of the article (failed by 12 participants) and the group that was argued to have the most influence on concussions (failed by 24 participants). However, using the same inclusion criteria used in Study 3, participants who failed both manipulation-check items ($n = 10$) were excluded from all analyses. Those who did and did not fail both manipulation-check items did not differ from each other in the amount of time spent reading the article, reported effort that was exerted reading the article, or levels of reported favourability or skepticism towards the article (all $ps > .15$).

The two threat conditions were compared to determine if those who read the threatening article felt more distressed and skeptical towards the article compared to those who read the less threatening article. Results of independent samples t -test, however, revealed that the threat manipulation had no effect on overall levels of negative affect or specific negative emotions after reading the article, skepticism towards the article, or favourability towards the article. Once again, this suggests that the threat manipulation did not have the intended consequences of causing participants in the high-threat condition to feel more negativity towards the article compared to participants in the low-threat condition. For this reason, as in Study 3, the threat condition was excluded from the analyses. Omitting the threat condition from the analyses had

the advantage of reducing the regression equation by 8 terms (see Table 3.19), which increased the power of the significance tests of the remaining terms (Cohen et al., 2003).

Finally, the measured variables in this study were tested for sex differences. This analysis revealed that there were sex differences on a number of variables, which are reported in Table 3.20. In general, the same pattern of sex differences found in Study 3 was found in the current study: Males reported higher levels of passion for watching NHL (as reflected in levels of passion, hours of NHL watched, and the extent to which they identified as being fans of the NHL), while females reported being more accepting of the message in the article. To account for these sex differences, each regression analysis was repeated while including sex as an additional predictor (Jaccard & Turrisi, 2003). As part of each analysis, any influence of controlling for sex differences will be reported, but in general controlling for sex did not alter the results in any meaningful way.

Table 3.20
Study 4: Sex differences

Variable	Mean		<i>t</i>	<i>df</i>	<i>p</i>	95% Difference CI	Cohen's <i>d</i> ^a
	Males	Females					
Passion criteria	4.30	3.55	2.832	109	.006	[0.227, 1.288]	0.540
T1: NHL hours over past 7 days	5.48	2.98	3.717 ^b	81	<.001	[1.160, 3.833]	0.709
T1: NHL hours per week	6.34	4.30	2.776	109	.006	[0.583, 3.491]	0.530
Importance of issue	2.48	3.74	-3.834 ^b	107	<.001	[-1.908, -0.607]	-0.731
Article favourability	3.31	4.07	-2.351	109	.021	[-1.396, -0.119]	-0.449
Obligation to reduce viewership	1.70	2.34	-2.246 ^b	99	.027	[-1.213, -0.075]	-0.428
Fandom for NHL	7.34	6.34	3.152	109	.002	[0.370, 1.622]	0.601
Convincingness of article	3.36	4.33	-2.569	109	.012	[-1.714, -0.221]	-0.490
% who will reduce NHL viewership	11.14	22.27	-4.218 ^b	98	<.001	[-1.703, -0.233]	-0.805
Coded article star rating	4.43	5.35	-2.947	106	.004	[-1.530, -0.299]	-0.570
T2: NHL hours over past 7 days	4.23	2.42	2.916 ^b	77	.005	[0.589, 3.126]	0.583

Note. Only differences that differ at the $p < .05$ level are displayed. Analyses excluded participants who failed both manipulation-check items. T1 = Time 1; T2 = Time 2.

^a Cohen's *d* values were calculated using a pooled standardizer.

^b Equal variances were not assumed due to heterogeneous variances.

Focal Analyses. The focal analyses in this study, like Study 3, concentrated on two dependent variables that were directly related to the study hypotheses: participants' levels of favourability and skepticism towards the article. In keeping with the original study hypotheses,

obsessive, but not harmonious, passion was predicted to be negatively associated with article favourability and positively associated with skepticism (hypothesis 1), and these relationships were predicted to be attenuated by ego-depletion (hypothesis 4). Once again, a moderate correlation was found between levels of favourability towards the article and article skepticism, $r = -.339, p < .001$.

Article favourability. A regression analysis was conducted predicting the composite measure of article favourability from passion types and ego-depletion condition (see Table 3.19, but note that the terms representing the threat conditions were excluded). There were no interaction effects between both passion types, so terms that included this interaction effect were excluded from the final regression model (Aiken & West, 1991). Results of the final regression model are displayed in Table 3.21. Contrary to the study hypotheses and the results from Study 3, no significant associations were found with passion types or depletion condition (all $ps > .40$). Including sex as an additional predictor did not alter these results.

Table 3.21

Study 4: Regression analyses predicting article favourability from passion types and depletion condition.

Predictor	<i>b</i>	95% CI	<i>SE</i>	<i>p</i>
Intercept	3.723	[3.245, 4.201]	.241	<.001
HP	-0.183	[-0.619, 0.253]	.220	.407
OP	0.186	[-0.511, 0.883]	.352	.599
Depletion	0.009	[-0.653, 0.671]	.334	.980
HP X Depletion	0.017	[-0.621, 0.655]	.322	.958
OP X Depletion	-0.087	[-1.065, 0.891]	.493	.861

Note. HP = harmonious passion, OP = obsessive passion.

Article skepticism. The same analysis was conducted predicting article skepticism, the second focal dependent variable in this study. Regression diagnostics identified one participant

who may have had a disproportionate influence on the regression equation based on an extreme Cook's D value. This participant was removed from the analysis. Effects containing the harmonious passion by obsessive passion interaction were also removed from the regression model as they did not reach significance (Aiken & West, 1991). The results of the final regression model are displayed in Table 3.22. In keeping with the findings from Study 3, but contrary to the original study hypotheses, there was a main effect with harmonious passion, $b = 0.515$, 95% CI [0.026, 1.004], $p = .039$, such that harmonious passion was positively associated with skepticism towards the article. Once again, there was no main effect of obsessive passion and no interaction with the depletion condition.

Table 3.22
Study 4: Regression analyses predicting article skepticism from passion types and depletion condition.

Predictor	<i>b</i>	95% CI	<i>SE</i>	<i>p</i>
Intercept	5.970	[5.434, 6.507]	.271	<.001
HP	0.515	[0.026, 1.004]	.247	.039
OP	0.002	[-0.781, 0.784]	.395	.997
Depletion	0.399	[-0.349, 1.147]	.377	.292
HP X Depletion	-0.019	[-0.754, 0.716]	.371	.959
OP X Depletion	-0.485	[-1.583, 0.613]	.554	.383

Note. HP = harmonious passion, OP = obsessive passion.

Peripheral analyses. As in Studies 1 and 3, additional outcome variables were assessed that were not directly related to the two focal outcomes of this study. Regression analyses were conducted with each peripheral outcome variable using the same procedure used with the focal outcome variables, and noteworthy results from these analyses are highlighted in Appendix N.

Some peripheral findings that complement the results from the focal analyses deserve to be highlighted. Negative affect after reading the article was predicted by an interaction between

harmonious and obsessive passion, $b = -0.220$, 95% CI [-0.347, -0.092], $p = .001$. Simple slope analysis indicated that levels of negative affect were positively associated with obsessive passion, but that this relation was intensified for those with low levels of harmonious passion, $b = 0.864$, 95% CI [0.549, 1.178], $p < .001$. This indicates that, although obsessive passion was unrelated to article favourability or skepticism, it was associated with feeling distressed after reading the article. An interaction between both passion types was also found when predicting obligation to reduce viewership, $OR = 0.615$, 95% CI [0.385, 0.983], $p = .042$. The odds of participants reporting that they felt obligated to reduce NHL viewership increased as levels of obsessive passion increased, but only amongst those with low levels of harmonious passion, $OR = 3.321$, 95% CI [1.059, 10.410], $p = .039$. Therefore, in addition to feeling distressed, participants with high levels of obsessive passion felt that they should reduce their NHL viewership after reading the article. Obsessive passion was also positively associated with ratings of article quality, but only amongst those in the depletion condition, $b = 1.194$, 95% CI [0.311, 2.077], $p = .009$.

Three significant effects emerged from responses to the debate exercise and the follow-up phase of the study. For the debate exercise, a three-way interaction emerged between harmonious passion, obsessive passion, and depletion condition when predicting whether or not participants acknowledged the comment to which they were asked to respond. In the control condition, increases in obsessive passion were associated with increased odds that participants acknowledged the debate comment, but only for those with low levels of harmonious passion, $OR = 7.631$, 95% CI [0.948, 61.407], $p = .056$. This trend was reversed in the depletion condition: increases in obsessive passion were associated with decreased odds of acknowledging the debate comment for those with low levels of harmonious passion, $OR = 0.167$, 95% CI

[0.022, 1.272], $p = .084$. This pattern indicates that, in the control condition, those with high levels of obsessive passion and low levels of harmonious passion were most likely to acknowledge the comment in their response. Based on these debate responses, three independent coders were asked to predict the star rating that each participant gave to the article. These coded star ratings were also predicted by the same three-way interaction, $b = 0.749$, 95% CI [0.007, 1.474], $p = .048$. The pattern of this interaction indicated that those with the most positively rated debate response were those with low levels of harmonious passion and high levels of obsessive passion in the control condition (see Figure N4). Overall, these results suggest that participants who were “purely” obsessive towards the NHL, as reflected by high obsessive scores and low harmonious scores, were most likely to respond directly to another student in their debate response and be more positive towards the article in their response compared with those who were more harmonious towards the NHL. However, this yielding pattern did not emerge amongst those in the depletion condition. Finally, one significant effect emerged in responses to the follow-up phase of the study: the odds that participants were wearing NHL-related clothing when they were contacted for the follow-up phase increased as levels of harmonious passion increased, $OR = 2.107$, 95% CI [1.067, 63.347], $p = .043$. This effect did not interact with obsessive passion or depletion condition.

Discussion

This fourth and final study was a replication of Study 3, but included a manipulation of ego-depletion rather than a manipulation of self-affirmation. This study allowed for two hypotheses to be tested. Once again, hypothesis 1 predicted that obsessive passion would be linked with biased information evaluation. At this point, it is understandable if the reader was

doubtful of whether support would be found for this hypothesis. Indeed, in line with the results of the previous three studies, it was harmonious passion, not obsessive passion, that was linked with treating passion-threatening information with bias. Dependent on support of hypothesis 1 was hypothesis 4, which predicted that ego-depletion would attenuate the positive association between obsessive passion and biased information evaluation. No support was found for this hypothesis: ego-depletion did not interact with any passion type when predicting levels of bias towards the passion-threatening article.

Replicating the results of Study 3, the results of the current study found that harmonious passion was positively associated with skepticism towards the passion-threatening article. Although article favourability was not related to harmonious passion, the pattern of the relationship was in a negative direction, as it was in Study 3. Peripheral analyses also supported the tendency for harmonious passion to be linked with resistance to the content of the article and staying the course of pursuing a passion: harmonious passion was positively associated with levels of fandom for the NHL immediately after reading the article, and with the amount of NHL watched on TV and the likelihood of wearing NHL clothing one week after reading the article. Peripheral analyses suggested that obsessive passion, on the other hand, was related to being more accepting and affected by the content of the article: obsessive passion predicted higher levels of article reading time, negative affect after reading the article, and higher levels of perceived obligation to reduce NHL viewership. Relationships with negative affect and obligation to reduce viewership were most pronounced for those with low levels of harmonious passion, revealing that those with “pure” obsessive passions may have been particularly affected by the article. Although these results do not support hypothesis 1, they are in line with the results with the previous three studies by finding that harmonious passion predicts biased and

defensive reactions to passion-threatening information. This challenges the reputations of obsessive and harmonious passions as being defensive and non-defensive passion types, respectively (Vallerand, 2010). The results of the current research indicate that a new framework is needed to account for the patterns of defensiveness found in the current research and those found in previous research (e.g., Bélanger et al., 2013a; Donahue et al., 2009; Philippe et al., 2009). A reformulated hypothesis will be presented as part of the general discussion.

The ego-depletion manipulation was hypothesised to cause participants to become more accepting and open to threatening information. This hypothesis was not supported: harmonious passion was linked with article skepticism regardless of ego-strength. Any impact of the ego-depletion manipulation emerged as part of the peripheral analysis, and mainly affected the relationship between obsessive passion and ratings of article quality and responses to the debate exercise. A positive relationship between obsessive passion and ratings of article quality emerged in the depletion condition but not in the control condition. This suggests that being in an ego-depleted state caused participants with high levels of obsessive passion to perceive that the article was of higher quality, which could indicate that these participants were conceding that the arguments made in the article had some merit. In addition, the depletion exercise generally caused obsessive passion to play a more subdued role in predicting responses to the debate exercise. Compared to the control condition, those with pure obsessive passions (i.e., high obsessive passion and low harmonious passion) did not acknowledge the other student's comment and were not as positive towards the article in their own debate comment. The ego-depletion manipulation, however, did not impact the results of the focal analysis or any other result from the peripheral analysis.

Conclusion

Once again, the results of this fourth and final study found evidence supporting a link between harmonious passion, not obsessive passion, and biased evaluations of threatening information. At this point, it is necessary to conclude that this research found no support for hypothesis 1, which predicted that obsessive passion would be related to biased evaluations. Moreover, asking some participants to engage in an ego-depleting task did not affect the results in any substantial way. It is now time to consider the discrepancy between the findings from the four studies of this research, which found harmonious passion to predict defensive responses, and other empirical investigations and theoretical frameworks that have linked obsessive passion with defensive actions (Vallerand, 2010). This discrepancy will be a main issue addressed in the general discussion.

CHAPTER IV: General Discussion and Conclusions

In the face of threat, the literature on the dualistic model of passion has linked obsessive passion with defensive responding and harmonious passion with more open and non-defensive behaviour (Vallerand, 2010). The aim of this research was to examine the relationship between both passion types and responses to a specific form of threat: messages that challenged engaging in a passion. In four studies, two with Facebook users and two with hockey fans, participants were presented with messages that challenged their passion and were asked to report their desire to read the messages (Studies 1 and 2) or to evaluate the messages after reading them (Studies 3 and 4). In each scenario, in line with previous research, obsessive passion, but not harmonious passion, was expected to predict biased responding. Surprisingly, the opposite pattern of relationships emerged: Consistent across all four studies, harmonious passion, but not obsessive passion, predicted biased treatment of challenging passion-related messages. The participants with high levels of harmony towards their passion were the ones most likely to avoid (Studies 1 and 2) and negatively evaluate (Studies 3 and 4) messages that opposed pursuing an activity that they loved. Participants with high levels of obsession towards their passion, if anything, tended to be more even-handed in their treatment of these types of messages. In the discussion that follows, I address the theoretical and applied implications of these results, along with some ideas for future research.

Hypotheses, Revisited and Revised

The main hypothesis of this study (hypothesis 1) predicted that obsessive passion would be positively associated with biased exposure to and evaluations of passion-threatening information. This hypothesis was based on two theoretical links: (a) passions occupy dominant

roles in the identities of people with predominant obsessive passions, causing more to be at stake when confronted with threatening passion-related messages (Vallerand, 2010; Vallerand et al., 2003), and (b) obsessive passion is linked with ego-invested self-structures (Hodgins & Knee, 2002), causing more defensive behaviour to emerge when passion-related goals are threatened (Vallerand, 2010). Conversely, harmonious passion entails a more balanced and authentic relationship with an activity, which was hypothesised to cause this passion type to be unrelated to biased responding. Research conducted with passionate drivers (Philippe et al., 2009), students (Bélanger et al., 2003a), athletes (Donahue et al., 2009; Schellenberg, Gaudreau, et al., 2013), and sports fans (Schellenberg, Bailis, et al., 2013) has found that obsessive passion is linked with defensiveness and avoidance when faced with threats and challenges, while harmonious passion is linked with more balanced and task-focused responding. Clearly, in all four studies of this research, the results contradicted this theoretical reasoning and empirical evidence. The connection between passion types and defensiveness, therefore, needs to be considered further in order to account for the discrepancy between the results from the current research and previous findings.

In what follows, I offer an alternative perspective on the link between passion types and defensiveness. This new, revised hypothesis accommodates the results of the current and previous research, and is in accordance with the descriptions of harmonious and obsessive passion types outlined by the dualistic model of passion. To begin, I will present a story that illustrates the crux of the revised hypothesis, followed by an explanation of what this new hypothesis means for predictions based on the dualistic model of passion.

The revised hypothesis is analogous to a fictional story of two first-year architecture students, Olivia and Hailey. Both love architecture, and before their first year of school they buy

identical notebook computers; they differ, however, in the reason for this purchase. Olivia feels that the computer is needed to succeed in school and create the computer-generated designs that will win her academic praise, honours, and achievement. Hailey, on the other hand, enjoys designing buildings and structures, and feels that the computer is the best way to pursue this activity. So, while both students purchased the same computer and used it in the same way, Olivia felt she *needed* to purchase the computer to do well in school while Hailey *wanted* to buy the computer to create building designs.

For both Olivia and Hailey, the new computer is an unmitigated disaster. First, when using computer programs to design new buildings, the computers run very slowly and often crash altogether, causing them to lose all their progress. When this happens, Olivia gets extremely frustrated since she needs the computer to function properly in order to achieve the success in architecture school that she desires. On the other hand, Hailey, although not happy when this happens, tends to take these computer malfunctions more in stride since she likes to design buildings for its own sake. Olivia, therefore, is miserable when trying to use her unreliable computer, while Hailey is more content despite these problems.

But there is another problem with their computers that was raised by an article that they both read in a magazine. This article explained that their computers were made with “conflict minerals”, the mining of which has financed multiple conflicts in the Democratic Republic of Congo (e.g., Marks, 2014). The problem, according to the article, is that the minerals that are needed to build computers are harvested in African mines that are controlled by militias and rebel groups. These groups make millions of dollars selling the minerals, the profit of which is used to purchase weapons and fund domestic conflicts. The militia groups also use child labour and sexual violence to harvest the minerals and intimidate communities when exporting the

minerals. Therefore, by purchasing their computers, as argued in the article, they were indirectly supporting these rebel groups. Once again, Olivia and Hailey reacted quite differently to this new challenge with their new computers. Olivia was distressed by the news but felt she did not have a choice in the matter: to be an architect and succeed in school, she *needed* to buy the computer. Therefore, she read the article and agreed that the whole issue was disgraceful, but she felt that she had little say in the matter. Hailey, on the other hand, did not feel that she needed the computer for school, but chose the computer because she *wanted it*. Now, she was learning that this decision was funding warfare in other countries, a fact that troubled her deeply.

Although purchasing a computer is clearly quite different from pursuing a passion, Hailey and Olivia's story illustrates the difference between two targets of threat: threats that target (a) engagement in a passion, and (b) the selection of a passion. A computer that has crashed presents an obstacle to experiences and goal achievement that is dependent on a fully functional computer, such as designing computer-generated buildings and succeeding in architecture school. Therefore, in response to a computer crash, a situation that is analogous to threatening engagement in a passion, Hailey is less distressed than Olivia, who needs to use the computer to achieve academic success. However, both students respond differently after reading the magazine article. The magazine article did not threaten the pursuit of a goal, but instead challenged one's choice to buy the computer in the first place. This is analogous to threatening one's choice to engage in a passion. The distinction between challenges to activity engagement and activity selection is important in explaining how people react to threat, and, as this research demonstrates, likely depends on the extent to which a passion is more harmonious or obsessive.

Previous research has focused exclusively on information, obstacles, or scenarios that threaten engagement in a passion. Donahue et al. (2009, Study 2) asked passionate basketball

players how they would react if they were intentionally fouled by an opponent during a try-out for a team, causing them to fail at a drill and reducing their chances of making the team. Philippe et al. (2009, Study 2) put passionate drivers in a driving simulator where they were repeatedly obstructed by another vehicle, causing their ability to finish the driving course in a set amount of time to be impeded. Bélanger et al. (2013a, Study 1) asked passionate exercisers to reflect on their personal weaknesses with exercise and to write about how these weaknesses impeded them from achieving their goals. Schellenberg, Bailis, et al. (2013) asked passionate hockey fans how they were coping during a period of time when the NHL was “locked out” and no games were being shown on television. Schellenberg, Gaudreau, et al. (2013) asked passionate volleyball players how they coped with demands and challenges while training for volleyball, while Rip et al. (2006) asked passionate dancers how they coped with dance-related injuries. In all cases, passionate participants were asked to either reflect on or experience obstacles that obstructed them from pursuing or achieving a goal related to their passion. To relate this to Hailey and Olivia’s story, this is analogous to studying how they reacted when their computers crashed. And in all cases, obsessive passion predicted higher perceptions of threat and defensive responses, as reflected in higher levels of aggressive intentions and behaviour (Donahue et al., 2009; Philippe et al., 2009), hand-grip strength (Bélanger et al., 2013a), threat perceptions (Schellenberg & Bailis, in press-b; Schellenberg, Bailis, et al., 2013) and avoidance behaviour (Rip et al., 2006; Schellenberg, Bailis, et al., 2013; Schellenberg, Gaudreau, et al., 2013).

The threats presented in the current research were different from the ones examined in these previous studies. Rather than present an impediment to passion-related goal achievement or study people’s reactions when they were unable to engage in a passion, this research presented

participants with messages that argued that they were pursuing an activity that either hurt themselves (Studies 1 and 2) or others (Studies 3 and 4). When the selection of a passion is under attack, this research found that harmonious passion, and not obsessive passion, predicts defensive responses.

To integrate the distinction between the targets of threats (i.e., engagement-threat vs. selection-threat) with the dualistic model of passion, it is necessary to return to the descriptions of both passion types outlined in Chapter 2. A key distinguishing feature of obsessive and harmonious passions is control over the activity (Vallerand, 2010). Vallerand (2010) explains that obsessive passion, given its association with controlled activity internalization, “produces a phenomenological experience of a relative lack of control over the activity” (p. 102). He then describes that highly obsessive individuals have an uncontrollable desire to engage in a passion, and that the passion “must run its course as it controls the person” (p. 103). Highly obsessive individuals, therefore, *have to* engage in the activity – indeed, it is as if they do not have a say in the matter, just as Olivia did not have a say in whether or not she purchased the computer. Harmonious people, however, absolutely have a say in whether or not they engage in a passion. With harmonious passion, which emerges from autonomous internalization, the person is in control of the activity and can freely engage or disengage from the activity at any point (Vallerand, 2010). There are no internal or external contingencies pushing or pulling them to engage in a passion – harmonious people engage in activities with a sense of volition and personal endorsement (Vallerand, 2010). To use a phrase that emerges quite regularly in the passion literature when describing both passion types, with a harmonious passion, the individual is in control of the activity, but with obsessive passion, the activity is in control of the individual.

An original hypothesis of this research predicted that obsessive passion would predict defensiveness and bias when confronted with passion-threatening information. It is evident that this would be the case when the information threatens one's engagement with a passion, as passions occupy more dominant roles in the identities of obsessive individuals (see Chapter 2 for the complete justification for this hypothesis). However, considering the role of control perceptions with both passion types, it is also evident that opposite predictions could be made when the target of threat is one's choice to engage in a passion. With an obsessive passion, control over activity engagement is forfeited to forces outside the self, such as the excitement or self-esteem derived from the activity (Vallerand, 2010). But with harmonious passion, the choice of whether or not to pursue an activity emerges from one's true, authentic self. Any information that challenges this choice, such as an article that argues that one has chosen to engage in a particular passion that causes harm to others, should pose a direct threat to the harmonious person – they have freely chosen to engage in a harmful activity. The obsessive person, given a relative lack of control over activity engagement, should feel that these types of messages, although upsetting, do not require a response – the choice to engage in the activity is beyond the person's control, so what can he or she do?

An added element to the story of Hailey and Olivia is how both students react upon learning of the conflict mineral crisis. For Olivia, who felt she needed to purchase the computer, reading the conflict mineral story was likely uncomfortable and unpleasant. She did, after all, purchase a computer that was assembled using minerals that were harvested using unethical means. But for Hailey, having freely chosen to purchase the activity, her self-protective bias and defensiveness would likely have protected her from experiencing these negative feelings. This example illustrates a corollary to the revised hypothesis: when faced with threat to activity

selection, obsessive passion, not harmonious passion, will predict higher levels of negative affect and emotions. By being less defensive and more receptive of these messages, obsessive individuals should also experience discomfort when learning that they are engaging in an activity that is causing harm to themselves or others. This is what was found in the current research. In Study 1, although negative affect itself was not assessed, obsessive passion positively predicted rating the anti-Facebook articles as highly relevant and central to the self. In both Studies 3 and 4, obsessive passion positively predicted levels of negative affect after reading the article.

In sum, the revised hypothesis predicts that, when the selection of a passion is challenged, harmonious passion, not obsessive passion, will predict biased information processing (avoidance or biased evaluations of the information). Consequently, obsessive passion, not harmonious passion, will predict negative emotional experiences after receiving this form of passion-threatening information. This revised hypothesis emphasizes that different predictions can be made when the target of threat is activity selection compared to activity engagement. These revised hypotheses are summarised in Table 4.1.

Table 4.1

Revised hypotheses

1. When faced with threat to activity *engagement*, obsessive passion, but not harmonious passion, will be positively associated with biased information processing.
 2. When faced with threat to activity *selection*, harmonious passion, but not obsessive passion, will be positively associated with biased information processing.
-

Self-Affirmation

Affirming important life values was expected to attenuate biases in the way information was attended to (Study 1) and evaluated (Study 3). This hypothesis was supported in Study 1 only: the relationship between harmonious passion and biased information attention was

attenuated among those who had previously affirmed an important life value. This finding supports previous research that found that self-affirmation can help people be open to threatening health information (e.g., Howell & Shepperd, 2012; van Koningsbruggen & Das, 2009). However, self-affirmation has also been shown to enable people to *evaluate* threatening health information in more balanced and less biased ways (e.g., Sherman et al., 2000; Sherman & Cohen, 2006), a finding that was not supported in Study 3.

The discrepancy between the effects of the self-affirmation manipulations in Study 1 and Study 3 may have be due to differences in the nature of the presented threats in the two studies. In Study 1, Facebook users were presented with a list of articles titles and told that one of the articles would be assigned to them to read. Bias was assessed with their ratings of the anti-Facebook articles in comparison with their ratings of the pro-Facebook articles. Participants had very little information about each article, other than the title and a brief one-sentence summary, meaning that many details of the articles such as the authors, publication types, and arguments, were unknown. Participants, particularly those with high levels of harmonious passion, could have assumed that the arguments presented by the anti-Facebook articles were not as credible or persuasive as those presented by the pro-Facebook articles: the articles could have been published in less reputable sources (e.g., internet blogs, school newspapers), written by less reputable authors (e.g., bloggers, students), or contained weak arguments. Through self-affirmation, the modest threat that these articles posed to one's passion could have been made less threatening by bolstering one's self-integrity or coping resources (Schmeichel & Vohs, 2009; Schnabel et al., 2013). That is, those with high levels of harmonious passion could have been more open to reading passion-threatening information after engaging in a self-affirmation exercise because their ability to handle the arguments made in these articles was bolstered

(Schnabel et al., 2013). However, in Study 3, hockey fans were confronted with an explicit attack on their passion. While participants in Study 1 could have discounted the quality of the arguments being made in the passion-threatening messages, no assumptions could be made in Study 3: the article appeared to have been written by a professor, to have been published in the Ottawa Citizen newspaper, and to be supported by scientific evidence. Therefore, not only did the quality of threat differ between Studies 1 and 3, but perhaps also the quantity: participants in Study 3 may have faced a greater threat to their passion compared to participants in Study 1. For this reason, the self-affirmation exercise in Study 3 may have been insufficient to diminish the potency of the threat for highly harmonious hockey fans.

An additional purpose of Studies 1 and 3 was to test if enhancing self-transcendent values was more effective at attenuating biased responding compared to affirming self-enhancement values. This hypothesis was based on a recent suggestion by self-affirmation researchers (Burson et al., 2012; Crocker et al., 2008) who proposed that self-affirmation manipulations were effective because they reminded people of components of their lives that were more important than temporary feelings of threat, enabling them to transcend concerns about their self-image (Crocker et al., 2008). For this hypothesis to be supported, affirming values with self-transcendent qualities would have to be more effective than affirming values that merely enhanced the self and lacked any transcendent properties, such as those related to power, wealth, and social status. Results of Studies 1 and 3, however, did not find a difference between affirmations of self-transcendent and self-enhancement values, which fails to support this hypothesis. One potential reason for the similarity between both affirmation types is that, unlike previous research, the current research was conducted with passionate participants. It may be quite difficult, perhaps even impossible, for a person to transcend personal concerns

about self-image or self-worth when the focus of the research is on an activity that is a central part of his or her life. Recall that participants in Studies 1 and 3 knew that they were involved in research related to a passion in their lives (Facebook and the NHL, respectively), and, before engaging in the value affirmation exercise, were asked to answer items from the Passion Scale in regards to their attitudes towards their passion. Although the results of Study 1 demonstrated that affirmations of both self-transcendent and self-enhancement values were effective at attenuating the positive association between harmonious passion and biased information exposure, any added benefit of self-transcendent affirmations may not have been realized because it is difficult for one to transcend the self when the focus of the research is on an activity from which the self is inseparable.

Ego-Depletion

An additional hypothesis of this research, tested in Study 4, predicted that participants in an ego-depleted state would be more accepting and less skeptical towards the passion-threatening article compared to participants who were not ego-depleted. This hypothesis was made based on previous research that found ego-depleted participants to be more accepting of counter-attitudinal arguments (Wheeler et al., 2007) and also on the general tendency for people to accept messages at face value as a default response (Gilbert, 1991). No support was found for this hypothesis. Once again, harmonious passion was linked with high levels of skepticism towards the article, and this relationship was unaffected by a manipulation of ego-strength. There are three possibilities for why ego-depletion did not affect this relationship. First, it is possible that the ego-depletion exercise did not effectively manipulate ego-strength. This, however, seems unlikely, given that the manipulation used in Study 4, the crossing-out-letters exercise, has been

shown in previous research to be an effective ego-depleting procedure (e.g., Baumeister et al., 1998; Hagger et al., 2010). Second, it is possible that participants, particularly those with high levels of harmonious passion, do not rely on ego-strength to combat counter-attitudinal arguments. However, when one considers the evidence that has accumulated implicating ego-strength in decision making (Masicampo & Baumeister, 2008) and complex defensive processes, including the suppression of threatening information (Fischer, Greitemeyer, & Frey, 2007), this explanation also seems unlikely.

A final explanation, one that seems more plausible, is that highly harmonious people rely on ego-strength when faced with counter-attitudinal arguments, and engaging in an ego-depleting task simply makes confronting these arguments a little more challenging. Relying on self-regulation in one context can make subsequent acts of self-regulation less effective (Bauer & Baumeister, 2011); however, any decrease in self-regulatory strength can be counteracted by high levels of motivation (Baumeister & Vohs, 2007). As an example, one's ability to exert self-control at a dinner party (e.g., by waiting until everybody at the table is served before eating, focusing on the conversation rather than daydreaming) would likely be impaired after spending a long day as an air-traffic controller, a profession that involves a great deal of self-control. But if there was an important guest at the dinner party (e.g., a celebrity, employer, or a first date), motivation to exert self-control would be high and the likelihood of such self-regulatory failures would diminish. Motivation, therefore, can compensate for diminished ego strength (Baumeister & Vohs, 2007). Evidence for the compensatory effect of motivation was demonstrated by Muraven and Slessareva (2003), who found that self-control failures could be eliminated with proper incentives. In Study 4, highly harmonious participants could have experienced reduced self-control strength in the depletion condition, but could have “dug deep” into their self-

regulatory reservoir to combat the content of the article with a healthy amount of skepticism.

The harmoniously passionate hockey fans, therefore, might have been so motivated to refute the counter-attitudinal argument that the depletion exercise did not impact their evaluations.

Applied Implications

When William Morris died in 1896, British newspapers struggled to provide comprehensive accounts of his life (MacCarthy, 1994). Some newspapers focused on Morris the poet but ignored Morris the businessman, while others focused on Morris the writer but ignored Morris the environmentalist. For the present purposes, as introduced at the very start of this dissertation (Chapter 1), Morris was the passionate wallpaper designer who ignored his customers when they complained that the arsenic in their wallpaper was making them sick. Over a century after Morris had dismissed these complaining customers as being “bitten by the witch fever” (Kelvin, 1987, p. 463, W. Morris to T. Wardle, October 3, 1885), Morris’ story piqued the interest of Andy Meharg, a molecular biologist now at Queen’s University in Belfast. Meharg was astonished by Morris’ indifference towards his ailing customers, mainly because instances of arsenic poisoning were well-documented in Britain at the time when his wallpapers were being produced (Meharg, 2003).³⁴ To determine if arsenic was indeed present in Morris’ wallpapers, Meharg used energy-dispersive analysis on a sample of *Trellis* pattern wallpaper that he had acquired from the William Morris Gallery in London. Meharg’s suspicions, and the

³⁴ A search of the renowned medical journal *The Lancet* yields dozens of articles and commentaries that were written around this time concerning the deleterious health effects of arsenical wallpaper (or “paper-hangings” as they were often referred to at the time). What was remarkable about these writings was that they emerged decades before Morris began receiving, and dismissing, complaints about his wallpaper, that they all recommended removing arsenic-laden wallpaper from homes, and that green wallpaper was identified as the most toxic variety. These attitudes towards arsenical wallpaper are evident in the titles of these writings: “On arsenical paper-hangings, and the mode in which they produce noxious effects on health” (Taylor, 1859); “On poisoning by green wall-paper” (Orton, 1862); “Green, or arsenical, paper-hangings” (G. S. Morris, 1862).

suspicious of Morris' customers, were supported: Meharg's results indicated that the green colour in the wallpaper was created using copper arsenic salt (Meharg, 2003). Moreover, the toxicity of this compound was likely magnified in humid environments, making the typically damp British home a particularly dangerous place to hang a Morris wallpaper (Bryson, 2010). Morris' customers did not get sick because of poor hygiene, incompetent doctors, or witch fever. Morris' beautiful wallpaper, his passion, was at fault.

The results of this research have relevance for stories such as Morris'. To begin, I believe that many people, like Morris, find themselves in positions in which an important activity in their lives, a passion, is challenged. There are countless examples of these types of threatening messages, a few of which were outlined in Chapter 2 related to people with passions for using Facebook ("Why Facebook makes you feel bad about yourself"; Sifferlin, 2013), sedentary activities ("Why sitting might kill you: And exercising won't necessarily save you"; Lunau, 2012), and playing football ("Offensive play: How different are dogfighting and football?"; Gladwell, 2009). The way people respond to these types of messages can have implications for the self and for others. Morris' inaction to his customers' complaints, for example, likely caused many of them to experience health complications associated with arsenic poisoning. To demonstrate (a) the ubiquity of such passion-related threats, and (b) the impact that responses to these threats can have for the self and for others, I will focus on two examples that I find particularly informative.

The first example comes from a scene from the documentary *Head Games* (Sheridan & James, 2012), a film that discusses the issue of concussions in sport. The film focuses on Christopher Nowinski, a former Harvard University football player and professional wrestler who is now an advocate for concussion awareness. In the scene, Nowinski is at a high school

giving a presentation about concussion awareness to a group of parents and coaches. During the question-and-answer period of his presentation, Nowinski was asked the following question from an audience member (transcribed verbatim):

You sure scared a lot of people tonight, ok. You came here and you talked about all these people who their brains are decaying, and didn't show is there's a heck of a lot of people that play football that don't have problems, ok, that don't have this post-concussion syndrome. You didn't talk about the hundreds of thousands of million [sic] people...

Nowinski was quite appalled by the question and replied with an appropriate amount of sarcasm and disdain (he began his reply with the following: "No, that's right, I also didn't talk about all the people who smoke and don't get lung cancer"). He would soon storm off the stage in disgust. Two other aspects of this scene make it even more interesting: (a) the football coach at the high school had scheduled a mandatory weight lifting session during Nowinski's presentation, meaning that the members of the football team could not attend the presentation, and (b) the audience member who had questioned Nowinski was the head athletic trainer of the football team. This scene parallels the scenarios used in this research in the way information about concussions was avoided by the football coach (the focus of Studies 1 and 2), who also prevented the players on his team from being exposed to this information, and evaluated by the head athletic trainer (the focus of Studies 3 and 4), who was skeptical of the information that was being presented.

The second example once again relates to the story of William Morris. As it so happens, for many people, the study of Morris' life is a passion in and of itself. In fact, the *William Morris Society*, with divisions in the United States, United Kingdom, and Canada, is an

organization devoted to the study of Morris' life and work. This society also publishes *The Journal of William Morris Studies*, which is edited by Patrick O'Sullivan. My perspective on Morris' story took an interesting turn after reading an article that O'Sullivan wrote for the *William Morris Society Newsletter* (O'Sullivan, 2011), in which he reviewed and critiqued a presentation that had been given by Andy Meharg, the molecular biologist who we learned earlier had found that Morris' wallpaper was chock-full of arsenic (Meharg, 2003). Given O'Sullivan's passion for studying Morris' life – on his personal website he refers to himself as a “Morrisian” (<http://www.plymouth.ac.uk/staff/posullivan#>) – hearing Meharg's presentation could have been construed as a threat to this passion. That is, like the athletic trainer from *Head Games* and the participants from Studies 3 and 4 who learned that they were supporting a sport that was hurting others, O'Sullivan was learning that he had been adoring and devoting his life to an immoral, neglectful businessman who had caused thousands of customers to suffer arsenic poisoning. To demonstrate how O'Sullivan evaluated Meharg's presentation, I have chosen to include a quote from the end of his review, which, it needs to be noted, was entitled “William Morris and arsenic – guilty, or not proven?” (O'Sullivan, 2011, pp. 15-16):

In other words, not only did Morris & Co give up producing arsenical wallpapers some nine years before the ‘scientific basis’ of the ‘toxic gas’ theory was established, it also now turns out that the science on which the theory was based is at least questionable. Therefore, although such phrases as ‘bitten by witch fever’ may, with the benefit of hindsight, seem rather unfortunate, it may well be that William Morris, described by Professor Meharg as ‘silent as a stone on his own role’, ‘showing (no) remorse’, and ‘failing to confess’, may in fact be ‘guilty’ of no such ‘crime’. Or at the very least his

case may be, like that of Madeleine Smith³⁵ (but surely beyond much more reasonable doubt), ‘not proven’. Both letters to Wardle subsequently state that Morris is going to look into the matter, but as to whether he did or not, I do not know.

It seems that ‘arsenophobia’ ran wild in nineteenth-century England, and that the long association of arsenic and its compounds with poisoning favoured the toxic, arsenical gas scenario. Existence of an unseen, silent and unknown poison gas related to arsenic which pervaded every dwelling, from the lowest to the highest, may have been used as a convenient excuse for the incidence of mysterious, poorly understood illnesses many of which were, of course, related to appalling living conditions. There is also some evidence (again also cited by Professor Meharg) that both the first editor of *The Lancet*, Thomas Wakley, and one of his journalists, believed themselves and their family to have been poisoned by arsenical wallpaper, so that although they may have been perfectly justified in publicising their grievances, they should not perhaps be seen as dispassionate, ‘scientific’ sources.

I find this quote eerily similar to how Morris himself originally responded to the accusation that his wallpaper was causing other people to become sick (I recommend comparing the above quote to Morris’ in his letter to Thomas Wardle, quoted in Chapter 1). Whereas Meharg (2003) had appeared to present the final damning piece of evidence against Morris, O’Sullivan was asserting that the jury was still out. Upon learning that his hero, the man who he

³⁵ Madeleine Smith was a seamstress who worked for William Morris (and was married to George Wardle, Morris’ business manager), who had stood trial for murdering her French lover, Emile L’Angelier. The official verdict was “not proven”, meaning that the jury believed that the defendant was guilty but that the prosecution had not made a strong enough argument to reach a guilty verdict. If Morris’ story required any more subplots or irony, Madeleine Smith’s lover had died from arsenic poisoning (MacGowan, n.d.).

had been passionately studying throughout his life, had been supplying poisonous wallpaper to unsuspecting homeowners throughout Britain, O'Sullivan questioned whether Morris could have known the side-effects of the arsenic in his wallpaper ("it also now turns out that the science on which the theory was based is at least questionable"), blamed Morris' customers' deteriorating health on living conditions of the time ("illnesses many of which were, of course, related to appalling living conditions"), and questioned the trustworthiness of the accusations ("...they should not perhaps be seen as dispassionate, 'scientific' sources"). I also find it a little disturbing that O'Sullivan downplayed concerns of arsenic poisoning as being due to an irrational "arsenophobia", and more than a little ironic that O'Sullivan criticised members of *The Lancet* editorial team of being unreliable and unscientific sources of information because they were too passionate and emotionally invested in the problem.

These two examples illustrate that the passions people pursue are often challenged, and that people's responses to these messages can have profound implications. Obviously, William Morris' biased treatment of the customer complaints had implications for their health. If Morris had been more accepting of their concerns, he could have taken steps to rectify the problem, perhaps by ending the production of wallpapers with arsenic-based dyes and developing new dyeing techniques that did not rely on toxic compounds. Instead, many Britons lived in beautiful houses that smelled of garlic and caused chronic arsenic poisoning (Bryson, 2010). In the *Head Games* documentary (Sheridan & James, 2012), the athletic trainer downplayed the seriousness of concussions in sport, a response that has obvious implications for the members of the football team. The football coach responded to this potential threat by avoiding the presentation altogether, which prevented himself and the members of his team from being exposed to information about the dangers of playing football. In O'Sullivan's (2011) newsletter, he argued

that Morris was not responsible for his customers' ailing health, a stance that has implications for scholars trying to understand why Britons who had green wallpaper in their homes in the late 19th century were so sick.³⁶

Passion is likely an important construct in the context of making important decisions based on challenging, provocative information, as passionate people are often the ones responsible for making these tough choices. People are often advised to “follow their passion” and to pursue activities that fill one’s life with joy, purpose, and meaning. We read books with titles such as “The element: How finding your passion changes everything” (Robinson, 2009), and “What’s next? Follow your passion and find your dream job” (Hannon, 2010). We learn that following our passion is a secret of success (Gallo, 2010; St. John, 2005) that can help us master our behaviour, emotions, relationships, and careers (Robbins, 2002). By following our passion, we are told that we can reach our potential in life and achieve our life goals. Those who follow their passions become the CEOs, the Department Heads, the Members of Parliament, the journal editors, the league commissioners. Those who are at the top of their field are those who are driven by passion. These successful individuals, however, are also responsible for making important decisions. We rely on these passionate individuals to decide whether the prevalence of concussions in hockey or football is a serious problem (Schwarz, 2010) and whether products such as asbestos, lead paint, or wallpaper, are the cause of serious health complications. These types of threatening information, I believe, fall on the desks of passionate individuals, who are then required to decide (a) whether to attend to or ignore such information, and (b) if attended to,

³⁶ Based on O’Sullivan’s article, the *William Morris Society* website makes the following statement on the issue of Morris and arsenical wallpaper: “However, more recent scientific studies, and more detailed historical research, both show that William Morris did not poison his customers with arsenical wallpapers, and is therefore guilty of no such ‘crime’” (Did William Morris wallpapers really poison his customers with arsenic?, n.d.).

whether the information should be given full consideration or discounted. The literature on motivated reasoning (e.g., Ditto & Lopez, 1992; Ditto et al., 2003; Dunning, 1999; Frey, 1986; Kunda, 1990) has discussed at length about how people's motivation can shape how they view and process the world, including information that poses a threat to the self. A key contribution of this research is to show that how people respond to challenging messages depends on the *type* of motivation they have for an activity: Those who are driven by harmonious passion rather than obsessive passion showed the most bias and defensiveness, by avoiding information or evaluating it with high levels of skepticism and low levels of favourability, when that information challenged the legitimacy of the choice to pursue that activity.

A final implication of this research is how it can be used to help (harmoniously) passionate people be more accepting and open to information that challenges their passion in life. In the scene from *Head Games*, for example, how can we help the football coach and the athletic trainer be more accepting of the fact that concussions are a problem in amateur football? Two routes are suggested by this research. The first route can focus on the independent variables studied in this research, harmonious and obsessive passions, and take steps to thwart harmonious passions from developing in important decision makers. This could be accomplished by efforts that hinder autonomous activity internalization, perhaps by creating high-pressure or controlling environments (Bonneville-Roussy, Vallerand, & Bouffard, 2013; Koestner, 2008; Mageau et al., 2009; Schellenberg & Bailis, in press-a). This route may be unwise, however, as harmonious passion is typically linked with other more adaptive outcomes, such as positive emotions and well-being (Vallerand, 2010). A second, more promising route could be to focus on a moderator variable targeted in this research, self-affirmation. Although unrelated to biased information evaluation (Study 3), this research found that affirming an important value attenuated the

positive association between harmonious passion and biased information exposure (Study 1). If the football coach from the *Head Games* documentary would have affirmed an important value *before* learning of the upcoming concussion awareness presentation, the likelihood of him agreeing to attend the presentation (and agreeing to let his players attend the session) might have increased. However, such an exercise is unlikely to affect evaluations of the presentation itself – if the coach had high levels of harmonious passion for coaching, it is likely that he would have been skeptical and unaccepting of the information presented to him.

Future Directions

The key finding of this research – that harmonious passion predicts biased responding to passion-threatening messages – was quite unanticipated and demands additional research. In light of the various directions this research could take, I will focus my discussion on three opportunities that I believe would be the most informative for theoretical and applied purposes.

An alternative explanation of the results of this research is that people with high levels of harmonious passion for a specific activity have generally distinct cognitive and decision-making styles from those with high levels of obsessive passion (e.g., Dewberry, Juanchich, & Narendran, 2013; Sternberg & Grigorenki, 1997). This reasoning accounts for the current results not because harmonious people are defensive when their decision to engage in a passion is threatened, as I have proposed in the revised hypothesis, but because harmonious people generally process information in more skeptical and discerning ways. However, the results of Study 2 found that those randomly assigned to engage in a task designed to activate a harmoniously passionate mindset responded with more bias compared to those who engaged in a task designed to induce an obsessively passionate mindset. Therefore, the results of Study 2

support a causal relationship between harmonious passion and selective exposure bias. The current research, however, cannot rule out this alternative interpretation when it comes to how passion-threatening information is evaluated, as assessed in Studies 3 and 4. The alternate interpretation was expected to be tested in Studies 3 and 4 by comparing responses to the high-threat and low-threat versions of the concussion article; however, given that this manipulation of threat level was unsuccessful, it was not possible to rule out this explanation. To rule out this alternative explanation, and to find support for a causal link between passion types and biased information evaluation, two research designs could be adopted. First, as was attempted in Studies 3 and 4, research could replicate the results of the current research with the inclusion of control groups. For example, the design of Study 3 could be replicated but with half the participants, rather than being asked to read and evaluate an article about concussions in hockey, being asked to read and evaluate a similar article about a sport that they are not passionate towards, such as rugby or football. If the hockey fans with strong levels of harmonious passion were threatened by the passion-threatening messages, they would treat the hockey article with bias but not messages related to a similar but personally unimportant sport such as rugby or football. Another research design, as adopted in Study 2, could treat passion types as a manipulated variable. Passion types have been manipulated in previous research either by priming a particular type of passion mindset (Bélanger et al., 2013b) or by priming either one's harmonious or obsessive activity among those with multiple passions (Schellenberg & Bailis, 2014). Either way, by randomly assigning participants to harmonious passion, obsessive passion, or control conditions, a causal relationship between passion types and biases in the way passion-threatening information is evaluation could be assessed.

A second research opportunity could be to test the revised hypothesis, which predicts that harmonious passion is linked with higher levels of biased information processing when faced with threat to activity selection, but that obsessive passion is linked with higher biased processing when faced with threat to activity engagement. The ideal design to test this hypothesis would include two manipulations, one manipulating passion type (harmonious passion vs. obsessive passion), and the other manipulating the threat target (selection vs. engagement). Manipulating passion types could be accomplished using the two techniques discussed earlier, but ways to manipulate the target of the threat presents more of a challenge. One approach could be to present participants with hypothetical scenarios and ask how they think they would react to threats to activity engagement or activity selection. For example, hockey fans could be asked to imagine that they receive an email from a friend with a link to a newspaper article that says (a) the players will be going on strike and the season will soon be cancelled (engagement threat), or (b) concussions in hockey are indirectly caused by fan support (selection threat). Another approach could be to adopt an ostensible interaction paradigm (e.g., Schellenberg & Bailis, 2014) in which participants expect that they will be meeting somebody who shares the same passion. Before this meeting, however, participants could learn information about that person that threatens either activity engagement or selection. For example, Facebook users could expect to meet a person who believes that the Facebook website will soon succumb to a terrifying internet virus that will shut down the website for many months (engagement threat) or who believes that Facebook causes people to experience intellectual and cognitive decline (selection threat). A challenge with these types of designs is ensuring that the level of threat is similar for both threat targets, and that the experimental design manipulates threat target in an effective and believable way.

A third research direction could explore the relationship between passion types and biased information processing in different populations. Populations that would be most informative, and that would offer an opportunity to assess the impact of passion-threatening messages on decision making, could be coaches, sport administrators, employees at for-profit or non-profit organizations and charities, activist groups, and university administrators, just to name a few. As an example of one potential study, real estate agents could be invited to participate in a study in which they are first asked to report levels of harmonious and obsessive passion for selling real estate. Then, in a seemingly unrelated study, all agents are emailed a link to an article that argues that, with the advents of the internet and online real estate databases, real estate agents are redundant and unnecessary nowadays when purchasing property. Whether or not participants click the link to the article (i.e., expose themselves to this passion-threatening message) could be measured to see if this response is related to levels of harmonious and obsessive passion for real estate. As another study example, hockey administrators and coaches throughout Canada could be presented with information about the prevalence and effects of concussions in hockey, and then asked to select from a list of potential solutions to this problem. Some solutions could represent more symbolic and minimal changes to hockey (e.g., more concussion awareness programs, safer equipment) and other solutions could appear to be more effective but also more drastic (e.g., mandatory time-off for concussed players, eliminating fighting and hitting, adding soft padding to the boards in all hockey rinks). Using this type of design, the extent to which coaches and administrators take the issue of concussion in hockey seriously, as represented by the actions that they endorse, could be assessed in relation to levels of harmonious and obsessive passion for hockey.

Conclusion

Most people can identify having at least one passion in their lives. At times, however, these passions can be attacked by messages that question whether or not people should be pursuing them. As predicted, the results of this research revealed that people's reactions to these types of messages depends on passion type. However, unexpectedly, it was harmonious passion, not obsessive passion, that predicted biased information processing, in terms of both avoidance (Studies 1 and 2) and negative evaluations (Studies 3 and 4) of passion-threatening messages. This research also found that affirming an important life value attenuated the positive association between harmonious passion and selective exposure bias. The positive association between harmonious passion and biased information evaluation was unaffected by prior self-affirmations or activities designed to deplete self-control resources. Although previous research has identified obsessive passion, and not harmonious passion, as being associated with defensive responses (Vallerand, 2010), the current research demonstrates that in some situations an opposite pattern emerges. This raises the possibility that harmonious passion is associated with defensive behaviour when the target of threat is one's decision to engage in a passion, rather than the pursuit of a passion-related goal. Research is needed to test this proposed distinction between threats to activity selection and activity engagement, and to study how passion types affect decision making in response to these types of passion-threatening messages.

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Appendices

Appendix A: Study 1 - Pretest Online Consent Page and Survey

Page 1:

Information and Consent Page

- Study Name:** Article Attitudes Survey
- Principal Investigator:** Benjamin Schellenberg, PhD Candidate,
Department of Psychology, University of Manitoba
[REDACTED]
- Co-Investigator:** Daniel Bailis, Professor,
Department of Psychology, University of Manitoba
[REDACTED]
- Sponsor:** Social Sciences and Humanities Research Council of Canada

This consent form, a copy of which you may save or print for your records and reference at this time (it will not be available later), is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to contact us. Please take the time to read this carefully and to understand any accompanying information.

Information

The purpose of this research is **to learn about your attitudes towards various article titles**. Specifically, we want to learn about your attitudes and opinions about article titles discussing Facebook. This is a pilot study that is part of the dissertation research of Benjamin Schellenberg, a Ph.D. candidate in the Department of Psychology.

We estimate it will take no longer than **30 minutes** to complete this study. The survey will ask you to read a number of articles titles and to provide your assessments of the credibility, desirability, interest, and position of the articles. Importantly, you will **NOT** have to read any articles, but rather you will be asked to provide ratings based on the article titles only. You may skip any questions that you do not wish to answer.

You need to know the risks and benefits of participation in this research. Your participation does not involve any more risk than you would experience in your everyday life. In exchange, you will receive 1 research-participation credit in your PSYC 1200 Introduction to Psychology course.

One research-participation credit will be given if you agree to participate in the study (by clicking the “I AGREE” button at the bottom of the page). Your participation in this study is completely voluntary, and should you choose to withdraw from the study at any point or feel that you would rather leave some question(s) unanswered, you may do so without any penalty. This means that should you choose to withdraw at any point during the study, if you feel that you would rather leave some question(s) unanswered, or do not want to participate, you will still receive one research participation credit.

In order to give you one research credit, we have assigned an ID number to your survey. After we have assigned you one research credit, this ID number will be deleted and your responses will be anonymous. This *anonymous* data file will only be accessed by honours/graduate students that are supervised by Dr. Bailis who are involved or become involved with this project. All data stored on the password-protected Qualtrics server will only be accessed by the principal investigator (Benjamin Schellenberg) and the research supervisor, Dr. Bailis. Once data on the Qualtrics server has been downloaded onto password-protected computers affiliated with Dr. Bailis’ lab, the data on the Qualtrics server will be permanently deleted. Once all the data are collected and analyzed for this project, we plan to share this information with the research community through seminars, conferences, presentations, and journal articles. When presenting the results of this research, we will in no way focus on individual participants’ responses and will instead present the findings in summary form.

Although the Qualtrics online survey tool transmits your responses in an encrypted form (similar to online banking), and stores it on a highly secure password-protected off-campus server, there is always the risk (anytime the Internet is used for anything), however small, that someone could either legally access the data (e.g., law enforcement agencies) or illegally access the data (e.g., “hackers”). However, you can be assured that every feasible precaution is taken to protect the data.

The results of this study should be available by December, 2013. If you would like a report of the results, please indicate below how you would like to receive the results (mail or email), and we will send you a brief summary of the results. Please note that the information you provide below will not be linked with your results, and will be used only to send you a summary of the results. You may leave this portion blank if you do not want to receive a summary of results.

We strongly encourage you to save or print a copy of this consent form now for your records, as it will not be available later.

If you do not wish to participate in this study now, please close your web browser. You may return to participate at a later date and time. Thank you for considering participating.

To continue to the survey, click “I AGREE”

Again, we suggest that you be in a quiet place, when you have up to 30 minutes free, and where you can complete this survey on your own and without interruption. We would appreciate it if you could turn off all instant messaging programs, as well as any other programs, currently running on your computer before continuing. Thank you for your consideration.

I AGREE (press the next page button [NEXT>>] to continue to the survey)

Note: If you do not want to participate, or at any time wish to withdraw from the study, please close your web browser. If you choose to do this, any information that you have provided will be deleted immediately.

Page 2

The following survey asks a number of questions regarding your opinions and attitudes towards various article titles. All the article titles discuss an issue related to the social media website Facebook. You will be asked to provide your ratings based on the article title only, and you will **NOT** be required to read any article.

In total, you will be asked to provide your attitudes on 16 article titles. Each article title has a brief, one-sentence summary that gives you a little bit more information about the article.

To continue to the survey, please proceed to the next page.

Page 3

Article #1:

“Why going on Facebook is a really good thing”

This article presents scientific evidence that finds that going on Facebook can enhance your health and happiness.

Part A

While thinking of the above article title (and summary), please rate the article for each quality listed below. Importantly, please rate each title in relation to how you think the average person will find the article, regardless of your own position on the issue.

Rate each quality on a scale from 1 (not at all) to 9 (extremely).

	Not at all			Moderately				Extremely	
	1	2	3	4	5	6	7	8	9
1. How interesting do you think the average person would find this article?	<input type="radio"/>								
2. How credible do you think the average person would find this article?	<input type="radio"/>								
3. To what extent do you think the average person would want to read this article?	<input type="radio"/>								

Part B

Next, while still thinking of the above article title (and summary), please indicate the stance you believe this article takes on Facebook.

Please rate this article on a scale from -4 (opposed to going on Facebook) to +4 (in favour of going on Facebook).

	Opposed to going on Facebook			Neutral towards Facebook				In favour of going on Facebook	
	-4	-3	-2	-1	0	+1	+2	+3	+4
1. What is the stance of the article?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[Pages 4 through 18 were identical to page 3, but displayed different Facebook-related article titles. The titles presented on pages 4 through 18 were as follows:]

Page 4

“Facebook usage over the past 5 years”

This article presents data from a recent survey of Canadians about their Facebook usage over the past 5 years.

Page 5

“Facebook makes people less happy”

This article presents scientific evidence that finds that going on Facebook reduces levels of happiness and overall life satisfaction.

Page 6

“The expanding social network: Facebook and worldwide domination”

This article explains how Facebook expanded from a student-oriented website to a worldwide phenomenon.

Page 7

“The inspiring effect of Facebook”

This article discusses why going on Facebook has an inspirational effect that can contribute to creativity.

Page 8

“The role of advertisements on Facebook”

This article outlines why advertisements are needed on Facebook and how advertisements make their way onto Facebook.

Page 9

“Facebook: The great time waster”

This article discusses why going on Facebook can negatively impact productivity and work performance.

Page 10

“The new media: Where does Facebook stand?”

This article discusses the role of Facebook in relation to other more traditional media sources, such as television.

Page 11

“The secret benefits of going on Facebook”

This article explains how going on Facebook can improve intellectual performance.

Page 12

“The future of Facebook”

This article explains what Facebook might look like in the near future, including what types of features will be available.

Page 13

“Why healthy people don’t go on Facebook”

This article outlines how going on Facebook can cause various diseases, which can cause increased rates of mortality among Facebook users.

Page 14

“The Facebook effect: How Facebook influences our economy

This article outlines how our economy is influenced by Facebook activity.

Page 15

“Social media and human achievement: Why Facebook helps you succeed in life.”

This article outlines how going on Facebook is a motivational tool that helps people achieve their goals in life.

Page 16

“How does Facebook make money?”

This article explains how a website can be worth billions of dollars, even when it’s free to use.

Page 17

“This is your brain on Facebook...and it doesn’t look good”

This article explains how going on Facebook reduces brain functioning and mental performance.

Page 18

“Facebook: You use it every day, but how does it work?”

This article explains how Facebook works, including how it knows the people that you know.

Page 19

1. What is your age? _____
2. What is your sex?
 Male
 Female
3. What is your ethnic background? _____

Page 20

Thank You and Debriefing Page

The aim of this study was to learn about your attitudes towards certain article titles about Facebook. Your responses will be used to select article titles to use in future studies examining how Facebook usage influences attitudes towards Facebook messages. We will examine these questions by performing correlations and analysis of variance (ANOVA) to select titles that are perceived to be similar in credibility and desirability.

Please contact us below if you have any questions about this study.

Principal Investigator: Benjamin Schellenberg, PhD Candidate
Department of Psychology, University of Manitoba
[REDACTED]

Co-Investigator: Daniel Bailis, Professor
Department of Psychology, University of Manitoba
[REDACTED]

This concludes the study – your responses have been recorded and you may now close your web browser.

Thanks again!

Appendix B: Study 1 – Consent Form

Information and Consent Page

Study Name: Facebook Issues Study

Principal Investigator: Benjamin Schellenberg, PhD Candidate
Department of Psychology, University of Manitoba
[REDACTED]

Co-Investigator: Daniel Bailis, Professor
Department of Psychology, University of Manitoba
[REDACTED]

Sponsor: Social Sciences and Humanities Research Council of Canada

This consent form, a copy of which you may keep for your records and reference at this time, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask us. Please take the time to read this carefully and to understand any accompanying information.

Information

The purpose of this study is to examine attitudes towards issues related to Facebook. Facebook and other forms of social media is changing the way people interact with each other, and in this study we will be collecting people’s reactions to this form of social change. For this study, you will be asked to complete an online questionnaire that will take place entirely on a computer. The questionnaire will ask you to report to what extent you agree or disagree with various statements about Facebook, and also to report how you are feeling at the moment. The questionnaire will also ask you to write a brief essay about a specific topic. Finally, you will be asked to read a brief article about Facebook and to report your expectations of and opinions towards the article. Some information such as your age and ethnicity will be obtained from information that you provided on the Mass Testing survey and linked with the responses that you give in this study.

Those who participated in the Psychology Mass Testing survey and who provided contact information for future studies are being recruited to participate in this study, and will receive 2

research-participation credits in PSYC 1200 Introduction to Psychology for doing so. This study should take about **40 minutes** in total to complete. All data obtained from this survey will be confidentially and will be stored in password-protected computers that are located in secure, locked laboratories (room P520E in the Duff Roblin Building). This research study is being led by Ben Schellenberg, a PhD candidate in the Department of Psychology under the supervision of Dr. Dan Bailis.

You need to know the risks and benefits of participation in this research. You should know some of the articles are controversial and may make some participants feel uncomfortable. The other tasks involved in this project involve no greater risks or benefits than you would encounter in everyday life. In exchange, you will receive 2 research-participation credits in your PSYC 1200 Introduction to Psychology course.

Your participation in this study is completely voluntary. Should you choose to withdraw from the study at any point or feel that you would rather leave some question(s) unanswered, you may do so without any penalty. This means that should you choose to withdraw at any point during the study, if you feel that you would rather leave some question(s) unanswered, or do not want to participate at all, you will still receive two research participation credits.

After you have completed this study, we will link the responses that you provide on the questionnaire today to those that you provided on the Mass Testing survey with your mass testing ID number. Your age and ethnicity will be obtained from the Mass Testing survey in order to learn more about the characteristics of those who participate in this study. After all responses have been matched, we will delete all identifying information from our records (i.e., your name, phone number, and email address) rendering all data collected as part of this study **anonymous**. We expect that all identifying information will be deleted in March, 2014. All data stored on the password-protected Qualtrics server will only be accessed by the principal investigator (Benjamin Schellenberg) and the research supervisor, Dr. Bailis. Once data on the Qualtrics server has been downloaded onto password-protected computers affiliated with Dr. Bailis' lab, the data on the Qualtrics server will be permanently deleted.

Although the Qualtrics on-line survey tool transmits your responses in an encrypted form (similar to on-line banking), and stores it on a highly secure password-protected off-campus server, there is always the risk (anytime the Internet is used for anything), however small, that someone could either legally access the data (e.g., law enforcement agencies) or illegally access the data (e.g., "hackers"). However, you can be assured that every feasible precaution is taken to protect the data.

Any information you provide will be stored on password-protected computers affiliated with Dr. Bailis' lab (room P520E in the Duff Roblin Building). The anonymous data files will only be accessed by honours/graduate students that are supervised by Dr. Bailis who are involved or become involved with this project. We will keep the data file indefinitely, but this file will be anonymous and will contain no identifying information (name, phone number, email address). Before we remove your identifying information, the data will only be accessed by the principal investigator (Benjamin Schellenberg) and Dr. Bailis. Once all the data are collected and analyzed for this project, we plan to share this information with the research community through seminars, conferences, presentations, and journal articles. When presenting the results of this research, we will in no way focus on individual participants' responses and will instead present the findings in summary form.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate. In no way does this waive your legal rights nor release the researcher from her legal and professional responsibilities. You are free to withdraw from the study at any time, and/or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

The University of Manitoba Research Ethics Board(s) and a representative(s) of the University of Manitoba Research Quality Management / Assurance office may also require access to your research records for safety and quality assurance purposes.

This research has been approved by the University of Manitoba Psychology/Social Research Ethics Board. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Secretariat at 204-474-7122. A copy of this consent form has been given to you to keep for your records and reference. You should also know that the Student Counselling and Career Centre has counsellors that are available to provide supportive and problem-solving assistance for emotional difficulties, interpersonal problems, or stressful life situations. They are located at 474 University Centre here at the Fort Garry Campus, and can be reached by phone at 204-474-8592.

If you agree to each of the following, please place a check mark in the corresponding box. If you do not agree, leave the box blank:

- I have read or had read to me the details of this consent form.
- My questions have been addressed.
- I, _____ (print name), agree to participate in this study.

Participant's Signature: _____ Date: _____

Researcher's Signature: _____ Date: _____

Facebook Issues Study

*The results of this study should be available by **August, 2014**. If you would like a report of the results, please indicate below how you would like to receive the results (email or surface mail), and we will send you a brief summary of the results. Please note that the information you provide below will not be linked with your results, and will be used only to send you a summary of the results. You may leave this portion blank if you do not want to receive a summary of results.*

Do you wish to receive a summary of the findings? Yes No

How do you wish to receive the summary? E-mail (preferred) Surface mail

Address: _____

Appendix C: Study 1 – Online Survey

Page 1

WELCOME TO THE FACEBOOK ISSUES STUDY

PLEASE WAIT FOR INSTRUCTIONS BEFORE CONTINUING TO THE SURVEY

Page 2

WELCOME TO THE FACEBOOK ISSUES STUDY

Please enter your assigned participant ID# (from the piece of paper that was provided to you) in the space below:

Page 3

Facebook Survey

The questions below ask you about your experiences going on Facebook.

1. On average, approximately how many hours per week do you spend on Facebook? __

While thinking of your usage of Facebook and using the scale below, please indicate your level of agreement with each item.

	not agree at all	very slightly agree	slightly agree	moderately agree	mostly agree	strongly agree	very strongly agree
	1	2	3	4	5	6	7
1. Facebook is in harmony with the other activities in my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I have difficulties controlling my urge to go on Facebook.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. The new things that I discover going on Facebook allow me to appreciate it even more.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I have almost an obsessive feeling for going on Facebook.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Going on Facebook reflects the qualities I like about myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Going on Facebook allows me to live a variety of experiences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Going on Facebook is the only thing that really turns me on.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Going on Facebook is well integrated in my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. If I could, I would only go on Facebook.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Going on Facebook is in harmony with other things that are part of me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Going on Facebook is so exciting that I sometimes lose control over it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I have the impression that going on Facebook controls me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I spend a lot of time going on Facebook.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. I like going on Facebook.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Going on Facebook is important for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Going on Facebook is a passion for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

We find that most participants benefit from participating in a warm-up exercise before making evaluations and reporting attitudes.

[INSTRUCTIONS FOR PARTICIPANTS IN THE SELF-TRANSCENDENT CONDITION]:

For a warm-up exercise, please rate the following list of personal values from 1 (most important in your life) to 9 (least important in your life). Ratings can be made by “dragging and dropping” different values into different positions on the list. Place your most important value at the top of the list, and your least important value at the bottom of the list.

Note. The rankings will be displayed in green boxes next to all the items once you begin to “drag and drop” the items.

- Empathy/compassion
- Being responsive and supportive to the needs of others as well as one’s own needs
- Creating or contributing to something larger than oneself
- Trust/openness
- Personal growth
- Being in mutually supportive and caring relationships.

Check the box below when you are satisfied with the ordering of the personal values.

Yes, I am satisfied with the ordering of the personal values.

[INSTRUCTIONS FOR PARTICIPANTS IN THE SELF-ENHANCEMENT CONDITION]:

For a warm-up exercise, please rate the following list of personal values from 1 (most important in your life) to 9 (least important in your life). Ratings can be made by “dragging and dropping” different values into different positions on the list. Place your most important value at the top of the list, and your least important value at the bottom of the list.

Note. The rankings will be displayed in green boxes next to all the items once you begin to “drag and drop” the items.

- Power/status
- Wealth/possessions
- Appearing confident/independent
- Physical attractiveness
- Popularity/admiration/prestige
- Appearing intelligent/competent

Check the box below when you are satisfied with the ordering of the personal values.

Yes, I am satisfied with the ordering of the personal values.

[INSTRUCTIONS FOR PARTICIPANTS IN THE CONTROL CONDITION]:

For a warm-up exercise, please write a brief essay (for approximately 8 minutes) about your daily routine. The essay can be written directly in the textbox below:

WHEN YOU ARE FINISHED WRITING THE ESSAY, CLICK "NEXT" TO CONTINUE WITH THE SURVEY.

Page 4B

[PAGE VIEWED BY PARTICIPANTS IN THE SELF-TRANSCENDENT AND SELF-ENHANCEMENT CONDITIONS ONLY]

You ranked the following value as most important in your life:

Next, please write a brief essay (for approximately 8 minutes) on the personal value that you ranked as MOST important in your life. Please write about why this value is important and meaningful to you. The essay can be written directly in the textbox below:

WHEN YOU ARE FINISHED WRITING THE ESSAY, CLICK "NEXT" TO CONTINUE WITH THE SURVEY.

Page 5

This scale consists of a number of words that describe different feelings and emotions. Read each item and then indicate to what extent you feel this way right now, that is, at the present moment. Use the following scale (1-5) to record your answers.

	not at all		moderately		extremely
	1	2	3	4	5
1. Loving	<input type="radio"/>				
2. Compassionate	<input type="radio"/>				
3. Connected	<input type="radio"/>				
4. Proud	<input type="radio"/>				
5. Strong	<input type="radio"/>				
6. Admirable	<input type="radio"/>				
7. Powerful	<input type="radio"/>				
8. In control	<input type="radio"/>				
9. Humble	<input type="radio"/>				
10. Empathic	<input type="radio"/>				
11. Vulnerable	<input type="radio"/>				
12. Superior	<input type="radio"/>				
13. Fallible	<input type="radio"/>				
14. Victimized	<input type="radio"/>				
15. Weak	<input type="radio"/>				
16. Out of control	<input type="radio"/>				
17. Inferior	<input type="radio"/>				
18. Ashamed	<input type="radio"/>				
19. Powerless	<input type="radio"/>				

Page 6

The computer will randomly assign a Facebook-related article to you to read. Before you read the article, we would like to know your expectations and opinions about the articles that you might read.

Below you will find the full list of articles, one of which will be assigned to you to read. We would like to know how much you are hoping to read each article. To do this, please “drag and drop” the article titles in an order from 1 (most desirable, at the top) to 8 (least desirable, at the bottom). After you are satisfied with your order, please click the box at the bottom of the page.

Note. The rankings will be displayed in green boxes next to all the items once you begin to “drag and drop” the items.

“Why going on Facebook is a really good thing”

- *This article presents scientific evidence that finds that going on Facebook can enhance your health and happiness.*

“Facebook usage over the past 5 years”

- *This article presents data from a recent survey of Canadians about their Facebook usage over the past 5 years.*

“Facebook makes people less happy”

- *This article presents scientific evidence that finds that going on Facebook reduces levels of happiness and overall life satisfaction.*

“The role of advertisements on Facebook”

- *This article outlines why advertisements are needed on Facebook and how advertisements make their way onto Facebook.*

“The inspiring effect of Facebook”

- *This article discusses why going on Facebook has an inspirational effect that can contribute to creativity..*

“The new media: Where does Facebook stand?”

- *This article discusses the role of Facebook in relation to other more traditional media sources, such as television.*

“This is your brain on Facebook... and it doesn't look good”

- *This article explains how going on Facebook reduces brain functioning and mental performance.*

“The Facebook effect: How Facebook influences our economy”

- *This article outlines how our economy is influence by Facebook.*

Check the box below when you are satisfied with the ordering of the personal values.

Yes, I am satisfied with the ordering of the article titles.

Page 7

In this portion of the survey, we would like to know how much you are hoping to read each article. Please rate on a scale from -4 (*I do NOT want to read this article*) to +4 (*I WANT to read this article*) how much you would like to read each article.

	I do NOT want to read this article			No Preference				I WANT to read this article	
	-4	-3	-2	-1	0	+1	+2	+3	+4
1. “Why going on Facebook is a really good thing” <i>This article presents scientific evidence that finds that going on Facebook can enhance your health and happiness.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. “Facebook usage over the past 5 years” <i>This article presents data from a recent survey of Canadians about their Facebook usage over the past 5 years.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. “Facebook makes people less happy” <i>This article presents scientific evidence that finds that going on Facebook reduces levels of happiness and overall life satisfaction.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. “The role of advertisements on Facebook” <i>This article outlines why advertisements are needed on Facebook and how advertisements make their way onto Facebook.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. “The inspiring effect of Facebook” <i>This article discusses why going on Facebook has an inspirational effect that can contribute to creativity..</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. “The new media: Where does Facebook stand?” <i>This article discusses the role of Facebook in relation to other more traditional media sources, such as television.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. “This is your brain on Facebook... and it doesn't look good” <i>This article explains how going on Facebook reduces brain functioning and mental performance.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. “The Facebook effect: How Facebook influences our economy” <i>This article outlines how our economy is influence by Facebook.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page 8

Before you are assigned an article, we would like to know a little more about your evaluations of all the articles. For each article below, please answer the following two questions.

The questions below are concerned with your thoughts about the articles. There are no right or wrong answers. Please respond according to how you view each article right NOW.

QUESTION #1:

Will this article have important consequences for me?

	Not at all 1	Slightly 2	Moderately 3	Considerably 4	Extremely 5
1. “Why going on Facebook is a really good thing” <i>This article presents scientific evidence that finds that going on Facebook can enhance your health and happiness.</i>	<input type="radio"/>				
2. “Facebook usage over the past 5 years” <i>This article presents data from a recent survey of Canadians about their Facebook usage over the past 5 years.</i>	<input type="radio"/>				
3. “Facebook makes people less happy” <i>This article presents scientific evidence that finds that going on Facebook reduces levels of happiness and overall life satisfaction.</i>	<input type="radio"/>				
4. “The role of advertisements on Facebook” <i>This article outlines why advertisements are needed on Facebook and how advertisements make their way onto Facebook.</i>	<input type="radio"/>				
5. “The inspiring effect of Facebook” <i>This article discusses why going on Facebook has an inspirational effect that can contribute to creativity..</i>	<input type="radio"/>				
6. “The new media: Where does Facebook stand?” <i>This article discusses the role of Facebook in relation to other more traditional media sources, such as television.</i>	<input type="radio"/>				
7. “This is your brain on Facebook... and it doesn't look good” <i>This article explains how going on Facebook reduces brain functioning and mental performance.</i>	<input type="radio"/>				
8. “The Facebook effect: How Facebook influences our economy” <i>This article outlines how our economy is influence by Facebook.</i>	<input type="radio"/>				

QUESTION #2:

How much will I be affected by the content of this article?

	Not at all 1	Slightly 2	Moderately 3	Considerably 4	Extremely 5
1. “Why going on Facebook is a really good thing” <i>This article presents scientific evidence that finds that going on Facebook can enhance your health and happiness.</i>	<input type="radio"/>				
2. “Facebook usage over the past 5 years” <i>This article presents data from a recent survey of Canadians about their Facebook usage over the past 5 years.</i>	<input type="radio"/>				
3. “Facebook makes people less happy” <i>This article presents scientific evidence that finds that going on Facebook reduces levels of happiness and overall life satisfaction.</i>	<input type="radio"/>				
4. “The role of advertisements on Facebook” <i>This article outlines why advertisements are needed on Facebook and how advertisements make their way onto Facebook.</i>	<input type="radio"/>				
5. “The inspiring effect of Facebook” <i>This article discusses why going on Facebook has an inspirational effect that can contribute to creativity..</i>	<input type="radio"/>				
6. “The new media: Where does Facebook stand?” <i>This article discusses the role of Facebook in relation to other more traditional media sources, such as television.</i>	<input type="radio"/>				
7. “This is your brain on Facebook... and it doesn't look good” <i>This article explains how going on Facebook reduces brain functioning and mental performance.</i>	<input type="radio"/>				
8. “The Facebook effect: How Facebook influences our economy” <i>This article outlines how our economy is influence by Facebook.</i>	<input type="radio"/>				

Page 9

Reading Task:

The following article has been randomly assigned to you to read:

“This is your brain on Facebook... and it doesn’t look good”

This article explains how going on Facebook reduces brain functioning and mental performance.

Before you read this article, please rate your current thoughts and feelings on a scale from 1 (*not at all*) to 9 (*very much so*):

	Not at all			Moderately				Very much so	
	1	2	3	4	5	6	7	8	9
1. I plan to read this article very carefully.	<input type="radio"/>								
2. I am excited to read this article.	<input type="radio"/>								
3. I expect that this article will be interesting.	<input type="radio"/>								

Page 10
Debriefing

Below is some important information about this study. Please read this page carefully. If you’d like a copy of this page, it is available from the researcher at the front of the room.

Thanks for completing the survey! Now we need to explain a few details about this study that we could not tell you earlier.

First, you will not be required to read an article about Facebook. In fact, the study is completely over now. This also means that you will not be required to answer any questions about your opinions of and reactions to an article about Facebook. Also, as you may suspect by now, you were not actually randomly assigned to read a specific article about Facebook – in fact, all participants were presented with the same article titles.

Also, the article titles that you read are not from real articles – they were created for the purposes of this research. The article titles we used in this study were designed to represent articles that were in favour of engaging in Facebook, opposed to engaging in Facebook, and neutral towards Facebook. We selected these 8 article titles from a larger list of titles that were pre-tested earlier this year with a different group of participants.

Lastly, you were asked to engage in a warm-up essay task prior to making your evaluations of the article titles. In fact, this exercise was not simply a warm-up task, but was a central component of this study. We will now explain the true purpose of this study and why we need to deceive participants in these ways.

The true purpose of this study was to examine how people attend to information related to a passion in their life. You were selected for this study because you reported on the Mass Testing

survey that you enjoyed going on Facebook on a regular basis, and as part of the current study we assessed the extent to which your passion for Facebook was harmonious or obsessive. The other questions on this survey assessed the extent to which people preferred to look at or avoid messages that were either consistent or inconsistent with their passion. We suspect that people's attitudes and evaluations of the article titles presented in this study will be related to whether their passion for Facebook is more harmonious or obsessive.

As mentioned earlier, the warm-up essay exercise was an important component of this study. We suspect that people will be more open and accepting of contradictory messages if they have affirmed an important value in their lives. You were either asked to write an essay about an important self-enhancement value (power, wealth), self-transcendent value (empathy, personal growth), or about your daily routine. This experimental manipulation will help us determine if affirming important life values can allow individuals to be more accepting of contradictory messages.

We apologize for having deceived you in these ways, but it was necessary in order to create a realistic scenario with the proper experimental controls. We need to emphasise that, although we were required to use deception about the purpose of the study, we were not deceptive about the other aspects of the study, such as how we will store your data and your rights as a research participant. After your responses from this study are linked to those provided on the Mass Testing survey, all your identifying information (name, phone number, and email address) will be **permanently** deleted from all our data files. That means that all responses that you provided will be anonymous.

You should also know that the Student Counselling and Career Centre has counsellors that are available to provide supportive and problem-solving assistance for emotional difficulties, interpersonal problems, or stressful life situations. They are located at 474 University Centre here at the Fort Garry Campus, and can be reached by phone at 204-474-8592.

A final important point: **We would also appreciate if you would not discuss this study with any of your classmates, as it is important that the true purpose of the study remain secretive until the entire study is complete.** We thank you for your cooperation.

If you would like to talk more about the study, please contact us at the information below:

Principal Investigator: Benjamin Schellenberg, PhD candidate,
Department of Psychology, University of Manitoba
[REDACTED]

Co-Investigator: Daniel Bailis, Professor,
Department of Psychology, University of Manitoba
[REDACTED]

**Please raise your hand to let a researcher know you are done
the survey.**

**Keep the survey on this screen – Do NOT press “next” or
close the web browser.**

Page 11

<<FOR THE RESEARCHER ONLY>>

ENTER PARTICIPANT ID#: _____

Appendix D: Study 3 – Consent Form

Information and Consent Page

Study Name: Hockey Issues Study

Principal Investigator: Benjamin Schellenberg, PhD Candidate,
Department of Psychology, University of Manitoba
[REDACTED]

Co-Investigator: Daniel Bailis, Professor,
Department of Psychology, University of Manitoba
[REDACTED]

Sponsor: Social Sciences and Humanities Research Council of Canada

This consent form, a copy of which you may keep for your records and reference at this time, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask us. Please take the time to read this carefully and to understand any accompanying information.

Information

The purpose of this study is to examine attitudes towards current issues in hockey.

For this study, you will be asked to read an article that discusses a current hockey issue. Also, you will be asked to write a brief essay, to answer a number of questions about your relationship with hockey, and to report your attitudes and feelings towards the article. About a week after this, we plan to call participants and ask a few more questions about the article. Some information such as your age and ethnicity will be obtained from information that you provided on the Mass Testing survey and linked with the responses that you give in this study.

Those who participated in the Psychology Mass Testing survey and who provided contact information for future studies are being recruited to participate in this study, and will receive 2 research-participation credits in PSYC 1200 Introduction to Psychology for doing so. This study should take about 45 minutes in total to complete. All data obtained from this survey will be stored confidentially and will be stored in password-protected computers that are located in secure, locked laboratories (room P520E in the Duff Roblin Building). This research study is being led

by Ben Schellenberg, a PhD candidate in the Department of Psychology under the supervision of Dr. Dan Bailis.

You need to know the risks and benefits of participation in this research. You should know that some students may be uncomfortable with the issues discussed in the article. The other tasks involved in this project involve no greater risks or benefits than you would encounter in everyday life. In exchange, you will receive 2 research-participation credits in your PSYC 1200 Introduction to Psychology course.

Your participation in this study is completely voluntary. Should you choose to withdraw from the study at any point or feel that you would rather leave some question(s) unanswered, you may do so without any penalty. This means that should you choose to withdraw at any point during the study, if you feel that you would rather leave some question(s) unanswered, or do not want to participate at all, you will still receive two research participation credits.

After you have completed this study, we will link the responses that you provide on the questionnaire today to those that you provided on the Mass Testing survey with your mass testing ID number. Your age and ethnicity will be obtained from the Mass Testing survey in order to learn more about the characteristics of those who participate in this study. After all responses have been matched and we have contacted you by phone, we will delete all identifying information from our records (i.e. your name, phone number, and email address) rendering all data collected as part of this study **anonymous**. All data stored on the password-protected Qualtrics server will only be accessed by the principal investigator (Benjamin Schellenberg) and the research supervisor, Dr. Bailis. Once data on the Qualtrics server has been downloaded onto password-protected computers affiliated with Dr. Bailis' lab, the data on the Qualtrics server will be permanently deleted.

Any information you provide will be stored on password-protected computers affiliated with Dr. Bailis' lab (room P520E in the Duff Roblin Building). The anonymous data files will only be accessed by honours/graduate students that are supervised by Dr. Bailis who are involved or become involved with this project. We will keep the data file indefinitely, but this file will be anonymous and will contain no identifying information (name, phone number, email address). Before we remove your identifying information, the data will only be accessed by the principal investigator (Benjamin Schellenberg) and Dr. Bailis. Once all the data are collected and analyzed for this project, we plan to share this information with the research community through seminars, conferences, presentations, and journal articles. When presenting the results of this research, we will in no way focus on individual participants' responses and will instead present the findings in summary form.

Although the Qualtrics on-line survey tool transmits your responses in an encrypted form (similar to on-line banking), and stores it on a highly secure password-protected off-campus server, there is always the risk (anytime the Internet is used for anything), however small, that someone could either legally access the data (e.g., law enforcement agencies) or illegally access the data (e.g., “hackers”). However, you can be assured that every feasible precaution is taken to protect the data.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate. In no way does this waive your legal rights nor release the researcher from her legal and professional responsibilities. You are free to withdraw from the study at any time, and/or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

The University of Manitoba Research Ethics Board(s) and a representative(s) of the University of Manitoba Research Quality Management / Assurance office may also require access to your research records for safety and quality assurance purposes.

This research has been approved by the University of Manitoba Psychology/Social Research Ethics Board. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Secretariat at 474-7122. A copy of this consent form has been given to you to keep for your records and reference.

If you agree to each of the following, please place a check mark in the corresponding box. If you do not agree, leave the box blank:

- I have read or had read to me the details of this consent form.
- My questions have been addressed.
- I, _____ (print name), agree to participate in this study.

Participant's Signature _____ Date _____

Researcher's Signature _____ Date _____

Hockey Issues Study

*The results of this study should be available by **August, 2014**. If you would like a report of the results, please indicate below how you would like to receive the results (email or surface mail),*

and we will send you a brief summary of the results. Please note that the information you provide below will not be linked with your results, and will be used only to send you a summary of the results. You may leave this portion blank if you do not want to receive a summary of results.

Do you wish to receive a summary of the findings?

Yes

No

How do you wish to receive the summary? E-mail

Surface mail

Address: _____

Appendix E: Study 3 – Online Survey

Page 1

WELCOME TO THE HOCKEY ISSUES STUDY

PLEASE WAIT FOR INSTRUCTIONS BEFORE CONTINUING TO THE SURVEY

Page 2

WELCOME TO THE HOCKEY ISSUES STUDY

Please enter your assigned participant ID# (from the piece of paper that was provided to you) in the space below:

Page 3

NHL Hockey Fan Survey

The questions below ask you about your experiences watching the National Hockey League (NHL) on television.

1. During the past 7 days, how many hours did you spend watching the National Hockey League ("NHL") on television? _____
2. On average, approximately how many hours per week (during the regular season) do you typically spend watching the NHL on television? _____

While thinking of watching the NHL and using the scale below, please indicate your level of agreement with each item.

	not agree at all	very slightly agree	slightly agree	moderately agree	mostly agree	strongly agree	very strongly agree
	1	2	3	4	5	6	7
1. Watching the NHL is in harmony with the other activities in my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I have difficulties controlling my urge to watch the NHL.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. The new things that I discover watching the NHL allow me to appreciate it even more.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I have almost an obsessive feeling for watching the NHL.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Watching the NHL reflects the qualities I like about myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Watching the NHL allows me to live a variety of experiences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Watching the NHL is the only thing that really turns me on.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Watching the NHL is well integrated in my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. If I could, I would only watch the NHL.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Watching the NHL is in harmony with other things that are part of me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Watching the NHL is so exciting that I sometimes lose control over it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I have the impression that watching the NHL controls me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I spend a lot of time watching the NHL.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. I like watching the NHL.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Watching the NHL is important for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Watching the NHL is a passion for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

There is currently some concern about the rate of concussions in the NHL. Below, please indicate how seriously you take this issue. Please rate your opinions on this issue on a scale from 1 (not seriously at all) to 9 (extremely seriously).

	Not serious at all			Moderately				Extremely seriously	
	1	2	3	4	5	6	7	8	9
1. How seriously do you take the issue of concussions in the NHL?	<input type="radio"/>								

Page 4A

We find that most participants benefit from participating in a warm-up exercise before making evaluations and reporting attitudes.

[INSTRUCTIONS FOR PARTICIPANTS IN THE SELF-TRANSCENDENT CONDITION]:

For a warm-up exercise, please rate the following list of personal values from 1 (most important in your life) to 9 (least important in your life). Ratings can be made by “dragging and dropping” different values into different positions on the list. Place your most important value at the top of the list, and your least important value at the bottom of the list.

Note. The rankings will be displayed in green boxes next to all the items once you begin to “drag and drop” the items.

- | |
|---|
| <ul style="list-style-type: none"> ▪ Empathy/compassion ▪ Being responsive and supportive to the needs of others as well as one’s own needs ▪ Creating or contributing to something larger than oneself ▪ Trust/openness ▪ Personal growth ▪ Being in mutually supportive and caring relationships. |
|---|

Check the box below when you are satisfied with the ordering of the personal values.

Yes, I am satisfied with the ordering of the personal values.

[INSTRUCTIONS FOR PARTICIPANTS IN THE SELF-ENHANCEMENT CONDITION]:

For a warm-up exercise, please rate the following list of personal values from 1 (most important in your life) to 9 (least important in your life). Ratings can be made by “dragging and dropping” different values into different positions on the list. Place your most important value at the top of the list, and your least important value at the bottom of the list.

Note. The rankings will be displayed in green boxes next to all the items once you begin to “drag and drop” the items.

- Power/status
- Wealth/possessions
- Appearing confident/independent
- Physical attractiveness
- Popularity/admiration/prestige
- Appearing intelligent/competent

Check the box below when you are satisfied with the ordering of the personal values.

Yes, I am satisfied with the ordering of the personal values.

[INSTRUCTIONS FOR PARTICIPANTS IN THE CONTROL CONDITION]:

For a warm-up exercise, please write a brief essay (for approximately 8 minutes) about your daily routine. The essay can be written directly in the textbox below:

WHEN YOU ARE FINISHED WRITING THE ESSAY, CLICK "NEXT" TO CONTINUE WITH THE SURVEY.

Page 4B

[PAGE VIEWED BY PARTICIPANTS IN THE SELF-TRANSCENDENT AND SELF-ENHANCEMENT CONDITIONS ONLY]

You ranked the following value as most important in your life:

Next, please write a brief essay (for approximately 8 minutes) on the personal value that you ranked as MOST important in your life. Please write about why this value is important and meaningful to you. The essay can be written directly in the textbox below:

WHEN YOU ARE FINISHED WRITING THE ESSAY, CLICK "NEXT" TO CONTINUE WITH THE SURVEY.

Page 5

This scale consists of a number of words that describe different feelings and emotions. Read each item and then indicate to what extent you feel this way right now, that is, at the present moment. Use the following scale (1-5) to record your answers.

	not at all		moderately		extremely
	1	2	3	4	5
1. Loving	<input type="radio"/>				
2. Compassionate	<input type="radio"/>				
3. Connected	<input type="radio"/>				
4. Proud	<input type="radio"/>				
5. Strong	<input type="radio"/>				
6. Admirable	<input type="radio"/>				
7. Powerful	<input type="radio"/>				
8. In control	<input type="radio"/>				
9. Humble	<input type="radio"/>				
10. Empathic	<input type="radio"/>				
11. Vulnerable	<input type="radio"/>				
12. Superior	<input type="radio"/>				
13. Fallible	<input type="radio"/>				
14. Victimized	<input type="radio"/>				
15. Weak	<input type="radio"/>				
16. Out of control	<input type="radio"/>				
17. Inferior	<input type="radio"/>				
18. Ashamed	<input type="radio"/>				
19. Powerless	<input type="radio"/>				

Page 6

The next page of the survey displays an article.

Please read the article carefully, as you will not be able to return to it later.

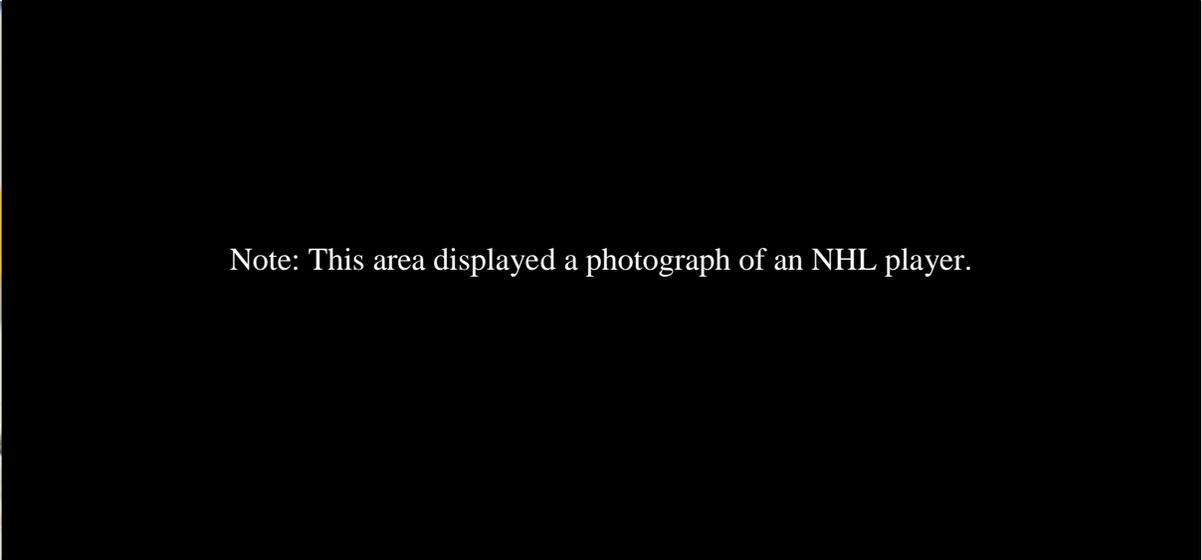
CLICK "NEXT" TO CONTINUE TO THE ARTICLE:

Page 7

Current Issues in Sport: Are Fans to Blame for NHL Concussions?

In this ongoing series, we ask local experts to give their opinions and perspectives about various controversial issues in sport. Want to join the debate? Leave a comment in the comments section below.

*In today's installment, we asked **Dr. Jeffery L. Davey**, a professor of sport economics in the Faculty of Kinesiology and Recreation Management at the University of Ottawa, to give his perspective on concussions in the NHL.*



Note: This area displayed a photograph of an NHL player.

The Issue

The prevalence of concussions in the NHL is currently a very hot topic, and a recent study by my lab at the University of Ottawa concluded that the rate of concussion in the NHL is increasing (Devens & Davey, 2011). A concussion is a traumatic brain injury that is caused by either a direct or indirect blow to the head, and the symptoms of a concussion can target one's physical (headache, nausea, ringing in ears), cognitive (memory loss, confusion, amnesia), and emotional (depression, moodiness) well-being. The increasing rate of concussions in the NHL combined with the frightening effects of having a concussion make this a very important topic to discuss.

Perspective

As an economist, I tend to approach problems such as these by analyzing financial incentives. The NHL is not a non-profit organization, but a business that is guided by investors, stakeholders, and ultimately, the almighty dollar. Commissioner Gary Bettman has a duty to the teams, the players, and the fans to ensure that the league is financially stable, and the decisions that are made by the league and by Mr. Bettman should be guided by this overarching goal. This, unfortunately, applies to decisions that I believe would substantially reduce the amount of concussions in the NHL.

Like any industry, 100% of the revenue of the NHL comes from the consumer, and in this case, the consumer is the hockey fan. Of the various sources of income (e.g. game-day tickets, merchandise sales), the primary source of revenue for the NHL is television advertisement, which accounts for over 60% of all revenue. This is precisely the reason why the NHL has not made any significant changes to protect the players against concussions: any major change to the game that would decrease the amount of concussions would also result in lower television viewership, and thus less advertising revenue. Increasing time off for concussed players would lower the risk of experiencing subsequent concussions, but could also lead to high profile players (e.g. Sidney Crosby) being forced to sit out for extended periods of time. Increasing the severity of sanctions (e.g. fines, suspensions) for unnecessarily aggressive behavior would discourage players from playing aggressively, which would again result in lower television ratings. This same reasoning can explain why fighting has remained in the NHL: despite studies showing that eliminating fighting from hockey would lower the rate of concussions in hockey by between 5-15%, fighting is also the most robust predictor of NHL television ratings.

If the NHL won't make the game safer for the players because of these financial incentives, what can be done? Based on my economic approach and the primary sources of income for the NHL, I propose that it would take only one simple action to reduce hockey concussions: ***hockey fans should reduce, or even eliminate completely, the number of NHL games that they watch on television.*** By lowering the NHL's television ratings, this would achieve the goal of communicating to the NHL that the current state of the NHL was unsatisfactory to the consumer. As the television ratings start to drop, Mr. Bettman and the NHL league officials will be forced to change the rules and regulations of the game to appease the consumer (i.e. the fans) and make the game safer for the players. If hockey fans sustain their

viewership of the NHL, then there will be no economic incentive for the NHL to change the product they are providing to the fans.

[LOW-THREAT CONDITION:

However, television ratings are not all treated equally. One demographic factor that plays a major role is age: advertisers are known to be highly influenced by the viewing habits of people who are *over 40 years old*, since these older viewers have more disposable income to spend on advertised products. So, if the older hockey fans started to put down the remote and reduce the amount of NHL hockey they watched on television, Mr. Bettman and the NHL executives would be forced to change NHL rules and regulations to be more concussion-friendly to try to entice these older viewers back to their television sets.

Conclusion

The concussion rate in the NHL is increasing, which is causing young men to suffer both physically and psychologically. Unfortunately, the NHL has made no effort to make any significant changes to make the game safer for the players. But, as I have argued using an economic perspective, the solution is under the control of hockey fans. The hockey fan is in complete control of the NHL profit margins, and the source of revenue that is the most important to the NHL is television ratings. By reducing the amount of NHL hockey that is watched, the NHL will be forced to change their product in order to appease the consumer. To summarize my position, if hockey fans maintain their viewership of NHL hockey on television, especially those who are over 40 years old, young men will continue to suffer irreversible brain damage that can impact their lives long after the hits have stopped.]

[HIGH-THREAT CONDITION:

However, television ratings are not all treated equally. One demographic factor that plays a major role is age: advertisers are known to be highly influenced by the viewing habits of people who are *under 25 years old*, since these younger viewers have more disposable income to spend on advertised products. So, if the younger hockey fans started to put down the remote and reduce the amount of NHL hockey they watched on television, Mr. Bettman and the NHL executives would be forced to

change NHL rules and regulations to be more concussion-friendly to try to entice these younger viewers back to their television sets.

Conclusion

The concussion rate in the NHL is increasing, which is causing young men to suffer both physically and psychologically. Unfortunately, the NHL has made no effort to make any significant changes to make the game safer for the players. But, as I have argued using an economic perspective, the solution is under the control of hockey fans. The hockey fan is in complete control of the NHL profit margins, and the source of revenue that is the most important to the NHL is television ratings. By reducing the amount of NHL hockey that is watched, the NHL will be forced to change their product in order to appease the consumer. To summarize my position, if hockey fans maintain their viewership of NHL hockey on television, especially those who are under 25 years old, young men will continue to suffer irreversible brain damage that can impact their lives long after the hits have stopped.]

WHEN YOU ARE FINISHED READING THE ARTICLE, CLICK "NEXT" TO CONTINUE WITH THE SURVEY:

Page 8

This scale consists of a number of words that describe different feelings and emotions. Read each item and then indicate to what extent you feel this way right now, that is, at the present moment. Use the following scale (1-5) to record your answers.

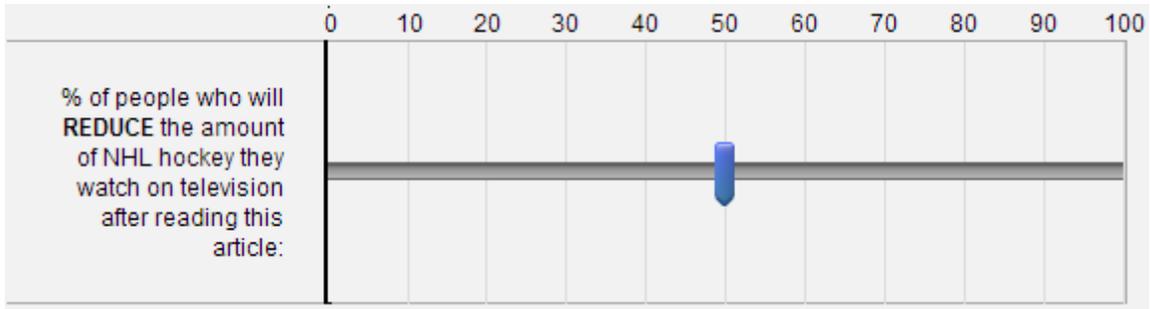
	not at all		moderately		extremely
	1	2	3	4	5
1. Distressed	<input type="radio"/>				
2. Upset	<input type="radio"/>				
3. Guilty	<input type="radio"/>				
4. Hostile	<input type="radio"/>				
5. Irritable	<input type="radio"/>				
6. Ashamed	<input type="radio"/>				
7. Angry	<input type="radio"/>				

Page 9

Below are a series of questions about the article you just read. Please rate your level of agreement with each statement on a scale from 1 (not at all) to 9 (very much so).

	Not at all			Somewhat				Very much so	
	1	2	3	4	5	6	7	8	9
1. To what extent do you agree that hockey fans' TV viewing habits influence concussions in the NHL?	<input type="radio"/>								
2. How important do YOU think it is that NHL fans reduce the amount of NHL that they watch on television in order to influence the number of concussions in the NHL?	<input type="radio"/>								
3. How skeptical did you feel while reading the article?	<input type="radio"/>								
4. How knowledgeable would you consider the author, Jeffrey L. Davey, to be about the NHL?	<input type="radio"/>								
5. To what extent do you think that you, personally, SHOULD reduce the amount of NHL that you watch on television?	<input type="radio"/>								
6. To what extent did you exert effort into trying to understand and think about the author's argument while reading the article?	<input type="radio"/>								
7. To what extent would you consider yourself a "fan" of NHL hockey?	<input type="radio"/>								
8. To what extent did you find the article convincing?	<input type="radio"/>								
9. Do you think you WILL reduce the amount of NHL that you watch on television?	Yes	<input type="radio"/>	No	<input type="radio"/>					
9a [Displayed only for those who answered YES on #9]: By how many hours (per week) do you think you will reduce the amount of NHL that you watch on television? _____									

Estimate the percentage of people that you think will REDUCE the amount of NHL hockey they watch on television after reading this article. 0% indicates that NOBODY will reduce the amount of NHL they watch, while 100% indicates that EVERYBODY will reduce the amount of NHL they watch. Move the slider below to select a percentage.



Please rank the overall quality of the article on a scale from 1 (very poor) to 10 (excellent). Move your cursor over the stars below, and click to indicate the desired number of stars.



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We are now interested in what you were thinking about while reading the article. You might have had ideas all favourable to the argument in the article, all opposed, all irrelevant to the content of the article, or a mixture of the three. Any case is fine; simply list what it was that you were thinking while reading the article. The next page of this computer survey contains a form we have prepared for you to use to record your thoughts and ideas. Simply write down the first idea you had in the first text box, the second idea in the second box, etc. Please put only one idea or thought in a text box. You should try to record only those ideas that you were thinking *while reading the article*. Please state your thoughts and ideas as concisely as possible...one sentence is sufficient. **IGNORE SPELLING, GRAMMAR, AND PUNCTUATION.** You will have 2.5 minutes to write your thoughts. We have deliberately provided more space than we think most people will need to insure that everyone will have plenty of room to write the ideas they had while reading the article. So don't worry if you don't fill every space. Just write down whatever your thoughts were while reading the article. Please be completely honest and list all of the thoughts that you had.

Please enter your thoughts in the blank text-boxes below:

Thought #1:

Thought #2:

Thought #3:

- Thought #4:
- Thought #5:
- Thought #6:
- Thought #7:
- Thought #8:
- Thought #9:
- Thought #10:
- Thought #11:
- Thought #12:
- Thought #13:
- Thought #14:
- Thought #15:
- Thought #16:
- Thought #17:
- Thought #18:
- Thought #19:
- Thought #20:

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Below you will find the thoughts that you listed on the previous page of the survey. Please indicate whether each thought was in support of the article, opposed to the article, or neutral towards the article:

	Supportive	Opposed	Neutral
<input style="width: 100%; height: 20px;" type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input style="width: 100%; height: 20px;" type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input style="width: 100%; height: 20px;" type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input style="width: 100%; height: 20px;" type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input style="width: 100%; height: 20px;" type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

and Lindros and others like that suffer concussions and memory loss just so I can watch hockey. It's not worth it. I'm seriously going to stop watching as many games on tv to do my part.

Please respond to the above comment in the textbox below:

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Finally, please answer the following questions about the article that you read:

1. Please select the argument that was made in the article about how the concussion rate in the NHL can be reduced:
 - Gary Bettman should ban fighting.
 - The NHL should increase fines for aggressive hits.
 - Hockey fans should reduce the amount of hockey they watch on television.
 - The NHL should increase mandatory time off for concussed players.

2. According to the article, which of the following groups has the **most power** to influence concussions in hockey:
 - Hockey fans *over* 40 years old.
 - NHL executives.
 - NHL officials.
 - Hockey fans *under* 25 years old.

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THANK YOU

Thank you for your participation in this study!

Remember that we would like to call you in about a week to ask you some follow-up questions about this article. We will use the same phone number that we used to recruit you for this study.

If you will be unable to receive a call from us at this time (for example, if you will be out of town) or if there is another phone number that you would prefer us to use, please let us know.

Please raise your hand to let a researcher know you are done the survey.

Keep the survey on this screen – Do NOT press “next” or close the web browser.

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<<FOR THE RESEARCHER ONLY>>

ENTER PARTICIPANT ID#: _____

Appendix F: Study 3 – Follow-up Questions and Debriefing Script

Hockey Issues Study (“DEERWOOD”)

Follow-Up Phone Call

Hi, my name is [researcher’s name] from the Department of Psychology at the University of Manitoba. About a week ago you participated in the “Hockey Issues Study” where you read an article about a current issue in hockey. I’m calling to conduct the final follow-up phase of the study, and it shouldn’t take longer than 5 minutes. Do you have time now to talk? [If not, schedule another time].

Ok, I have 4 quick questions to ask you. Just answer honestly, and remember that your answers will be **anonymous**:

-
- 1. Ok, the first question is this: During the past 7 days, how many hours did you spend watching the National Hockey League ("NHL") on television?**
 - 2. Next, how seriously do you take the issue of concussions in the NHL? Please rate on a scale from 1 meaning not serious at all, to 9 meaning extremely serious.**
 - 3. Ok, now I’d like you to try to remember all the details of the article that you read last week as part of the laboratory study. What do you remember from the article? [Probe until all details of the article are recalled].**
 - 4. Great, I have one final question: Could you tell me, right now, if you are currently wearing any NHL clothing or apparel (like an NHL hat or t-shirt)?**
-

Thanks for answering the question. Those are the only questions that I’d like to ask, and you will get one additional research credit under “DEERWOOD 2” for participating in this phase of the study. Now the study is completely over and I’d like to inform you of some aspects of the study that I could not explain fully to you beforehand because this could have affected your responses.

First, the article that you read as part of this study **was not a real article**. In order to assess how receptive participants were to a threatening message, we needed to fabricate this article and make it look as real as possible. This means that all the references and facts contained in the article were also fabricated for the study. **We need to emphasize that we are not aware of any research or newspaper articles that link television viewing to NHL concussions.** Participants were also randomly assigned to read versions of the article that argued that television viewing habits of hockey fans either under 25 years of age or over 40 years of age had

a strong effect on hockey concussions in the NHL. **This was also fabricated, and we are not aware of any research that links a viewer's age with NHL concussions.**

Also, you need to know that we recorded the amount of time that you spent reading the article on the computer. We could not tell you we were doing this because this may have influenced how much time you spent reading the article. The amount of time you spent reading the article will be used as a measure of how interested you were in the article.

You also engaged in a warm-up essay task prior to making your evaluations of the article titles. In fact, this exercise was not simply a warm-up task, but was a central component of this study – I will explain why we included this exercise shortly.

Finally, as part of the questionnaire, you completed a section that asked you to respond to another participant's comment about the article. In fact, all participants read the same comment, which did not come from a participant but was created as part of the study. We wanted to measure how people reacted to others who agreed with this controversial argument, and the only way we could do this with the proper experimental controls was to have every participant read the same comment. We intend to analyze people's comments for signs of hostility and aggression.

The true purpose of this study was to examine how people's passion for hockey influenced how receptive they were to threatening hockey-related messages. Research has indicated that people's passion for their favourite activities can come in two forms: a harmonious passion, when the activity is in harmony with other activities in their lives, or an obsessive passion, when the activity occupies more of a dominant role in the individual's life, sometimes at the expense of other activities. We suspected that people with high levels of obsessive passion may not be as receptive to threatening messages compared to those with high levels of harmonious passion. The extent to which people were receptive to the message in the article and changed viewing NHL viewing habits will be assessed by the responses that you gave from both phases of the study.

As mentioned earlier, the warm-up essay exercise was an important component of this study. We suspect that people will be more open and accepting of contradictory messages if they have affirmed an important value in their lives. You were either asked to write an essay about an important self-enhancement value (power, wealth), self-transcendent value (empathy, personal growth), or about your daily routine. This experimental manipulation will help us determine if affirming important life values can allow individuals to be more accepting of contradictory messages.

We apologize for having deceived you in these ways, but it was necessary in order to create a realistic hockey-related message with the proper experimental controls. We need to emphasize that, although we were required to use deception about the article used in the study, we were not deceptive about the other aspects of the study, such as how we will store your data and your rights as a research participant. After your responses from both phases of this study have been linked together and linked to those provided on the Mass Testing survey, all your identifying

information (name, phone number, and email address) will be **permanently** deleted from all our data files. That means that all responses that you provided, including your comments from the “comments” section of the computer questionnaire, will be anonymous.

You should also know that the Student Counselling and Career Centre has counsellors that are available to provide supportive and problem-solving assistance for emotional difficulties, interpersonal problems, or stressful life situations. They are located at 474 University Centre here at the Fort Garry Campus, and can be reached by phone at 204-474-8592.

A final important point: **We would also appreciate if you would not discuss this study with any of your classmates, as it is important that the true purpose of the study remain secretive until the entire study is complete.** We thank you for your cooperation.

If you would like to talk more about the study, please contact us at the information below:

Principal Investigator: Benjamin Schellenberg, PhD Student,
Department of Psychology, University of Manitoba
[REDACTED]

Co-Investigator: Daniel Bailis, Professor,
Department of Psychology, University of Manitoba
[REDACTED]

Hockey Issues Study ("DEERWOOD")

Follow-Up Phone Call ANSWERS

Original Session #: _____

Date: _____

DATE CONTACTED: _____

TIME CONTACTED: _____

FIRST NAME: _____

ID#: _____

<p>1. Ok, the first question is this: During the past 7 days, how many hours did you spend watching the National Hockey League ("NHL") on television?</p>	
<p>2. Next, how seriously do you take the issue of concussions in the NHL? Please rate on a scale from 1 meaning not serious at all, to 9 meaning extremely serious.</p>	
<p>3. Ok, now I'd like you to try to remember all the details of the article that you read last week as part of the laboratory study. What do you remember from the article? [Probe until all details of the article are recalled – record answer verbatim].</p>	
<p>4. Great, I have one final question: Could you tell me, right now, if you are currently wearing any NHL clothing or apparel (like an NHL hat or t-shirt)? YES/NO</p>	

Appendix G: Study 3 – Debate Coding Sheet

JOIN THE DEBATE COMMENT CODING

Study: HOCKEY ISSUES STUDY (“DEERWOOD”) /
NHL ATTITUDES STUDY (“DRUMHELLER”)

ID#:

1. Did the participant acknowledge or respond to the comment that they read (e.g., “I agree, but...”)?	
Yes	
No	
2. The participant was asked to rank the overall quality of the article on a scale from 1 (very poor) to 10 (excellent). Based on their comment, what star rating do you think the participant gave to the article?	
Star rating (1 - 10)	
3. Word Count	

Appendix H: Study 3 – Follow-up Coding Sheet

FOLLOW-UP CODING

Study: HOCKEY ISSUES STUDY (“DEERWOOD”) /
 NHL ATTITUDES STUDY (“DRUMHELLER”)

ID#:

1. Main Argument	
Fans should stop watching the NHL on TV to reduce concussions	
Not mentioned	
2. Target Group	
Older fans over 40 years old	
Younger fans under 25 years old	
Not mentioned	
3. Source	
Economist, Kinesiology Department, University of Ottawa	
Not mentioned	
4. Restated disagreement/opinion of article?	
Yes	
No	
5. Misremembered article details (e.g., “ <u>Men</u> over 40...”?)	
Yes: _____	
No	

Appendix I: Study 3 – Descriptive Statistics and Correlations

Table I1
Study 3: Descriptive statistics

	Scale Range	<i>M</i>	<i>SD</i>	Skew	Kurt	α
<u>Mass Testing^a</u>						
Age	---	18.64	1.38	1.64	2.89	---
Level of fandom for NHL	1 to 10	8.10	1.53	-0.04	-1.48	---
<u>Laboratory Session^b</u>						
Passion						
Harmonious passion	1 to 7	3.42	1.28	2.32	8.78	.88
Obsessive passion	1 to 7	1.80	0.94	-0.43	0.34	.86
Passion criteria	1 to 7	4.02	1.43	-0.18	-0.14	.89
NHL hours over past 7 days	---	3.98	2.79	0.32	-0.88	---
NHL hours per week	---	6.01	10.96	-0.43	-0.61	---
Seriousness of concussions	1 to 9	6.33	1.90	-0.11	-0.03	---
Affirmation Essay Word Count	---	180.13	107.10	0.44	-0.44	---
Post-Essay Emotions						
Positive other-directed emotions	1 to 5	3.46	0.84	1.00	0.09	.79
Positive self-directed emotions	1 to 5	3.45	0.85	0.11	-0.59	.82
Article Reactions/Attitudes						
Article favourability	1 to 9	3.88	1.99	-0.91	0.30	.86
Article skepticism	1 to 9	5.64	2.13	1.56	1.67	---
Importance of Issue	1 to 9	3.20	2.23	-0.18	-0.14	---
Agreement with article	1 to 9	4.02	2.23	0.44	-0.72	---
Convincingness of article	1 to 9	4.41	2.29	0.13	-1.07	---
Article reading time (seconds)	---	276.51	71.24	2.32	8.78	---
Effort spent reading article	1 to 9	6.54	2.10	-0.43	-0.61	---
Negative affect	1 to 5	1.95	.64	-0.43	0.34	.77
Author's knowledge of issue	1 to 9	4.77	1.85	0.32	-0.88	---
Obligation to reduce viewership	1 to 9	2.22	1.73	-0.11	-0.03	---
Fandom for NHL	1 to 9	6.83	1.83	0.44	-0.44	---
Fandom for NHL difference score	---	0.01	0.83	1.00	.09	---
% who will reduce NHL viewership	0 to 100	15.70	13.33	-0.71	0.23	---
Article star rating	1 to 10	5.40	2.03	-1.05	4.50	---
Thought favourability index		-0.22	0.59	1.91	4.87	---
<u>Join the Debate Responses^c</u>						
Debate word count	---	100.33	43.26	0.07	-0.65	---
Coded article star rating	1 to 10	4.99	1.78	0.66	-0.40	---
<u>Follow-up Responses</u>						
NHL hours over past 7 days	---	3.22	1.41	1.41	2.15	---
Seriousness of concussions	1 to 10	6.30	-0.57	-0.57	-0.16	---
NHL Hours difference score	---	-0.63	0.80	0.80	4.75	---
Seriousness of concussions difference score	---	-0.05	0.73	0.73	1.29	---
Details of article remembered	0 to 3	1.00	0.67	0.00	-0.75	---

Note. ^a*N* = 140. ^b*N* = 126 (excluding participants who did not pass both manipulation-check items and who did not write a valid self-affirmation essay). ^c*N* = 124 (excluding additional participants who did not participate in the debate exercise). ^d*N* = 116 (excluding additional participants who did not participate in the follow-up phase of the study).

Table I2
Study 3: Correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Harmonious passion	---												
2. Obsessive passion	.69**	---											
3. Passion criteria	.77**	.70**	---										
4. T1: NHL hours over past 7 days	.28**	.30**	.30**	---									
5. NHL hours per week	.22**	.18*	.26**	.10	---								
6. T1: Seriousness of concussions	.20*	.21*	.17*	-.08	.02	---							
7. Affirmation essay word count	.17*	.08	.10	.04	.15	.13	---						
8. Positive other-directed emotions	.04	.11	-.01	.07	-.06	.01	.01	---					
9. Positive self-directed emotions	.23**	.13	.12	.05	.01	.06	.03	.44**	---				
10. Article favourability	-.23**	-.12	-.26**	-.15	-.12	.27**	-.13	.23**	-.02	---			
11. Article skepticism	.16	-.02	.17*	-.16	.11	.05	.12	-.08	-.19*	-.31**	---		
12. Importance of issue	-.24**	-.10	-.28**	-.12	-.07	.27**	-.14	.17*	-.04	.88**	-.21*	---	
13. Agreement with article	-.18*	-.18*	-.19*	-.14	-.10	.16	-.05	.14	-.03	.86**	-.29**	.63**	---
14. Convincingness of article	-.18*	-.03	-.20*	-.12	-.14	.28**	-.16	.28**	.03	.88**	-.32**	.68**	.63**
15. Article reading time (seconds)	-.09	-.04	-.10	-.01	.00	.14	-.13	-.09	-.10	.11	-.20*	.15	.04
16. Effort spent reading article	.04	-.12	-.06	-.06	-.09	.16	.04	.10	.14	.30**	.01	.18*	.32**
17. Negative affect	.04	.17*	.09	-.06	.00	.26**	-.01	.13	-.10	.40**	-.04	.48**	.30**
18. Author's knowledge of issue	-.16	-.17*	-.25**	-.08	-.03	.12	-.04	.17*	.13	.55**	-.26**	.50**	.47**
19. Obligation to reduce viewership	-.07	.05	-.14	-.12	-.02	.29**	-.05	.22**	.01	.57**	-.09	.60**	.40**
20. Fandom for NHL	.61**	.47**	.68**	.25**	.22**	.10	.13	-.08	.11	-.25**	.07	-.30**	-.18*
21. Fandom for NHL difference score	.07	.00	.10	.14	.03	.04	.12	.01	.06	-.01	.03	-.01	-.02
22. % who will reduce NHL viewership	-.06	-.04	-.18*	-.06	.00	.19*	-.03	.00	-.05	.50**	-.17*	.51**	.33**
23. Article star rating	-.09	-.05	-.12	-.10	-.12	.19*	-.20*	.17*	.21*	.53**	-.30**	.38**	.42**
24. Thought favourability index	-.05	.04	-.04	-.03	.10	.16	-.10	.12	.01	.30**	-.06	.31**	.21*
25. Debate word count	.14	.12	.16	.03	.06	.13	.18*	-.02	-.16	.06	.12	.00	.10
26. Coded article star rating	-.21*	-.18*	-.25**	-.16	.02	.24**	-.01	.09	.01	.55**	-.23**	.54**	.38**
27. T2: NHL hours over past 7 days	.57**	.56**	.62**	.28**	.22*	-.02	-.01	-.14	.14	-.25**	.08	-.27**	-.18*
28. T2: Seriousness of concussions	.21*	.24**	.28**	.08	.04	.62**	.01	-.01	.08	.29**	-.11	.23**	.24**
29. NHL Hours difference score	-.09	-.12	-.09	-.94**	-.02	.08	-.04	-.13	-.02	.07	.21*	.04	.10
30. Seriousness of concussions difference score	.03	.01	.13	.18*	.02	-.52**	-.11	-.03	.00	.03	-.19*	-.04	.13
31. Details of article remembered	-.04	-.04	-.13	-.06	.17	-.01	.18	-.25**	-.16	-.04	.03	.01	-.09

Note. * $p < .05$. ** $p < .01$

Table I2 (continued)
Study 3: Correlations

	14	15	16	17	18	19	20	21	22	23	24	25	26
1. Harmonious passion													
2. Obsessive passion													
3. Passion criteria													
4. T1: NHL hours over past 7 days													
5. NHL hours per week													
6. T1: Seriousness of concussions													
7. Affirmation essay word count													
8. Positive other-directed emotions													
9. Positive self-directed emotions													
10. Article favourability													
11. Article skepticism													
12. Importance of issue													
13. Agreement with article													
14. Convincingness of article	---												
15. Article reading time (seconds)	.11	---											
16. Effort spent reading article	.29**	.13	---										
17. Negative affect	.28**	.02	.01	---									
18. Author's knowledge of issue	.46**	.00	.14	.05	---								
19. Obligation to reduce viewership	.49**	.11	.08	.40**	.25**	---							
20. Fandom for NHL	-.17*	-.05	.04	-.02	-.16	-.01	---						
21. Fandom for NHL difference score	-.01	.05	.18*	.10	.02	.16	.41**	---					
22. % who will reduce NHL viewership	.47**	.25**	.08	.33**	.25**	.46**	.00	.20*	---				
23. Article star rating	.58**	.15	.35**	.02	.50**	.25**	-.15	-.02	.26**	---			
24. Thought favourability index	.26**	-.05	.01	.26**	.21*	.25**	-.02	.02	.16	.06	---		
25. Debate word count	.06	-.13	-.05	.04	.06	-.03	.12	.06	.02	.01	-.12	---	
26. Coded article star rating	.52**	.13	.16	.14	.35**	.42**	-.18*	.03	.39**	.35**	.31**	-.01	---
27. T2: NHL hours over past 7 days	-.19*	-.06	-.02	-.05	-.22*	-.18*	.51**	.01	-.17	-.04	-.03	.04	-.26**
28. T2: Seriousness of concussions	.28**	.16	.17*	.22*	.02	.30**	.23**	.11	.24**	.21*	.25**	.05	.26**
29. NHL Hours difference score	.05	.01	.06	.06	.00	.08	-.09	-.13	.01	.07	.03	-.01	.08
30. Seriousness of concussions difference score	-.01	-.02	-.02	-.02	-.06	-.01	.10	.03	.03	.02	.04	-.07	-.03
31. Details of article remembered	-.02	.03	-.01	.03	.01	.00	-.02	.15	.12	.03	-.03	.09	.09

Note. * $p < .05$. ** $p < .01$

Table I2 (continued)
Study 3: Correlations

	27	28	29	30	31
1. Harmonious passion					
2. Obsessive passion					
3. Passion criteria					
4. T1: NHL hours over past 7 days					
5. NHL hours per week					
6. T1: Seriousness of concussions					
7. Affirmation essay word count					
8. Positive other-directed emotions					
9. Positive self-directed emotions					
10. Article favourability					
11. Article skepticism					
12. Importance of issue					
13. Agreement with article					
14. Convincingness of article					
15. Article reading time (seconds)					
16. Effort spent reading article					
17. Negative affect					
18. Author's knowledge of issue					
19. Obligation to reduce viewership					
20. Fandom for NHL					
21. Fandom for NHL difference score					
22. % who will reduce NHL viewership					
23. Article star rating					
24. Thought favourability index					
25. Debate word count					
26. Coded article star rating					
27. T2: NHL hours over past 7 days	---				
28. T2: Seriousness of concussions	.10	---			
29. NHL Hours difference score	.06	-.05	---		
30. Seriousness of concussions difference score	.14	.35**	-.14	---	
31. Details of article remembered	-.03	-.13	.04	-.13	---

Note. * $p < .05$. ** $p < .01$

Appendix J: Study 3 – Peripheral Analyses

Appendix J presents notable results from peripheral analyses conducted as part of Study 3. Table J1 presents a summary of noteworthy results from regression analyses predicting peripheral outcome variables. A result was deemed noteworthy if the accompanying p -value was $\leq .10$, as results that approach the typical statistical significance threshold of $.05$ may be of interest to some readers. The regression analyses presented in Table J1 were conducted using the same procedures used with the focal outcome variables (e.g., interactions with passion types were removed from the model if they were not significant, outliers were removed based on extreme Cook's D and $DFBETA$ values, etc...).

Following Table J1, additional analyses are presented in order to aid interpretation of significant interaction effects. Only interaction effects that yielded p -values $\leq .05$ were probed. Plots are presented to aid interpretation of interaction effects predicting continuous outcome variables – these plots were constructed using the same methods that were used to interpret interactions effects with focal outcomes in each of the four studies in the research. Interaction effects predicting dichotomous outcome variables were interpreted using recommendations provided by Jaccard (2001): Rather than visually display interactions, interactions were interpreted by computing odds ratios at different levels of the moderator variable.

Table J1

Study 3: Regression analyses predicting peripheral dependent variables assessed during, immediately after, and one week after reading the article.

Dependent Variable	Noteworthy Effect(s)	<i>b</i>	Odds Ratio ^a	95% CI	<i>SE</i>	<i>p</i>
<u>Post-Article Attitudes</u>						
Article reading time	HP	-12.287	-----	[-26.199, 1.626]	7.024	.083
Effort spent reading article	HP	0.416	-----	[0.008, 0.823]	0.206	.046
	OP	-0.569	-----	[-1.215, 0.077]	0.326	.084
Negative affect	OP	0.216	-----	[0.023, 0.409]	0.097	.029
Author's knowledge of issue	HPXOP _{C1}	0.872	-----	[-0.138, 1.882]	0.510	.090
	HPXOP _{C2}	0.877	-----	[0.234, 1.519]	0.324	.008
Obligation to reduce viewership? ^{a,b}	HP	-0.522	0.593	[0.363, 0.969]	0.250	.037
	OP	0.831	2.296	[0.980, 5.379]	0.434	.056
	HPXOP	-0.637	0.529	[0.334, 0.838]	0.235	.007
	HPX _{C2}	1.167	3.213	[1.007, 9.582]	0.558	.036
	OPX _{C2}	-2.344	0.096	[0.017, 0.545]	0.886	.008
Plan to reduce viewership?	-----	-----	-----	-----	-----	-----
Fandom for NHL	HP	0.787	-----	[0.506, 1.069]	0.142	<.001
	HPX _{C2}	-0.651	-----	[-1.300, -0.002]	0.328	.049
Fandom for NHL, controlling for mass testing fandom	HP	0.483	-----	[0.209, 0.758]	0.138	.001
	HPX _{C2}	-0.597	-----	[-1.177, -0.017]	0.293	.044
Fandom for NHL difference score	-----	-----	-----	-----	-----	-----
% who will reduce viewership	HPXOP	-2.605	-----	[-4.813, -0.398]	1.114	.021
Article star rating	-----	-----	-----	-----	-----	-----
Thought favourability index	-----	-----	-----	-----	-----	-----
<u>Join the Debate Responses</u>						
Debate word count	---	-----	-----	-----	-----	-----
Acknowledge comment? ^a	HPXOP	-0.608	0.544	[0.329, 0.902]	0.258	.018
	HPX _{C1}	-1.272	0.280	[0.101, 0.777]	0.520	.014
	OPX _{C1}	2.241	9.407	[1.348, 65.629]	0.991	.024
Coded article star rating	-----	-----	-----	-----	-----	-----
<u>Follow-up Responses</u>						
NHL hours over past 7 days	HP	0.758	-----	[0.243, 1.273]	0.260	.004
	OP	1.089	-----	[0.276, 1.903]	0.410	.009
NHL hours difference score	-----	-----	-----	-----	-----	-----
Seriousness of concussions	-----	-----	-----	-----	-----	-----
Seriousness of concussions difference score	-----	-----	-----	-----	-----	-----
Wearing NHL clothing? ^a	HP	0.678	1.971	[1.066, 3.643]	0.313	.030
	HPX _{C1}	1.208	3.346	[0.881, 12.714]	0.681	.076
	OPX _{C1}	-1.941	0.144	[0.016, 1.292]	1.121	.083
Details of article remembered ^c	---	-----	-----	-----	-----	-----

Restated opinion? ^a	---	-----	-----	-----	-----	-----
Misremembered article details? ^a	---	-----	-----	-----	-----	-----

Note. There was no meaningful change in the results when sex was controlled in the analyses.

^aOdds ratios are reported for binary outcomes only.

^bObligation to reduce viewership was rated on a 9-point Likert scale. However, given that the responses from this item were heavily skewed, responses were recoded into a dichotomous variable to identify participants did or did not feel somewhat obligated to reduce NHL viewership.

^cRecalled details of the article were likely to be sensitive to the time that had elapsed since reading the article, so only participants who were contacted *exactly* 7 days after the computer session were included in this analysis ($n = 95$).

Dependent Variable: Author's knowledge of issue

Interaction Effect: HPXOPX_{c2}

Figure J1: Relationship between affirmation condition, harmonious passion, and ratings of the author's knowledge of issue for those with low obsessive passion

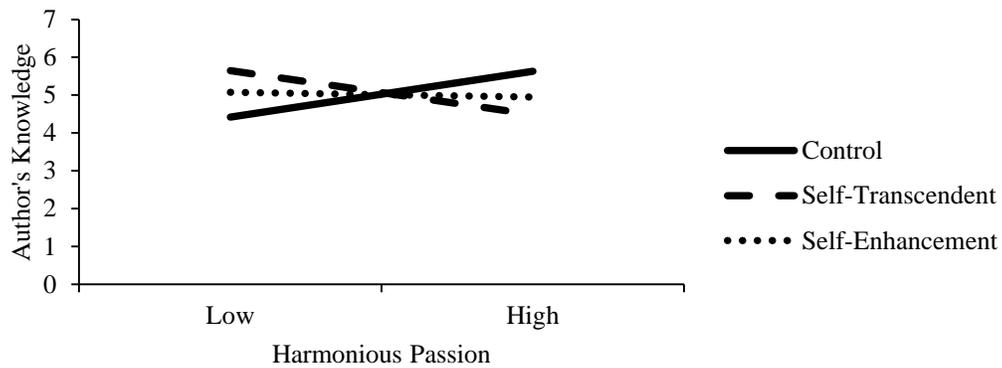


Figure J2: Relationship between affirmation condition, harmonious passion, and ratings of the author's knowledge of issue for those with high obsessive passion

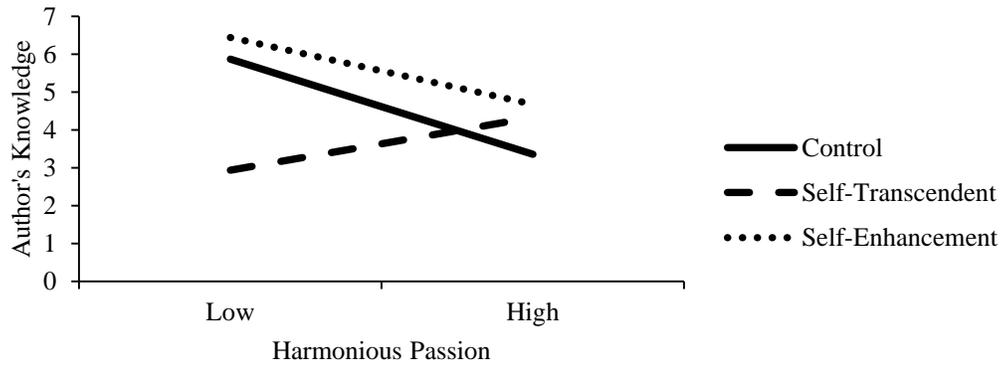


Table J2

Interpretation of HPXOPX_{c2} interaction: Simple slopes of the harmonious passion by affirmation condition interaction at low and high levels of obsessive passion.

	<i>b</i>	95% CI	<i>p</i>
<u>Low Obsessive Passion</u>			
Harmonious passion at			
Control	0.474	[-0.480, 1.428]	.327
Self-transcendent	-0.456	[-1.093, 0.182]	.159
Self-enhancement	-0.047	[-0.650, 0.556]	.879
<u>High Obsessive Passion</u>			
Harmonious passion at			
Control	-0.986	[-2.292, 0.319]	.137
Self-transcendent	0.548	[-0.313, 1.409]	.210
Self-enhancement	-0.692	[-1.493, 0.110]	.090

Dependent Variable: Obligation to reduce viewership

Interaction Effects: HPXc₂, OPXc₂, and HPXOP

Table J3
Interpretation of HPXc₂ and OPXc₂ interactions: Odds ratios for
harmonious and obsessive passion within each affirmation
condition

	Odds Ratio	95% CI	<i>p</i>
<u>Harmonious Passion</u>			
Control	0.604	[0.271, 1.346]	.218
Self-transcendent	1.054	[0.522, 2.129]	.884
Self-enhancement	0.328	[0.135, 0.799]	.014
<u>Obsessive Passion</u>			
Control	1.431	[0.335, 6.117]	.628
Self-transcendent	0.901	[0.275, 2.949]	.863
Self-enhancement	9.387	[2.244, 39.272]	.002

Table J4
Interpretation of HPXOP interaction: Odds ratios for
harmonious passion at differing levels of obsessive passion.

	Odds Ratio	95% CI	<i>p</i>
Harmonious passion at			
Low obsessive passion	0.976	[0.634, 1.503]	.913
Average obsessive passion	0.672	[0.438, 1.031]	.069
High obsessive passion	0.463	[0.240, 0.894]	.022

Dependent Variable: Fandom for NHL

Interaction Effect: HPXc₂

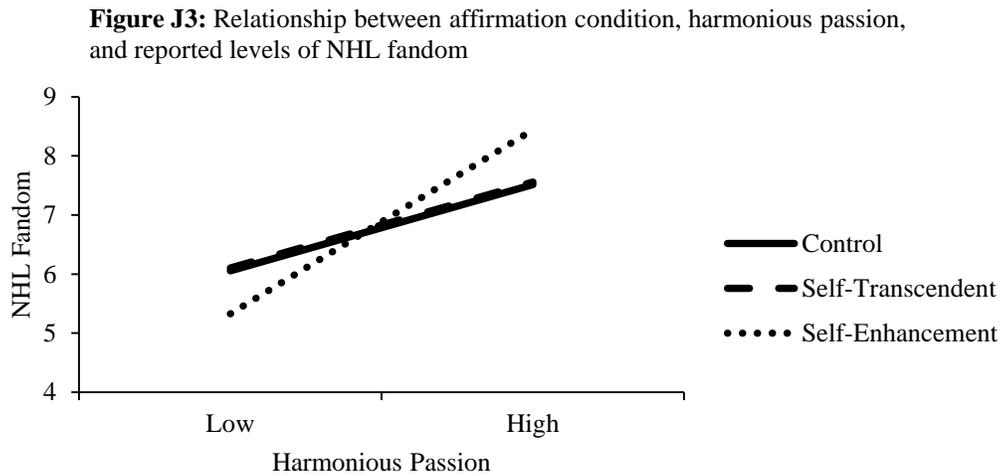


Table J5

Interpretation of HPXc₂ interaction: Relationship between affirmation condition, harmonious passion, and reported levels of NHL fandom

	<i>b</i>	95% CI	<i>p</i>
Harmonious passion at			
Control	0.572	[0.031, 1.113]	.039
Self-transcendent	0.570	[0.119, 1.021]	.014
Self-enhancement	1.221	[0.754, 1.688]	<.001

Dependent Variable: % who will reduce NHL viewership

Interaction Effect: HPXOP

Figure J4.: Relationship harmonious and obsessive passion and estimated percentage of fans who would reduce viewership

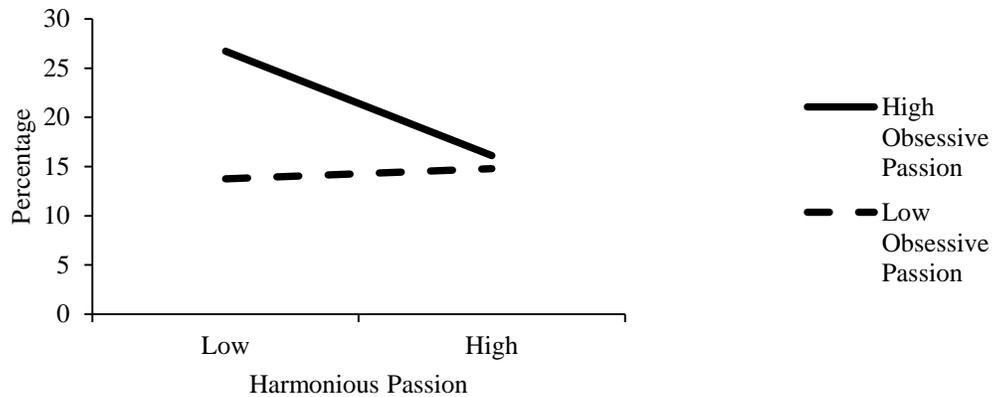


Table J6

Interpretation of HPXOP interaction: Relationship between harmonious and obsessive passion and estimated percentage of fans who would reduce viewership

	<i>b</i>	95% CI	<i>p</i>
Harmonious passion at			
Low obsessive passion	0.401	[-2.290, 3.092]	.768
Average obsessive passion	-1.874	[-4.522, 0.773]	.164
High obsessive passion	-4.150	[-7.857, -0.442]	.029

Dependent Variable: Acknowledgement of debate comment

Interaction Effects: HPXOP, HPX_{c1}, and OPX_{c1}

Table J7
Interpretation of HPX_{c1} and OPX_{c1} interactions: Odds ratios for
harmonious and obsessive passion within each affirmation
condition

	Odds Ratio	95% CI	<i>p</i>
<u>Harmonious Passion</u>			
Control	2.148	[0.886, 5.211]	.091
Self-transcendent	0.609	[0.298, 1.246]	.174
Self-enhancement	0.595	[0.282, 1.254]	.172
<u>Obsessive Passion</u>			
Control	0.192	[0.034, 1.092]	.063
Self-transcendent	1.108	[0.327, 3.755]	.869
Self-enhancement	2.933	[0.870, 9.890]	.083

Table J8
Interpretation of HPXOP interaction: Odds ratios for
harmonious passion at differing levels of obsessive passion.

	Odds Ratio	95% CI	<i>p</i>
Harmonious passion at			
Low obsessive passion	1.216	[0.764, 1.936]	.411
Average obsessive passion	0.876	[0.568, 1.351]	.549
High obsessive passion	0.631	[0.319, 1.247]	.186

Appendix K: Study 4 – Consent Form

Information and Consent Page

Study Name: NHL Attitudes Study

Principal Investigator: Benjamin Schellenberg, PhD Candidate,
Department of Psychology, University of Manitoba
[REDACTED]

Co-Investigator: Daniel Bailis, Professor,
Department of Psychology, University of Manitoba
[REDACTED]

Sponsor: Social Sciences and Humanities Research Council of Canada

This consent form, a copy of which you may keep for your records and reference at this time, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask us. Please take the time to read this carefully and to understand any accompanying information.

Information

The purpose of this study is to examine attitudes towards current issues in the NHL.

For this study, you will be asked to read an article that discusses a current hockey issue. Also, you will be asked to participate in a warm-up exercise, to answer a number of questions about your relationship with hockey, and to report your attitudes and feelings towards the article. About a week after this, we plan to call participants and ask a few more questions about the article. Some information such as your age and ethnicity will be obtained from information that you provided on the Mass Testing survey and linked with the responses that you give in this study.

Those who participated in the Psychology Mass Testing survey and who provided contact information for future studies are being recruited to participate in this study, and will receive 2 research-participation credits in PSYC 1200 Introduction to Psychology for doing so. This study should take about **45 minutes** in total to complete. All data obtained from this survey will be confidential and will be stored in password-protected computers that are located in secure, locked laboratories (room P520E in the Duff Roblin Building). This research study is being led

by Ben Schellenberg, a PhD candidate in the Department of Psychology under the supervision of Dr. Dan Bailis.

You need to know the risks and benefits of participation in this research. You should know that some students may be uncomfortable with the issues discussed in the article. The other tasks involved in this project involve no greater risks or benefits than you would encounter in everyday life. In exchange, you will receive 2 research-participation credits in your PSYC 1200 Introduction to Psychology course.

Your participation in this study is completely voluntary. Should you choose to withdraw from the study at any point or feel that you would rather leave some question(s) unanswered, you may do so without any penalty. This means that should you choose to withdraw at any point during the study, if you feel that you would rather leave some question(s) unanswered, or do not want to participate at all, you will still receive two research participation credits.

After you have completed this study, we will link the responses that you provide on the questionnaire today to those that you provided on the Mass Testing survey with your mass testing ID number. Your age and ethnicity will be obtained from the Mass Testing survey in order to learn more about the characteristics of those who participate in this study. After all responses have been matched and we have contacted you by phone, we will delete all identifying information from our records (i.e. your name, phone number, and email address) rendering all data collected as part of this study **anonymous**. All data stored on the password-protected Qualtrics server will only be accessed by the principal investigator (Benjamin Schellenberg) and the research supervisor, Dr. Bailis. Once data on the Qualtrics server has been downloaded onto password-protected computers affiliated with Dr. Bailis' lab, the data on the Qualtrics server will be permanently deleted.

Any information you provide will be stored on password-protected computers affiliated with Dr. Bailis' lab (room P520E in the Duff Roblin Building). The anonymous data files will only be accessed by honours/graduate students that are supervised by Dr. Bailis who are involved or become involved with this project. We will keep the data file indefinitely, but this file will be anonymous and will contain no identifying information (name, phone number, email address). Before we remove your identifying information, the data will only be accessed by the principal investigator (Benjamin Schellenberg) and Dr. Bailis. Once all the data are collected and analyzed for this project, we plan to share this information with the research community through seminars, conferences, presentations, and journal articles. When presenting the results of this research, we will in no way focus on individual participants' responses and will instead present the findings in summary form.

Although the Qualtrics on-line survey tool transmits your responses in an encrypted form (similar to on-line banking), and stores it on a highly secure password-protected off-campus server, there is always the risk (anytime the Internet is used for anything), however small, that someone could either legally access the data (e.g., law enforcement agencies) or illegally access the data (e.g., “hackers”). However, you can be assured that every feasible precaution is taken to protect the data.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate. In no way does this waive your legal rights nor release the researcher from her legal and professional responsibilities. You are free to withdraw from the study at any time, and/or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

The University of Manitoba Research Ethics Board(s) and a representative(s) of the University of Manitoba Research Quality Management / Assurance office may also require access to your research records for safety and quality assurance purposes.

This research has been approved by the University of Manitoba Psychology/Social Research Ethics Board. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Secretariat at 474-7122. A copy of this consent form has been given to you to keep for your records and reference.

If you agree to each of the following, please place a check mark in the corresponding box. If you do not agree, leave the box blank:

I have read or had read to me the details of this consent form.

My questions have been addressed.

I, _____ (print name), agree to participate in this study.

Participant's Signature _____ Date _____

Researcher's Signature _____ Date _____

NHL Attitudes Study

*The results of this study should be available by **August, 2014**. If you would like a report of the results, please indicate below how you would like to receive the results (email or surface mail),*

and we will send you a brief summary of the results. Please note that the information you provide below will not be linked with your results, and will be used only to send you a summary of the results. You may leave this portion blank if you do not want to receive a summary of results.

Do you wish to receive a summary of the findings?

Yes

No

How do you wish to receive the summary? E-mail

Surface mail

Address: _____

Appendix L: Study 4 – Depletion Exercises

WARM-UP EXERCISE BOOKLET

Before continuing with the online survey, we ask that you complete a warm-up exercise. The purpose of this exercise is to engage your mental processing and concentration skills before continuing with the other components of this study (such as reading and answering questions about an article).

The warm-up exercise is called the ***crossing-out-letters exercise***. This exercise involves 2 parts:

Part 1

On the next page of the booklet, you will find a page of text. **Your task is to cross-out all the letter e's that appear in the text.** For example, in the following sentence, you would cross-out the letter e's like this:

I sent/~~the~~ letter

Please cross-out all the letter e's in the entire page of text. After you have crossed-out all the letter e's, please turn the page to continue with second part of the exercise.

Turn the page to continue with the crossing-out-letters exercise →

or may have limited capacity to do so. This research extends a prior study by Stapleton (2006) that examined the practical approaches that researchers can use when analyzing covariance structure models with complex sample data. It builds on that study by examining the robustness of sampling variance estimates and a proposed adjusted chi-square statistic from replication methods including jackknife repeated replication (JRR), balanced repeated replication (BRR), and bootstrapping. These replication methods for estimating sampling variances with complex sample data are currently not available in software for SEM and must be specially programmed; they are available in other statistical packages for more traditional analyses such as multiple regression and comparison of frequency distributions.

In describing effects and procedures for this study, the Early Childhood Longitudinal Study (ECLS; U.S. Department of Education, 2001) data collection plan is used as a model: a stratified multistage sample. The ECLS sampling design included three stages of sampling: the selection of primary sampling units (PSUs) of single counties or groups of counties, then the selection of schools within those counties, and finally selection of students within the schools. At the first two stages of selection, stratification and probability proportional to size sampling was used and at the final stage, stratification unequal sampling probabilities was used; Asian/Pacific Islander students were sampled at a rate three times higher than the sampling rate for all other students. An excellent review of the characteristics of complex sample designs including clustering, stratification, unequal probabilities of selection, and nonresponse and poststratification adjustment is provided by Longford (1995). This article focuses on the problems posed when stratified multistage sampling is used.

An assumption in the use of many analysis techniques, including SEM, is that observations are independent and identically distributed. Data obtained through multistage sampling, however, typically demonstrate some degree of dependence (Kish, 1965; Skinner, Holt, & Smith, 1989). Because traditional standard error formulas assume that the correlation of the errors is zero, a researcher using clustered data may underestimate the sampling variance, resulting in inappropriate Type I error rates (Lee, Forthofer, & Lorimor, 1989). Muthén and Satorra (1995) demonstrated the standard error bias and large chi-square values that can result when SRS-based SEM is applied to data that were obtained through a two-stage SRS design (they refer to this type of analysis as “conventional”). A conventional SEM analysis of clustered data, therefore, may lead to the mispronouncement of statistically significant relations where only random covariation exists, as well as result in inappropriate rejection of correct models for the finite population. Additionally, if stratification is part of the sampling design and the response variables are homogeneous within strata, standard error estimates from a conventional analysis will be overestimated and represent a loss of efficiency (Asparouhov, 2004; Kish & Frankel, 1974).

Turn the page to continue with the crossing-out-letters exercise →

Part 2

[Depletion Condition Instructions:]

On the next page, you will find a second passage of text. Once again, your task is to cross-out all the letter e's that appear in the text. However, you must do so while adhering to TWO additional rules:

RULE 1: An 'e' should NOT be crossed-out if it is followed by a vowel in the same word

Example: you would NOT cross-out the 'e' in "read".

RULE 2: An 'e' should NOT be crossed-out if it appears in a word with a vowel appearing two letters before the 'e'.

Example: you would NOT cross-out the 'e' in "take".

On the next page, please cross-out all the letter e's while following these two rules.

[Control Condition Instructions:]

On the next page, you will find a second passage of text. Once again, your task is to cross-out all the letter e's that appear in the text.

On the next page, please cross-out all the letter e's in the entire page of text.

Turn the page to continue with the crossing-out-letters exercise →

and LISREL (Scientific Software International, 2004) for use with data that are both dependent (i.e., from cluster samples) and sampled at unequal probabilities. Assumptions in the use of this method include selection of PSUs within strata with replacement (Muthén & Muthén, 2004) and simulations have demonstrated that this approach provides robust estimates when assumptions are met (Asparouhov, 2004, 2005). Whereas the QPML estimation provides robust standard error estimates as part of the asymptotic covariance matrix, a robust likelihood ratio chi-square statistic is approximated by correcting the conventional log-likelihood-based chi-square statistic by using a correction factor. Specifically, Asparouhov and Muthén (2005) derive the correction factor for the likelihood ratio test as a function of the difference in the number of parameters and in the variance components within the asymptotic covariance matrix across a restricted and unrestricted model. This correction factor is similar to adjustments to likelihood ratios as proposed by Satorra and Bentler (1988) and is a parallel to the adjustment proposed for tests of independence by Rao and Scott (1981) and further explicated by Rao and Thomas (1989). This adjustment is reported to be used in the Mplus software (Asparouhov & Muthén, 2005). LISREL documentation is not clear with regard to its calculation of the correct factor as it offers a different formulation of the adjustment factor without derivations (Scientific Software International, 2004). Tests of the correction factors across these two software programs with empirical data yield very minimal differences in the adjusted chi-square statistic; differences are found only at the second and third decimal places. In either software program, to use the QPML estimation functions, the user must provide unique PSU and stratum indicators with the sample data. Monte Carlo simulation appraisals of this method demonstrated its superiority over the conventional method on standard error and chi-square statistic estimation for a confirmatory factor analysis under conditions of two-stage sampling with equal (Muthén & Satorra, 1995) and unequal (Asparouhov, 2005) probabilities of selection.

In another simulation study, Stapleton (2006) compared the robustness of estimates of standard errors and chi-square statistics from the simple adjustment methods one could use when undertaking a covariance structure analysis with complex sample data. The comparison included a conventional analysis, an analysis that incorporated design effect adjustments of the standard errors from a conventional analysis, an analysis that utilized design effect adjusted weights, and an analysis using the QPML method. Specifically, she examined the robustness of estimates under six different sampling design conditions with a large sample size (more than 14,000 observations), mirroring typical conditions of some national and international datasets. When there were dependencies within sampled clusters, as expected, the conventional analysis underestimated standard errors and the two analysis options that included design effect adjustments overestimated standard errors.

Turn the page to continue with the crossing-out-letters exercise →

Thank-you for completing the warm-up exercise.

Please press "Next" on the computer to resume the online survey.

When prompted by the online survey, please enter the following verification word:

[Depletion Condition Verification Word:]

"TIER"

[Control Condition Verification Word:]

"ARMES"

Appendix M: Study 4 – Descriptive Statistics and Correlations

Table M1

Study 4: Descriptive statistics

	Scale Range	<i>M</i>	<i>SD</i>	Skew	Kurt	α
<u>Mass Testing^a</u>						
Age	---	18.49	1.37	1.56	2.38	---
Level of fandom for NHL	1 to 10	8.19	1.42	-0.04	-1.35	---
<u>Laboratory Session^b</u>						
Passion						
Harmonious passion	1 to 7	3.32	1.27	0.15	-1.02	.86
Obsessive passion	1 to 7	1.76	0.83	1.27	1.00	.81
Passion criteria	1 to 7	3.89	1.44	0.30	-0.82	.89
NHL hours over past 7 days	---	4.11	3.59	1.00	0.33	---
NHL hours per week	---	5.22	3.96	1.22	1.35	---
Seriousness of concussions	1 to 9	6.20	1.87	-0.76	-0.03	---
Article Reactions/Attitudes						
Article favourability	1 to 9	3.73	1.72	0.39	-0.52	.81
Article skepticism	1 to 9	6.13	2.05	-0.59	-0.12	---
Importance of Issue	1 to 9	3.17	1.88	0.93	0.38	---
Agreement with article	1 to 9	4.13	2.15	0.19	-0.96	---
Convincingness of article	1 to 9	3.89	2.02	0.28	-0.91	---
Article reading time (seconds)	---	267.54	76.60	0.16	0.35	---
Effort spent reading article	1 to 9	6.37	1.85	-1.06	1.18	---
Negative affect	1 to 5	1.81	0.71	0.95	0.24	.85
Author's knowledge of issue	1 to 9	4.34	1.95	0.15	-0.69	---
Obligation to reduce viewership	1 to 9	2.05	1.61	2.34	6.50	---
Fandom for NHL	1 to 9	6.79	1.72	-0.55	-0.14	---
Fandom for NHL difference score	---	-0.03	0.84	-0.23	0.53	---
% who will reduce NHL viewership	0 to 100	17.21	15.38	1.37	1.99	---
Article star rating	1 to 10	4.97	2.04	-0.05	-0.87	---
Thought favourability index		-0.32	0.62	0.78	-0.42	---
<u>Join the Debate Responses^c</u>						
Debate word count	---	104.10	67.30	5.62	45.76	---
Coded article star rating	1 to 10	4.94	1.66	0.53	0.08	---
<u>Follow-up Responses</u>						
NHL hours over past 7 days	---	3.26	3.20	1.25	1.38	---
Seriousness of concussions	1 to 10	6.30	1.60	-0.43	-0.11	---
NHL Hours difference score	---	-0.70	1.96	-1.34	3.66	---
Seriousness of concussions difference score	---	0.10	1.54	0.62	2.09	---
Details of article remembered	0 to 3	1.00	0.84	0.42	0.54	---

Note. ^a*N* = 124. ^b*N* = 111 (excluding participants who did not pass both manipulation-check items and who did not follow the ego-depletion exercise instructions). ^c*N* = 108 (excluding additional participants who did not participate in the debate exercise). ^d*N* = 101 (excluding additional participants who did not participate in the follow-up phase of the study).

Table M2

Study 4: Correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Harmonious passion													
2. Obsessive passion	.57**												
3. Passion criteria	.76**	.58**											
4. T1: NHL hours over past 7 days	.47**	.31**	.61**										
5. NHL hours per week	.51**	.34**	.61**	.89**									
6. T1: Seriousness of concussions	.24*	.17	.16	.23*	.22*								
7. Article favourability	-.09	-.01	-.21*	-.26**	-.21*	.28**							
8. Article skepticism	.21*	.05	.22*	-.04	-.03	-.20*	-.34**						
9. Importance of issue	-.15	-.10	-.26**	-.19*	-.13	.26**	.84**	-.26**					
10. Agreement with article	.05	.09	-.04	-.25**	-.24*	.19	.85**	-.23*	.54**				
11. Convincingness of article	-.14	-.02	-.26**	-.22*	-.17	.28**	.87**	-.38**	.63**	.61**			
12. Article reading time (seconds)	.09	.26**	-.03	.02	-.01	.19*	.15	-.18	.12	.10	.17		
13. Effort spent reading article	.05	-.04	.05	.10	.09	.09	.10	-.04	.02	-.01	.24*	.09	
14. Negative affect	.20*	.46**	.12	.00	.00	.31**	.32**	.03	.22*	.26**	.33**	.16	.02
15. Author's knowledge of issue	.06	.02	.02	-.04	.02	.27**	.53**	-.21*	.42**	.47**	.48**	.03	.16
16. Obligation to reduce viewership	.04	.16	-.13	-.06	-.01	.25**	.54**	-.15	.56**	.35**	.50**	.16	.05
17. Fandom for NHL	.50**	.37**	.75**	.53**	.48**	.10	-.22*	.12	-.23*	-.08	-.25**	-.02	.00
18. Fandom for NHL difference score	.05	-.04	.15	.00	-.05	-.01	.00	.16	-.06	.07	-.02	-.09	.04
19. % who will reduce NHL viewership	-.03	.18	-.11	-.16	-.06	.25**	.57**	-.22*	.52**	.40**	.56**	.18	.09
20. Article star rating	.02	.09	-.05	.03	.01	.17	.69**	-.31**	.46**	.59**	.670**	.13	.15
21. Thought favourability index	-.06	-.02	-.13	.06	.05	.26**	.52**	-.31**	.53**	.37**	.44**	.06	-.05
22. Debate word count	.14	.11	.07	.12	.10	.13	-.17	.13	-.08	-.17	-.19*	.08	-.06
23. Coded article star rating	-.29**	-.10	-.42**	-.36**	-.30**	.27**	.53**	-.34**	.48**	.35**	.51**	.15	.07
24. T2: NHL hours over past 7 days	.53**	.43**	.63**	.84**	.79**	.16	-.27**	.04	-.22*	-.20*	-.25*	.09	.06
25. T2: Seriousness of concussions	-.02	.11	.03	.14	.07	.63**	.26**	-.06	.23*	.14	.30**	.26**	.20*
26. NHL Hours difference score	-.08	.05	-.12	-.45**	-.31**	-.11	.06	.15	.01	.11	.03	.08	-.02
27. Seriousness of concussions difference score	-.30**	-.09	-.14	-.11	-.18	-.59**	-.10	.17	-.11	-.11	-.03	.01	.10
28. Details of article remembered	-.03	-.10	-.07	0.00	-.10	-.05	.01	.08	-.05	.05	.00	.14	.25*

Note. * $p < .05$. ** $p < .01$

Table M2 (continued)

Study 4: Correlations

	14	15	16	17	18	19	20	21	22	23	24	25	26
1. Harmonious passion													
2. Obsessive passion													
3. Passion criteria													
4. T1: NHL hours over past 7 days													
5. NHL hours per week													
6. T1: Seriousness of concussions													
7. Article favourability													
8. Article skepticism													
9. Importance of issue													
10. Agreement with article													
11. Convincingness of article													
12. Article reading time (seconds)													
13. Effort spent reading article													
14. Negative affect													
15. Author's knowledge of issue	.02												
16. Obligation to reduce viewership	.38**	.36**											
17. Fandom for NHL	-.02	.04	-.18										
18. Fandom for NHL difference score	-.03	.03	-.04	.43**									
19. % who will reduce NHL viewership	.35**	.31**	.53**	-.17	-.22*								
20. Article star rating	.21*	.56**	.34**	-.03	.00	.40**							
21. Thought favourability index	.26**	.39**	.38**	-.19	-.16	.33**	.38**						
22. Debate word count	.01	-.16	-.13	.00	-.17	-.06	.02	-.16					
23. Coded article star rating	.21*	.31**	.28**	-.44**	-.25*	.46**	.33**	.45**	-.02				
24. T2: NHL hours over past 7 days	.03	.02	-.20*	.61**	.02	-.13	.09	-.01	.18	-.40**			
25. T2: Seriousness of concussions	.18	.22*	.23*	.00	-.09	.32**	.24*	.16	.09	.25*	.12		
26. NHL Hours difference score	.07	.09	-.18	-.05	.00	.08	.07	-.08	.00	.02	.11	-.06	
27. Seriousness of concussions difference score	-.18	-.12	-.07	-.14	-.04	.00	.03	-.14	-.08	-.05	-.08	.26**	.07
28. Details of article remembered	-.05	-.17	-.01	-.02	.18	-.22*	-.02	-.08	.03	-.07	-.01	.08	-.01

Note. * $p < .05$. ** $p < .01$

Table M2 (continued)

Study 4: Correlations

	27	28
1. Harmonious passion		
2. Obsessive passion		
3. Passion criteria		
4. T1: NHL hours over past 7 days		
5. NHL hours per week		
6. T1: Seriousness of concussions		
7. Article favourability		
8. Article skepticism		
9. Importance of issue		
10. Agreement with article		
11. Convincingness of article		
12. Article reading time (seconds)		
13. Effort spent reading article		
14. Negative affect		
15. Author's knowledge of issue		
16. Obligation to reduce viewership		
17. Fandom for NHL		
18. Fandom for NHL difference score		
19. % who will reduce NHL viewership		
20. Article star rating		
21. Thought favourability index		
22. Debate word count		
23. Coded article star rating		
24. T2: NHL hours over past 7 days		
25. T2: Seriousness of concussions		
26. NHL Hours difference score		
27. Seriousness of concussions difference score	---	---
28. Details of article remembered	.14	---

Note. * $p < .05$. ** $p < .01$

Appendix N: Study 4 – Peripheral Analyses

Appendix N presents notable results from peripheral analyses conducted as part of Study 4. Table N1 presents a summary of noteworthy results from regression analyses predicting peripheral outcome variables. A result was deemed noteworthy if the accompanying p -value was $\leq .10$, as results that approach the typical statistical significance threshold of $.05$ may be of interest to some readers. The regression analyses presented in Table N1 were conducted using the same procedures used with the focal outcome variables (e.g., interactions with passion types were removed from the model if they were not significant, outliers were removed based on extreme Cook's D and $DFBETA$ values, etc...).

Following Table N1, additional analyses are presented in order to aid interpretation of significant interaction effects. Only interaction effects that yielded p -values $\leq .05$ were probed. Plots are presented to aid interpretation of interaction effects predicting continuous outcome variables – these plots were constructed using the same methods that were used to interpret interactions effects with focal outcomes in each of the four studies in the research. Interaction effects predicting dichotomous outcome variables were interpreted using recommendations provided by Jaccard (2001): Rather than visually display interactions, interactions were interpreted by computing odds ratios at different levels of the moderator variable.

Table N1

Study 4: Regression analyses predicting peripheral dependent variables assessed during, immediately after, and one week after reading the article.

Dependent Variable	Noteworthy Effect(s)	<i>b</i>	Odds Ratio ^a	95% CI	<i>SE</i>	<i>p</i>
<u>Post-Article Attitudes</u>						
Article reading time	OP	32.659	-----	[2.991, 62.327]	14.962	.031
Effort spent reading article	-----	-----	-----	-----	-----	-----
Negative affect	HP	-0.150	-----	[-0.303, 0.004]	0.078	.057
	OP	0.779	-----	[0.498, 1.061]	0.142	<.001
	HPXOP	-0.220	-----	[-0.347, -0.092]	0.064	.001
	OPXDEplete	-0.301	-----	[-0.646, 0.043]	0.174	.085
Author's knowledge of issue	HPXDEplete	-0.620	-----	[-1.331, 0.091]	0.359	.087
	OPXDEplete	0.939	-----	[-0.150, 2.029]	0.549	.090
Obligation to reduce viewership? ^{a,b}	HPXOP	-0.486	0.615	[0.385, 0.983]	0.239	.042
Plan to reduce viewership?	-----	-----	-----	-----	-----	-----
Fandom for NHL	HP	0.548	-----	[0.175, 0.920]	0.188	.004
Fandom for NHL, controlling for mass testing fandom	HP	0.340	-----	[0.017, 0.664]	0.163	.040
Fandom for NHL difference score	OPXDEplete	-0.399	-----	[-0.868, 0.070]	0.236	.095
% who will reduce viewership	-----	-----	-----	-----	-----	-----
Article star rating	HPXDEplete	-0.644	-----	[-1.385, 0.097]	0.374	.088
	OPXDEplete	1.444	-----	[0.252, 2.637]	0.601	.018
Thought favourability index	-----	-----	-----	-----	-----	-----
<u>Join the Debate Responses</u>						
Debate word count	-----	-----	-----	-----	-----	-----
Acknowledge comment? ^a	OP	1.140	3.128	[0.829, 11.801]	0.677	.092
	HPXOP	-0.702	0.495	[0.243, 1.009]	0.363	.053
	OPXDEplete	-1.665	0.189	[0.035, 1.009]	0.854	.051
	HPXOPXDEplete	1.698	5.465	[1.573, 18.979]	0.635	.008
Coded article star rating	HP	-0.516	-----	[-0.929, -0.103]	0.208	.015
	OP	0.696	-----	[-0.101, 1.494]	0.402	.086
	HPXOP	-0.441	-----	[-0.856, -0.027]	0.209	.037
	HPXOPXDEplete	0.740	-----	[0.007, 1.474]	0.370	.048
<u>Follow-up Responses</u>						
NHL hours over past 7 days	HP	1.250	-----	[0.555, 1.945]	0.350	.001
NHL hours difference score	-----	-----	-----	-----	-----	-----
Seriousness of concussions	-----	-----	-----	-----	-----	-----
Seriousness of concussions difference score	HP	-0.353	-----	[-0.741, 0.035]	0.376	.074
	HPXOP	0.360	-----	[-0.029, 0.749]	0.196	.069
	OPXDEplete	0.904	-----	[-0.100, 1.909]	0.506	.077
	HPXOPXDEplete	-0.663	-----	[-1.340, 0.014]	0.341	.055
Wearing NHL clothing? ^a	HP	2.107	8.220	[1.067, 63.347]	1.042	.043

Details of article remembered ^c	-----	-----	-----	-----	-----	-----
Restated opinion? ^a	-----	-----	-----	-----	-----	-----
Misremembered article details? ^a	OP	-1.230	0.292	[0.076, 1.124]	0.687	.073
	OPXDEplete	1.512	4.538	[0.860, 23.944]	0.849	.075

Note. There was no meaningful change in the results when sex was controlled in the analyses.

^aOdds ratios are reported for binary outcomes only.

^bObligation to reduce viewership was rated on a 9-point Likert scale. However, given that the responses from this item were heavily skewed, responses were recoded into a dichotomous variable to identify participants who did or did not feel somewhat obligated to reduce NHL viewership.

^cRecalled details of the article were likely to be sensitive to the time that had elapsed since reading the article, so only participants who were contacted *exactly* 7 days after the computer session were included in this analysis ($n = 90$).

Dependent Variable: Negative affect

Interaction Effect: HPXOP

Figure N1: Relationship between passion types and negative affect

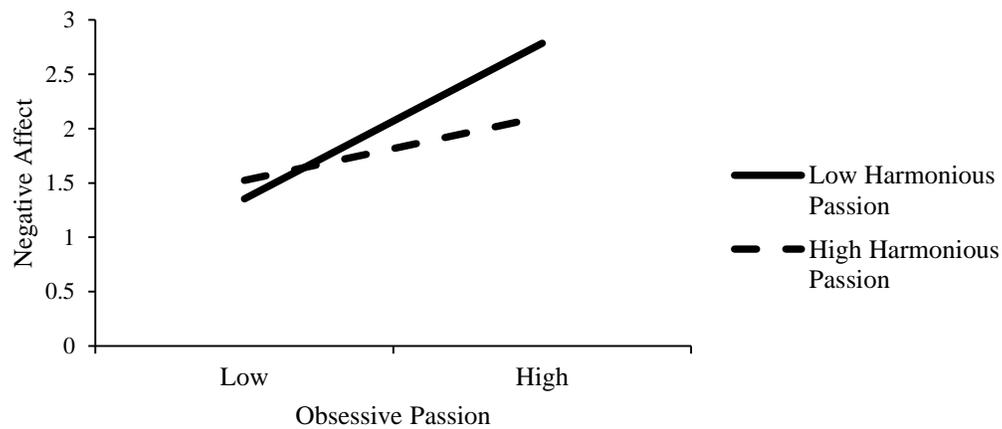


Table N2
 Interpretation of HPXOP interaction: Simple slopes of obsessive passion at low and high levels of harmonious passion

	<i>b</i>	95% CI	<i>p</i>
Obsessive passion at			
Low harmonious passion	.864	[0.549, 1.178]	<.001
High harmonious passion	.355	[0.179, 0.532]	<.001

Dependent Variable: Obligation to reduce viewership

Interaction Effects: HPXOP

Table N3
 Interpretation of HPXOP interaction: Odds ratios for obsessive passion at differing levels of harmonious passion.

	Odds Ratio	95% CI	<i>p</i>
Obsessive passion at			
Low harmonious passion	3.321	[1.059, 10.410]	.039
Average harmonious passion	1.861	[0.912, 3.800]	.088
High harmonious passion	1.043	[0.572, 1.902]	.890

Dependent Variable: Article Star Rating

Interaction Effect: OPXDEplete

Figure N2: Relationship between obsessive passion, depletion condition, and article star rating

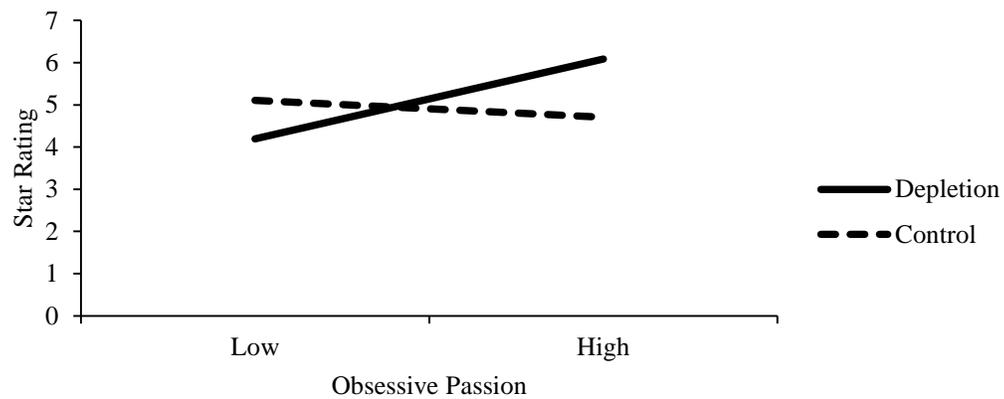


Table N4

Interpretation of OPXDEplete interaction: Relationship between obsessive passion and article star rating within depletion and control conditions.

	<i>b</i>	95% CI	<i>p</i>
Obsessive passion within			
Depletion Condition	1.194	[0.311, 2.077]	.009
Control Condition	-0.250	[-1.051, 0.551]	.537

Dependent Variable: Acknowledgement of debate comment

Interaction Effects: HPXOPXDEplete

Table N5

Interpretation of HPXOPXDEplete interaction: Odds ratios are reported for obsessive passion at each level of harmonious passion within each depletion condition

	Odds Ratio	95% CI	<i>p</i>
<u>Control Condition</u>			
Obsessive passion at			
Low harmonious passion	7.631	[0.948, 61.407]	.056
Average harmonious passion	3.128	[0.829, 11.801]	.092
High harmonious passion	1.282	[0.521, 3.155]	.588
<u>Depletion Condition</u>			
Obsessive passion at			
Low harmonious passion	0.167	[0.022, 1.272]	.084
Average harmonious passion	0.592	[0.213, 1.642]	.313
High harmonious passion	2.096	[0.663, 6.630]	.208

Dependent Variable: Coded article star rating

Interaction Effects: HPXOPXDEplete

Figure N3: Relationship between harmonious passion, depletion condition, and coded article star rating for low obsessive passion

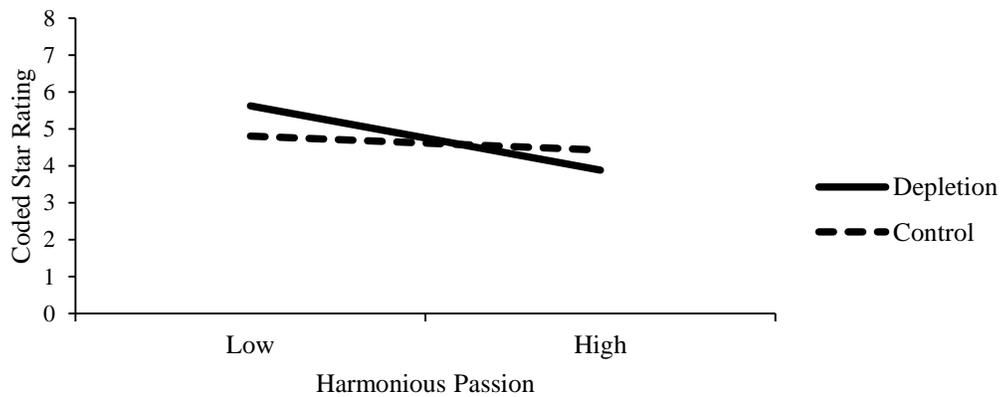


Figure N4: Relationship between harmonious passion, depletion condition, and coded article star rating for high obsessive passion

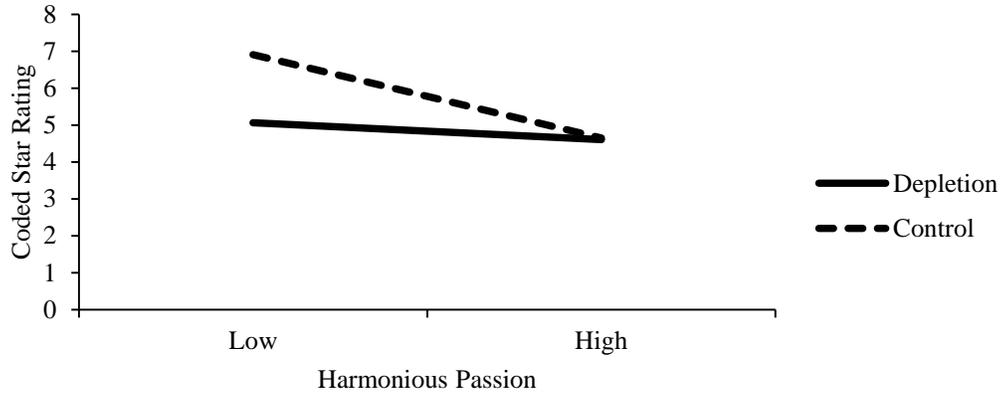


Table N6

Interpretation of HPXOPXDEPLETE interaction: Simple slopes of harmonious passion by depletion condition interaction at low and high levels of obsessive passion.

	<i>b</i>	95% CI	<i>p</i>
<u>Low Obsessive Passion</u>			
Harmonious passion within			
Depletion Condition	-0.677	[-1.224, -0.131]	.016
Control Condition	-0.154	[-0.611, 0.304]	.506
<u>High Obsessive Passion</u>			
Harmonious passion within			
Depletion Condition	-0.187	[-0.984, 0.610]	.643
Control Condition	-0.878	[-1.481, -0.275]	.005