“GOING AGAINST THE FLOW”: THE EFFECTS OF DYNAMIC ORIENTATIONAL METAPHORS ON CONSUMER CHOICE AND PERSUASION

BY
MINA KWON

DISSERTATION
Submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Business Administration in the Graduate College of the University of Illinois at Urbana-Champaign, 2015

Urbana, Illinois

Doctoral Committee:
Professor Dolores Albarracin, Chair
Professor Rashmi Adaval, Director of Research, HKUST
Professor Sharon Shavitt
Associate Professor Tiffany B. White
ABSTRACT

Past research shows that bodily experiences can activate concepts to which they are metaphorically linked and can influence judgments in other unrelated domains. Although some studies have focused on experiences that have a direct semantic correspondence to the target being judged (e.g., experience of physical warmth affects judgments of how “warm” a person is, experience of a fishy odor leads people to consider something as “fishy or suspicious” etc.), other embodied experiences do not fall into this category because they have a dynamic, directional character that is hard to capture in pure semantic terms (e.g., the experience of running one’s hands through water or stroking the fur of a pet in a particular direction). I suggest that these experiences have not only a sensory aspect (e.g., “wet” or “soft”) but a motor component as well that suggests movement in a specific direction. Captured linguistically in what are called dynamic orientation metaphors, the motor component of such experiences is important because it suggests movement in a particular direction. Characteristics of the movement (type and direction) have implications for behavior. I examine one such experience, the physical experience of going against the flow, and show how it can influence judgments and decisions in two different domains: Consumer choice and persuasion.

I show in a series of experiments that the sensorimotor experience of going against the flow affects the choices consumers make with participants picking products that are normatively less preferred. Further, I find that this effect only holds when the sensorimotor sensation is self-experienced and when people have to rely on their own internal sense of flow (i.e., when there is no external norm provided). When extended to the persuasion domain, I find that these experiences affect an individual’s desire to resist a persuasive message. A series of studies also shows that this effect is more evident when the experience is acquired actively (i.e., is volitional).
This research important because it moves the embodied cognition literature from work that explores sensations that have descriptive terms in language to a consideration of more dynamic sensations that have a motor aspect. Such experiences, because they involve action and direction, possess the power to alter not only what people choose in unrelated situations (i.e., their behavior) but also their inclination to protest against a persuasive message.
ACKNOWLEDGEMENTS

I owe endless thanks to my advisor, Professor Rashmi Adaval for her support from day 1. I could not have gone through the doctoral program, let alone finish this dissertation without her! I am very grateful to have helpful faculty members that have been there through what seems like a never-ending process. I have felt supported both emotionally and intellectually. I am also very thankful to Professor Tiffany White, Professor Dolores Albarracin, and Professor Sharon Shavitt who generously gave their time and attention to my research. I also thank the entire UIUC marketing faculty and doctoral students for thoughtful comments and critical questions that helped shape various stages of the dissertation. Last but not least, I received so much help from the administrative staff, especially Julie Monroe and Diana Gonzalez, for which I am grateful. Thank you everyone!

Additionally, I would like to send a special thank you to my parents, in-laws, husband, and my daughter Hannah, who has been there since the beginning.
TABLE OF CONTENTS

I. INTRODUCTION.................................................................................................................1

II. THEORETICAL FRAMEWORK............................................................................................9

IIIa. PART 1: METAPHORICAL EFFECTS OF SENSATIONS OF GOING AGAINST THE
FLOW ON CONSUMER CHOICES..........................................................................................21

IIIb. PART 2: METAPHORICAL EFFECTS OF SENSATIONS OF GOING AGAINST THE
FLOW ON PERSUASION.........................................................................................................61

IV. GENERAL DISCUSSION......................................................................................................96

REFERENCES ..........................................................................................................................102

APPENDIX A: EXAMPLES OF SENSORIMOTOR EXPERIENCES OF GOING AGAINST
THE FLOW IN DAILY LIVES....................................................................................................113

APPENDIX B: EXPERIMENTS 1A AND 2 JEWELRY OPTIONS.............................................114

APPENDIX C: EXPERIMENT 1B FLOW MANIPULATION AND CHOCOLATE
OPTIONS.....................................................................................................................................115

APPENDIX D: EXPERIMENT 1C T-SHIRT OPTIONS..............................................................116

APPENDIX E: EXPERIMENT 4 CHOCOLATE OPTIONS..........................................................117

APPENDIX F: EXPERIMENT 6 TUITION NEWS ARTICLE.......................................................118

APPENDIX G: EXPERIMENT 8 FLOW MANIPULATION AND NEWS ARTICLES.................119
I. INTRODUCTION

The idea that sensory perceptions might guide cognitive processes has gained ground in several areas of psychology and marketing. In contrast to standard theories of cognition where knowledge is seen as being represented as amodal symbols in memory, this view of grounded cognition suggests that knowledge can be represented in multiple modalities and that perceptual and bodily states provide important input in cognitions (Barsalou, 2008; Wilson, 2002). Several theories of information processing take such multi-modal representations into account (Wyer, Adaval, and Colcombe, 2002; Wyer and Radvansky, 1999) suggesting that most theories do need to consider information that is experienced in different sense modalities.

One such theory is perceptual symbol systems theory (Barsalou, 1999). According to this theory, semantic knowledge is grounded in sensorimotor experiences. For example, as one experiences sitting in a chair, the multimodal representation of how the chair looks and feels, the action of sitting, and the feelings it elicits are stored in memory. These multimodal representations might later be reactivated as knowledge of a chair. Another account (Wyer, et al., 2002; Wyer and Radvansky, 1999) invokes the use of event models to capture experiences that are coded in multiple sense modalities and retrieved when one is required to do so (Adaval and Wyer, 2004). This theory focuses on the encoding of events that are temporally and situationally localized. For example, the experience of attending a party might be encoded as a series of different events that are linked together to form a longer episode model that has a narrative structure. Thus, real experiences and knowledge might be encoded in these amodal forms that have spatial and other non-linguistic properties.
Despite these changes in how we think about the representation of real-world information, some skeptics question the utility of considering multimodal representations. Many criticisms are based on the perception that these amodal representations do not have any additional explanatory power. Yet, recent research shows that many of our routine sensory experiences are stored as these multimodal concepts that have metaphorical correlates in language. When they are retrieved, they can influence our responses in related and unrelated domains (see reviews by Krishna and Schwarz 2014). Thus, for example, sensorimotor experiences of moving against something that is flowing in one direction (e.g., walking upstream or against the wind) might be encoded in memory in the form of a multimodal concept. This concept might have a metaphorical correlate in language (the expression “going against the flow”). When one has a similar experience again, it can lead to the activation of the original representation and elicit a behavioral disposition to go against what is perceived to be the flow in an unrelated situation. This dissertation focuses on this type of sensorimotor experience – that of going against the flow and examines its influence in the domains of choice and persuasion.

The sensorimotor experience of going against the flow is fairly common and people encounter it in their daily lives. For example, they may experience it when they walk against the wind. They could also experience it when they shop for clothing or furnishing and run their hands against the weave of fabric or fur. They could experience it in a mall or an underground subway system when they walk against the direction of the crowd flow or go counter to signs indicating the direction in which people are expected to move (see Appendix A for examples). These experiences of going against the flow can influence behavior in a number of ways as they serve as inputs in decision-making and alter our reactions without our awareness. In a choice context, I suggest that these experiences of going against the flow can make people choose
options that are normatively less preferred. In a persuasion context, bodily sensations of going against the flow can make people more inclined to go against a persuasive message.

To understand how these experiences exert an impact, it is important to note that there are two parts to sensorimotor experiences: the sensory (i.e. sensation) part and the motor (i.e. movement) part. The motor aspect might be relatively static or dynamic and it is this component that can change the sensory experience in a fundamental way. In examining the different types of experiences that have been investigated in the past, it is worthwhile noting that they can be categorized into two types - some of them are more dynamic and others that are less so. These less dynamic sensations are also relatively easy to label compared to more dynamic ones. For example when a sensory experience involves static experiences of touch or smell, it is easy to come up with a semantic label for them (e.g., warm, rough, heavy, fishy). On the other hand, the more dynamic sensations that are integrated with movement are less easy to label because there is no direct corresponding semantic concept. For example, it is hard to describe the sensation one experiences when one pets a dog because multiple things such as soft, smooth are activated. Similarly, clenching one’s fist, moving one’s hand through water or walking against the wind are sensorimotor experiences that are harder to put a label on.

However, past research has typically not made a conceptual distinction between the different types of bodily experiences that are studied and the underlying mechanisms by which they exert an influence. For example, sensations that are relatively static and have a direct descriptive term in language (Ackerman, Nocera and Bargh 2010; Chandler, Reinhard and Schwarz 2012; Jostmann, Lakens and Schubert 2009; Lee and Schwarz 2012b; Meier and Robinson 2004; Schubert 2005; Williams and Bargh 2008; Zhang and Li 2012; Zhong and Leonardelli 2008) and those that are dynamic and do not always have a direct semantic correlate
(Chandler and Schwarz 2009; Hung and Labroo 2011; Krishna and Morrin 2008; Labroo and Nielsen 2010) are often clubbed together leading to some conceptual ambiguity regarding how they operate.

A few underlying process accounts are worthy of consideration. As noted earlier, if the sensation is easy to label, the activation of semantic concepts could account for many of the results. It is conceivable that sensorimotor experiences that are coded linguistically (using terms such as “warm” “rough” “smooth” etc.) have over time become associated with idiomatic expressions in language (e.g., a warm person, rough in appearance and speech, a smooth operator etc.). The experience of the sensation might make these semantic concepts more accessible, leading to its use in a different context where it might be deemed relevant (Zhang and Li 2012). Many studies have shown that such bodily experiences can influence judgments in unrelated domains (see reviews by Krishna and Schwarz 2014; Lee and Schwarz 2012a; Meier, Schnall, Schwarz and Bargh 2012; Reimann et al. 2012). Thus, for example, the experience of physical warmth affects judgments of how “warm” a person is (Williams and Bargh 2008; Zhong and Leonardelli 2008). Similarly, the experience of feeling something rough, leads people to consider a social interaction to be more difficult (Ackerman, Nocera and Bargh 2010).

When bodily experiences have a dynamic component, they are not easy to label or to code linguistically. As previously mentioned, this occurs in large part because such experiences involve not only a sensory aspect that one feels (e.g., “wet” “cool” or “soft” to touch) but a motor component that is crucial to the experience. This motor component reflects “doing something” and this along with the sensorimotor experiences could trigger affective reactions and associated behavioral dispositions. These could have an impact on behaviors in unrelated situations. Yet, there has been considerably less research examining this dynamic component of
sensorimotor experiences and the associated underlying processes. The current research provides an understanding of how both the sensory and the dynamic motor aspect of such experiences provide feedback that can influence consumers’ behavioral dispositions – specifically the choices they make and whether to fight against a persuasive message.

In the next section, I provide a conceptual framework for explaining how sensorimotor experiences can influence our behavior in unrelated situations using the construct of an image schema. Image schemas are a type of multimodal representation that form the basis of metaphor theory. I then test this conceptualization in two parts (Sections IIIa and IIIb).

In Section IIIa, I look at how sensorimotor experiences of going against the flow influence choice behavior. These effects on choice are important for marketers as it is important for them to know what makes people choose one option over the other. In making such a choice, consumers can rely on their own preferences or consider the preferences of others (West and Broniarczyk 1998; Wood, Lundgren, Ouellette, Busceme and Blackstone 1994). Marketers sometimes provide norm information about others’ preferences such as, “x% of people prefer this brand” or “The brand most people like” (Burnkrant and Cousineau 1975; Cialdini 2001; Cialdini and Goldstein 2004; Goldstein, Cialdini, and Griskevicius 2008). This serves as an externally provided norm. At other times, consumers might either go with their own preferences or infer what others like. This then serves as an internally generated norm. Thus, an option might be normatively preferred because it is something that is preferred by most people (including the consumer) and this information might either be explicit or not. There are, however, instances when consumers might choose to do something different by going against their initial inclination or by ignoring what is the normatively preferred option. This is often done with the objective of distinguishing themselves from others (Maslach, Stapp and Santee 1985;
Nail, MacDonald and Levy 2000; Snyder and Fromkin 1980). For example, in the consumer domain, there are times when a product becomes too popular or its use is considered clichéd. If this occurs, there is a tendency among consumers to choose something different. The desire to maintain distinctiveness appears to be inherent in consumers. So, at any given point, the tendency to go with the norm or against it might be equally accessible. Thus, it is important to examine what would make people go with the norm or against it. Here, I suggest that an experience as subtle as sensorimotor experiences of going against the flow can make people choose something that is not normatively preferred.

In Section IIIb, I examine the effects of sensorimotor experiences of going against the flow on reactions to persuasive messages. Companies continuously send out persuasive messages and communications to consumers through paid or unpaid means. Consequently, understanding what makes people accept or resist a message has long been of interest to marketers. More recently, researchers have started investigating the effects of bodily sensations on persuasion (Brinol and Petty 2008). Research in embodied persuasion typically involves examining how motor behavior such as nodding or shaking one’s head can influence thoughts to be more favorable or unfavorable (Brinol and Petty 2008; Tom, Pettersen, Lau, Burton, and Cook 1991). For example, Cacioppo, Priester, and Berntson (1993; see also Priester, Cacioppo, and Petty 1996) showed that arm flexion behavior (which is similar to approach behavior) increases favorable attitudes compared to arm extension behavior (which is associated with avoidance behavior). In general, this research has shown that such bodily movements can influence attitudes by serving as proprioceptive cues, influencing the amount or direction of thinking, and confidence in the thoughts that are generated (Brinol and Petty 2008). However, there is no clear
understanding of how these effects occur. Thus, clarifying the underlying mechanisms is important.

A total of 8 experiments were conducted to investigate these issues. The first part of the dissertation consists of six experiments in which participants experience sensations of going with the flow or against it. The effect that this experience has on subsequent choices between options that are normatively preferred and those that are not is examined. The second part of the dissertation consists of three experiments in which implications of this type of experience on the desire to oppose a message is examined. In this part, I also examine the role that volition plays in the process. That is, does the active or passive experience of the sensation change the metaphorical context and lead to different effects?

The current work is important theoretically because it contributes to an understanding of how embodied sensory experiences with a dynamic component affect choices and persuasion in unrelated domains. The effects of the sensation per se and the dynamic motor component of the experience have typically not been distinguished in past work and the current research shows that the motor component is an integral part of the experience that can exert an effect in its own right. The current research also identifies the mechanism underlying these effects.

The extension of the literature on embodied cognition to normative behavior is important because consumers often follow fads or choose to deviate from them and an understanding of this is important for consumption behavior in general. The finding that bodily sensations might have a profound effect on whether one chooses to go with the flow or against it raises intriguing questions about not only the role of internal states of flow but also how these feelings interact with external norms that might be apparent. Similarly, an understanding of how these experiences of going against the flow operate in a persuasion domain is important because our
tendency to counter argue might be differentially influenced by bodily experiences that are either experienced actively or passively (i.e., are volitional or not). Understanding how consumers respond to persuasive messages, the extent to which they are likely to resist persuasion and the factors that affect this desire to resist is generally important. The two essays (Sections IIIa and b) in conjunction shed light on these issues.
Embodied Cognition

Embodied cognition refers to the field of cognition where knowledge is assumed to be represented as concepts that have many of their original features intact (i.e., as amodal symbols). Thus, perceptions and bodily states might be coded in modalities that retain much of the original information. These amodal representations provide important input in cognitions (Barsalou 1999; 2008; Wilson 2002). For example, the experience walking on the wet sand on a beach can be represented in memory through multimodal representations that capture how the beach and the sand look, how the wet sand feels, the sound of the waves, the act of walking and the feelings that are elicited when an occasional wave touches one’s feet. These sensory experiences are stored in memory in representations that have visual, haptic, olfactory and auditory features.

It is worth noting that this view is not new and many theories in cognitive and social psychology have long debated the utility of such representational forms (Kosslyn, Ganis and Thompson 2001, 2006; Pylyshyn 1973). Many of these theories have suggested that information is processed reflexively or intuitively when it is first received and might be represented in forms close to the original (Lieberman, Gaunt, Gilbert and Trope 2002; Strack and Deutsch 2004; Wyer 2003; Wyer, Adaval and Colcombe 2002; Wyer and Radvansky 1999). Despite differences in the theoretical formulations, the consensus appears to be that multisensory experiences are represented in memory in some nonverbal form. One conceptualization of this representation is that of an “image schema”. Image schemas are important in understanding sensorimotor experiences as they function as the building blocks in the embodied representation of these
experiences. The features of an image schema are explained below.

**Image Schemas.** The notion of an image schema was first proposed by Johnson (1987) who saw it as “a recurring dynamic pattern of our perceptual interactions and motor programs that gives coherence and structure to our experience.” Simply put, a schema is basically a representation of knowledge that specifies relationships between entities. For example, a schema of a face specifies the position of the eyes above the nose and mouth. An image schema captures not only the spatial and physical characteristics but also the dynamic aspects of an experience. Although they remain a hypothetical construct (like any mental representation) they are useful because they provide a conceptual framework for the systematic investigation of how we interact with our environment and the relationship between various entities in the environment.

Image schemas presumably develop at an early age through motor behavior as infants learn about the world using their senses (Piaget 1977). Humans use their hands to explore the environment and acquire knowledge from infancy. As people are exposed daily to certain experiences (e.g., objects falling down, the experience of resistance, the experience of being “in” something), these schemas develop to represent knowledge about the world. Thus, an “up-down” schema might develop as children learn that things fall and don’t float when they drop them. Or, a “force” schema might develop as one experiences resistance and learns that one cannot walk through walls. A containment schema might develop as one learns that small objects can be placed within larger ones. Numerous image schemas have been documented in the cognitive linguistics literature and are largely categorized on the basis of space, containment, multiplicity, process, force, and attribute groups (Hampe and Grady 2005). As a result of these repeated sensorimotor experiences, schemas typically have three components – i) sensory details of the
experience ii) subjective reactions to it and iii) behavioral reactions to it (what one should do when one experiences it). These initial representations might form the bases of conceptual and linguistic metaphors that develop later in life.

It is worth noting that although work on schema theory and on conceptual metaphors emerged independently, they have since combined to provide the building blocks of the embodied cognition literature (Hampe and Grady 2005; Landau, Meier and Keefer 2010). Although there are differences in the two theories they share the broad notion that the meanings people give to abstract concepts are connected with bodily states and interactions with the physical world (Landau, Meier, and Keefer, 2010). In sum, the metaphor-enriched perspective complements the traditional schema view.

**Conceptual Metaphors.** As noted, sensory experiences might initially be encoded in some sort of schematic form. I assume that as language develops, semantic concepts get associated with these schemas. Further, a person might note analogies between these experiences and others that are experienced leading to the metaphorical expressions that are used to describe an experience or event that shares some properties with the original experience (Barsalou, 2008; Lakoff and Johnson, 1980b). Metaphors are thought of as “linguistic manifestations of image schemas” (Lakoff and Johnson 1980b). In other words, it is believed that repeated exposure to certain types of bodily experiences might lead to the formation of image schemas that might then be coded as metaphors (Johnson 1987; Lakoff and Johnson 1980b). For example, repeated sensory experiences involving the up-down movement leads to the formation of the up-down schema, which eventually leads to abstract analogies such as “feeling up” or “feeling down,” in an entirely different context pertaining to feelings (Lakoff and Johnson, 1980b). Thus, schemas
can be applied to understand several different types of situations in terms of these early percepts. The same up-down schema, for instance, is applicable to two different contexts: power and affect. Being physically high can imply higher status and more power (Schubert, 2005). Similarly, activation of an up-down schema through body movements can influence the positive or negative affect that people experience (Meier and Robinson, 2004).

According to the conceptual metaphor theory (Lakoff and Johnson 1980a; 1980b), people construe the world through conceptual metaphors which basically allow us to understand and experience one thing in terms of another (Lakoff and Johnson, 1980a). For example, the concept of an argument is reflected in everyday language using the conceptual metaphor of “war.” Some linguistic expressions such as “your claims are indefensible,” “I demolished his argument,” or “He shot down all my arguments” are suggestive of the use of this war metaphor.

Lakoff and Johnson (1980a) identify three basic types of conceptual metaphors: physical, structural and orientational. Physical metaphors are barely noticed because their conceptualization is so basic that they are taken for granted in our language. For example, the word “warm” which originates from the experience of temperature might enter language as an idiomatic expression (e.g., “warm person”). Structural metaphors are those metaphors where a concept from one domain (war) is used to structure a concept from another domain (argument). Consequently, one often notices people talking about winning or losing an argument. The third type of metaphor is an orientational metaphor in which an entire system of concepts is organized instead of only one. These metaphors are based on physical and cultural experiences and have both spatial orientation and movement. Examples include looking up-down, moving to the front-back, etc.

Past research in the embodied cognition area has investigated a variety of such
metaphors. For example, Williams and Bargh (2008) use a physical metaphor when they link a physical sensation (temperature) to warmth of an individual. Zhong and Leonardelli (2008) investigate similar physical metaphors by linking physical room temperature with “feeling cold and lonely”. Lee and Schwarz (2012b) use a structural metaphor when they associate a fishy odor with suspicion. Finally, work on the “up-down” orientational metaphor shows a link between position and feelings (Meier and Robinson 2004) and between position and power (Schubert 2005).

Two characteristics of this previous work are worth noting. First, the metaphors associated with sensorimotor experiences that have been examined are largely physical metaphors. Second, they tend to be elicited in response to sensations that are distinctive and easy to label semantically. For example, holding a warm cup of coffee is unambiguous with respect to the concept that it can activate (i.e., warm) and its idiomatic use in language (“a warm person”). Similarly, “rough” and “smooth” or “soft” and “hard” are unambiguous terms that are used to describe sensations. These words also have corresponding idiomatic expressions in language. Many of these idiomatic terms are “taken for granted” and emerge from metaphors that have been used in the past. They do not require much thought and are used frequently. The phrases “hard person,” and “smooth operator” do not require much cognitive effort to understand. The fact that it has become a common use term increases the likelihood that it will be elicited when the original sensory experience that the labels were based on are experienced again.

In contrast, the current research focuses on orientational metaphors that arise from sensorimotor experiences that are relatively more dynamic and have direction such as the experience of going against the flow. Such experiences are encountered quite often in daily life (e.g., when one moves one’s hands through fur in a direction that is opposite to hair growth or
when one walks against the wind or goes through a crowded mall against the direction that most shoppers are going). While some of the sensory components of this experience might be easy to label (e.g., fur feels rough, smooth, soft etc.), the motor component is not because of its dynamic character. Nevertheless, it might be a critical aspect of the experience and could provide useful information about the metaphorical direction in which to move (i.e., go with one’s sense of flow or against it). I expect that such experiences of flow and resistance have, in the past, led to the formation of an image schema that pertains to force (Johnson 1987). Metaphorical expressions in language (“going against the flow,” and “going against the grain”) testify that there might be an underlying representation that reflects experiences with flow and resistance. The experience of going against the flow could activate these underlying representations and influence certain types of consumer behaviors – more specifically the desire to choose options that are normatively less preferred.

The Metaphorical Representation of Force through the Force Schema

Initial sensorimotor experiences in reaction to force and resistance help develop schemas of the interaction of the person with aspects of the environment that elicit this sensation (Hampe and Grady 2005; Johnson 1987). For example, a child walking against the wind for the first time might remember the sensation of movement as well as the fact that this involved doing something different (the natural inclination being to give in to the force). Such initial experiences help in the creation of a schematic representation of force that includes one’s initial subjective reactions to this experience. These subjective reactions could include cognitions (semantic concepts and associated thoughts), feelings and behavioral reactions. Thus, a child’s experience
of walking against the wind might activate semantic concepts such as “windy”, “don’t fall”, “push” as well as cognitions about how to navigate the distance given the wind. The experience might also elicit subjective feelings (i.e., the conscious experience of what the bodily experience feels like; see Schwarz 2010 for a summary of different kinds of feelings). Often these feelings might be strongly associated with behavioral reactions such as a child’s attempt to not fall back and to push forward. The stronger the association between the feeling and the behavior, the more likely it is that the activation of one will lead to the activation of the other.

If at a later point these bodily sensations are re-experienced then, the existing schemas are reactivated along with the associated reactions. To the extent that these feelings are associated with behavioral dispositions, re-experiencing the same sensorimotor experience might trigger similar behavioral tendencies in a different, unrelated situation (Figure 1).

**Figure 1. Conceptual diagram.**

This image schema essentially guides one’s interpretation of the *current* situation. If the initial experience activates a behavioral tendency to do something different (e.g., not give in to
the force of the wind), then this tendency might persist in a new but unrelated situation. For example, the experience of going against the flow might lead the image schema of force to be activated along with the associated feelings and behavioral reactions. Once these feelings and behavioral reactions are accessible, they might affect how one responds in a new situation (e.g., making a choice between two products). People who have gone against the flow might be guided by these activated feelings and associated behavioral tendencies. They may, for instance, move away from their initial leaning and choose something different (i.e., something that is not what they or others prefer). Or, in a different context (e.g., a persuasion context) when one receives a persuasive message, the accessible feelings and associated behavioral reaction might make people resist the message leading to less persuasion. Thus, the sensorimotor experiences of going against the flow might affect how much one opposes an argument.

Past Research on the Metaphorical Effects of Sensorimotor Experiences

The idea that cognitive processes are rooted in bodily sensations is well accepted and the burgeoning literature in the area of embodied cognition (see reviews by Krishna and Schwarz 2014; Lee and Schwarz 2012a; Meier, Schnall, Schwarz and Bargh 2012; Reimann et al. 2012) bears testimony to the fact that many of these sensations have an impact not only in related domains (Chandler, Reinhard and Schwarz 2012; Crusco and Wetzel 1994; Huang, Li and Zhang 2013; Krishna and Morrin 2008; Labroo and Nielsen 2010; Nelson and Simmons 2009; Peck, Barger and Webb 2013; Peck and Wiggins 2006) but also in unrelated ones (Ackerman, Nocera and Bargh 2010; Hong and Sun 2012; Hung and Labroo 2011; Martin 2012; Williams and Bargh, 2008).
Sensorimotor Experiences in Related Domains. Previous research shows that sensorimotor experiences related to a product can influence evaluations of it. For example, McDaniel and Baker (1977) found that a harder-to-open potato chip bag increased evaluations of chip taste. Touch also influences persuasion, especially for those high in need for touch (Peck and Wiggins, 2006). More specifically, Peck and Wiggins (2006) found that brochures that had a touch element increased people’s willingness to donate if they had a high need for touch. Other sensorimotor experiences (such as interpersonal touch) can also influence consumers. For example, a gentle touch by a waiter can increase the tip a customer gives (Crusco and Wetzel, 1984) and a slight touch by a salesperson can make a customer comply more with a request to taste a snack in a supermarket (Hornik, 1992). The sensation from touch can also transfer to taste as the firmness of a cup can affect how the water tastes (Krishna and Morrin, 2008). Water ostensibly tastes better in a firm cup than in a flimsy cup. These effects have typically been attributed to the affective nature of the feedback from these sensations or to inferences consumers make based on these experiences.

Sensorimotor Experiences in Unrelated Domains. More recent research shows that sensorimotor experiences experienced in one domain can influence judgments and decisions in various unrelated domains through the activation of metaphorical concepts (Ackerman, Nocera, and Bargh 2010; Williams and Bargh 2008). For example, Ackerman and colleagues (2010) tested how three dimensions of sensorimotor experiences (i.e. weight experienced by holding heavy or light clipboards, texture experienced by solving rough or smooth puzzles, and hardness experienced by touching hard or soft objects) can nonconsciously influence judgments and decisions in a different domain. They asked participants to evaluate a job candidate by reviewing
resumes on either light or heavy clipboards (Study 1). Results show that participants who used heavy clipboards rated the candidate as better overall. Interestingly, the weight cue affected impressions of the candidate’s traits consistent with a “heavy” metaphor (i.e. performance and seriousness), but not the metaphorically irrelevant trait (i.e. social likeability). In another study, they asked participants to solve puzzles that had either rough or smooth surfaces and then asked them to evaluate a passage about an ambiguous social interaction. Those who completed the rough puzzle evaluated the interaction as more difficult and harsh (consistent with the metaphor “answering roughly” “rough in appearance and speech”) than participants who completed the smooth puzzle. The underlying mechanism in this body of work appears to be through the activation of semantic concepts that are either applicable in the unrelated situation or not.

To summarize, the effects of these experiences in related or unrelated domains can be explained either through the activation of semantic concepts or through the elicitation of subjective feelings that are then incorporated as a basis for making judgments and decisions. I examine these processes within the context of an image schema to provide a more comprehensive framework within which these different processes can be accommodated.

Underlying Processes: How Sensorimotor Experiences Affect Behavior.

As noted earlier, sensorimotor experiences can have an effect on judgment or behavior in related and unrelated domains. I explain the processes underlying these effects by using the aforementioned construct of an image schema. This construct allows me to explain sensory experiences that are both static and dynamic. Static experiences are more likely to be easy to
label. Thus, touching cotton might lead to the elicitation of the words “soft” and holding something that is hot might lead to the elicitation of the words “hot” or “warm”. However, when someone walks upstream or enters a room, these experiences are hard to capture using simple semantic terms. The image schema becomes a useful tool to conceptualize both types of experiences as described below. Specifically, I suggest that less dynamic sensory experiences are relatively easy to label and consequently might exert an influence through the activation of semantic concepts. More dynamic experiences that are difficult to label, however, might exert an influence through the feelings they elicit.

**Less Dynamic Sensation: Effects through the Activation of Semantic Concepts.**

Sensations that are less dynamic appear to have an effect is through the activation of semantic concepts. For example, if one holds a heavy weight, the concept “heavy” becomes more accessible. Likewise, if one is holding a warm cup of coffee, the concept warm is more accessible. These activated semantic concepts might be used to judge a target that is either related or unrelated. For example, Chandler, Reinhard and Schwarz (2012) showed that holding a heavy book can make people judge the book to be more important if they had some knowledge about the book. In this example, holding a heavy book can activate the concept of “heaviness” which is related to “seriousness” and “importance”, and this affects judgment of the related target, the book. Similarly, Williams and Bargh (2008) showed that holding a warm cup of coffee can make people judge another person to be a warm person. Thus, holding a warm cup of coffee can activate the semantic concept of “warmth”, which can be used to judge the friendliness of an unrelated target person.
More Dynamic Sensations: Effects through the elicitation of Subjective Feelings. The sensations that are more dynamic have more movement and are consequently less easy to label. These types of bodily experiences can be explained by the subjective feelings that are elicited from the sensations. For example, Krishna and Morrin’s (2008) study that showed that drinking water from a flimsy cup can make it taste worse than drinking it from a firm cup shows how feelings from a cup (which does not feel pleasant) might be transferred to the taste of a related target, the water in the cup. Similarly, Hung and Labroo (2011) showed that clenching one’s fist can make one exert more self-control by eating less unhealthy snacks. Specifically, the feeling from clenching one’s fist can generalize to an unrelated target (e.g., an unhealthy snack).

Another possibility is that these feelings are associated with behavioral tendencies. Thus, the initial experience of clenching one’s fists might be associated with an affective reaction as well as a behavioral tendency to be vigilant or ready to resist. When this sensation is re-experienced, both the affective reaction and the behavioral tendency might be reactivated and applied to the new situation. I use this idea to explain how experiences of going against the flow can lead to a tendency to choose something different and to resist persuasive communications. These processes are described in more detail in the sections where they are relevant.
In the current research I focus on sensorimotor experiences of going against the flow. I expect that such experiences have, in the past, led to the formation of an image schema that pertains to force (Johnson, 1987). When people re-experience going against the flow it could activate these schemas and conceptual metaphors and influence certain types of consumer behaviors – more specifically the desire to choose options that are not normatively preferred.

This idea is tested in six experiments. To manipulate the experience of flow, in some studies participants examine a sample of faux fur by either moving their hands in the direction of fur growth or against it to mimic the experience of going with the flow or against it. In other studies, participants imagine going against the flow of traffic in a subway. The effect that these experiences have on subsequent choices between normatively preferred and not preferred options is examined. Experiments 1a, 1b and 1c show that the sensorimotor experience of going against the flow makes participants choose normatively less preferred options. Experiment 2 identifies what aspects of the experience are necessary for the effect to occur. Experiment 3 provides process evidence by identifying why the effect occurs and experiments 4 and 5 identify conditions under which it is most likely to be evident and also direct evidence that participants are actually going against their initial inclination.

Normative and Counter-Normative Choices
There is considerable research in consumer behavior that shows that consumers tend to be attentive to the norm (Burnkrant and Cousineau 1975; Cialdini and Goldstein 2004). Evidence that they conform to others’ product preferences is also well documented (West and Broniarczyk 1998). One type of conformity occurs because people believe that others are more accurate and the norm has an informational influence (Cialdini 2001). In other words, consensus implies correctness, which makes people agree with the majority using consensus as a heuristic (Cialdini 2001). A second type of conformity occurs when people try to follow others in order to receive social approval. Classic experiments of social influence have shown that people tend to go with the majority (Asch 1956). Other than being directly influenced by others’ actions, people are also influenced by written information about others’ behavior (Goldstein, Cialdini and Griskevicius 2008). Specifically, Goldstein et al. (2008) found that normative messages (i.e. “the majority of guests reuse their towels”) increased towel reuse of hotel guests. Moreover, majority consensus often has a strong impact on judgments of personal preference (Wood et al. 1994).

Although conformity has several benefits for an individual trying to simplify their decision-making, nonconformity can also be advantageous (Argyle 1957; Hollander 1958). Nonconformity, independence, or resisting influence can help one differentiate from others and fulfill one’s need for individuality and uniqueness (Maslach et al. 1985; Nail, MacDonald and Levy 2000; Snyder and Fromkin 1980). For example, participants’ typically show a tendency to not conform when their uniqueness is threatened because of an encounter with a highly similar individual (Duval 1972; Weir 1971, as cited in Snyder and Fromkin 1980). Thus, in any given choice situation, consumers can go with what is normatively preferred or not.

It is worth pointing out that norm information might be more or less salient. In some cases, marketers might explicitly provide norm information in the form of best-seller signage
(Goodman, Broniarczyk, Griffin, and McAlister 2013). At other times, this information is less apparent and people have to either infer what the norm is or rely on their own preferences which might coincide with what is also normatively preferred. Experiences of going against the flow could affect the extent to which people deviate from what is normatively preferred. That is, they could either deviate from an external norm or what they would normally prefer (i.e., an internal norm). In general, however, this deviation is more likely when the norm is less explicit because feelings are typically used when no other objective criterion is available (Schwarz and Clore 1996).

The current research suggests that bodily experiences provide input into this tendency to go against the norm and pick options that one would normally not have picked. More specifically, I predict that the experience of going against the flow will affect the extent to which people choose the less preferred options.

How Do Sensorimotor Experiences of Going Against the Flow Impact Behavior?

Experiences of going against the flow can impact preferences in one of two ways. First, experiences that involve going against the flow (e.g., swimming against a current, moving one’s hands against the grain or weave) might activate the image schemas that have been formed in the past. These schemas store information about past feelings and behavioral reactions to a similar experience. The current experience might also elicit subjective feelings. (Subjective feelings are the conscious experience of how the bodily sensation makes one feel.) These subjective feelings could be confused with feelings associated with the image schema that is retrieved. The similarity between the two might trigger the associated behavioral response of what one does.
when one encounters a similar situation. In a choice situation, these feelings and the associated behavioral response might serve as information about how one feels about the alternatives. If one is drawn to an alternative, the activated behavioral tendency might make people feel like they should go against it. Thus, a normatively less preferred option might be chosen. If the feelings are misattributed to other sources, then the effects should be less apparent as is often the case when a feeling-based explanation is favored (Schwarz 2012; Schwarz and Clore 1983). Further, the more real or visceral the experience is, the greater the likelihood that these feelings will be elicited.

A second possibility is that the experience makes certain semantic concepts more accessible and these concepts guide subsequent choice behavior. The most direct evidence of this comes from studies that build on the metaphorical effect of physically carrying weight. Zhang and Li (2012), for instance, showed that physical experience is not a direct cause of the influence on judgment and decisions, and accessibility of the concepts is necessary for the effects. They suggest that the concept of heaviness or weight should be activated when people carry heavy weights and should influence judgments of importance. Specifically, in one of their studies, participants either carried a heavy bag or a normal bag, and engaged in a lexical decision task in which they were asked to judge whether a string of letters were words or non-words. The target words were “heavy”, “weighted”, “loaded”, “carry”, and “burdensome”. In the next task, participants were asked to indicate the importance of mastering investment skills in college. Results showed that carrying a heavy bag led participants to attach more importance to the investment task compared to carrying a regular bag. In addition, carrying a heavy bag decreased reaction time to target words such as “heavy” and “weighted,” suggesting that these concepts were more accessible. Further, the accessibility of the target words mediated the judgment of
importance in the second task. In the current context, one would expect that the experience of going against the flow might activate descriptive, semantic concepts such as “different” or “resist” and these concepts might trigger behavior that is consistent with them.

Although both process accounts are equally plausible, my conceptualization suggests that a feeling based explanation is more parsimonious. First, as noted previously, a large number of previous studies have focused on physical metaphors where the effects of sensations such as “warm,” “cold,” “heavy” and “rough” were examined. These sensations are relatively easy to label. Thus, the attribution of these effects to semantic priming is plausible. Once activated, a semantic concept might be applied to any type of ambiguous situation where it is relevant (Higgins 1996; Wyer and Srull 1989). In contrast, the types of experiences captured by dynamic orientational metaphors are more complex and harder to label. Thus, the likelihood that semantic concepts associated with the experience will guide the effect seems somewhat less likely.

Second, orientational metaphors are more complex because they require the mapping of one system or pattern of behaviors on to another. Thus, experiences involving going against the flow (represented by multimodal representations like an image schema of force) have to be somehow mapped on to other choice situations where they might be applicable. The closest plausible manner in which this might occur is through the activation of a cognitive production (Wyer, Xu and Shen 2012) that generalizes to other situations. However, such a process is likely to result in similar effects regardless of whether the self is involved in the experience or not. To the extent that these experiences are truly embodied, they have to originate in actions undertaken by the individual. A feeling-based explanation is relatively simple and could be based on the idea that feelings have long since been associated with behavioral tendencies (see Schwarz and Clore 2007) and situations that evoke them again are likely to lead to similar behavioral responses.
Given these considerations, it seems likely that any effects on the extent to which people choose normatively less popular options will be driven by feelings elicited and not by simple semantic concept activation. Stated formally:

\[ H1: \text{Participants who go against the flow are more likely to choose the normatively less preferred alternative compared to those who go with the flow} \]

The Embodied Nature of the Experience

The experience of going against the flow is presumed to have an effect on the extent to which people choose options that are not normatively preferred because self-experienced bodily feedback provides input into the decision process. This self-experience is essential for it to be truly an embodied effect. Previous research provides mixed findings about the extent to which this is true of embodied experiences. On one hand, a series of studies by Zhang and Li (2012) suggests that physical experience of heaviness is not necessary to obtain the effects of importance in judgments, and conceptual priming leads to similar results. In addition, two different sets of studies show similar findings on moral judgment when participants were primed with concepts of cleanliness (Schnall, Benton and Harvey 2008) and when participants experienced physical cleansing (Zhong and Liljenquist 2006). However, another series of studies on physical cleansing suggests the opposite. Specifically, Lee and Schwarz (2010a, Study 1) asked participants to choose a CD that was either their fifth and sixth preference to keep. After this, participants either examined a sample of soap or washed their hands with it. Results showed that participants who merely examined soap increased their preference for the chosen over the
rejected CD choice compared to those who washed their hands with soap. Apparently physically washing ones hands reduced the need to justify the choice. In other words, the act of physical cleansing led to a reduction of cognitive dissonance post choice, by increasing the perceived attractiveness of the chosen alternative and lowering that of the rejected alternative. Study 2 replicated this effect by showing that participants, who cleansed their hands with an antiseptic wipe after choosing one of two jams to keep, showed lower cognitive dissonance than those who merely examined the wipe. The results of these studies imply that mere examination of a cleansing product does not have the same effect as the physical experience of using the cleansing product. Although these studies are different in many respects from the Zhang and Li (2012) studies, it is not a stretch to consider that the examination of a cleansing product would also trigger the concept of cleansing and that it should have a similar effect. Thus, the Lee and Schwarz (2010a) studies show that in some cases mere observation or semantic activation might not be sufficient and that self-experience is a necessary component for the effects I postulate.

The role of imagery is also worth considering in this regard. A Damasian perspective suggests that bodily states do not necessarily have to be experienced at the time but also can be “experienced by” remembering it (Bechara and Damasio 2005; Damasio 1994, cited in Reimann et al 2012) and simulating it mentally (Barsalou 1999; cited in Reimann et al 2012). In addition, research on visual depiction shows that when a product is shown in a way that makes it easy to imagine using it, mental simulation has similar effects on behavioral intentions as the actual use of the product (Elder and Krishna 2012). Thus, I should expect similar effects of sensorimotor experience when it is easy to imagine the experience. However, merely observing someone else engage in the act might activate concepts associated with the experience but should not have the effects that a real experience does. Thus, my conceptualization emphasizes that for the
sensorimotor experience to have the effects proposed the self has to be involved, either through an actual physical or haptic experience, or through a vividly imagined simulation of it. Stated more formally, I expect:

\[
H2: \text{The effect of going against the flow on choosing the normatively less preferred alternative is more likely to be observed when the experience of flow is experienced physically relative to when the experience of flow is merely observed.}
\]

To summarize, I postulate that the experience of going against the flow makes participants pick options that are normatively less preferred. This change in preference is driven by subjective feelings that are elicited by the bodily experience rather than by the activation and application of descriptive, semantic concepts associated with the experience. Finally, self-experience (that includes both the sensory and motor component) is necessary for the effects to be evident. I test these hypotheses in a series of experiments described below.

EXPERIMENT 1A: EFFECTS OF GOING AGAINST THE FLOW ON PREFERENCE

Experiment 1a provides preliminary support for the idea that bodily experiences that involve going against the flow influence the choices participants make. Participants were given a sample of faux fur to evaluate. They were asked to evaluate it by running their hands through it either in the direction of hair growth or against it. After this, they were asked to make choices for men and women’s jewelry. The number of normatively less popular options they chose was used as the dependent measure.
Method

*Overview and Design.* Forty-nine undergraduate business students (73% female) participated in the study for extra course credit. Participants were randomly assigned to one of two conditions of a single factor design involving our key construct – the sensorimotor experience of going *against the flow* or going *with the flow*.

*Procedure.* When the participants arrived at the lab, the experimenter randomly assigned them to one of two conditions. They were told that they would be taking part in several unrelated experiments that had been put together to give them course credit. Participants were told that the first experiment was a product-testing task in which they would evaluate materials used by interior design firms for furnishings. Under this pretext, participants were given a sample of faux fur. To test it, they were asked to stroke the sample with their hands in one of two directions. In the *going with the flow* condition, the fur sample was stroked three times in the direction of hair growth in a manner that would smooth the fur. In the *going against the flow* condition, the fur sample was stroked three times in a direction that was opposite to the direction of hair growth, so that the fur would be ruffled. Directions were given by asking participants to move their hands “from A to B” and the words “ruffle” “smooth” or other words that could imply resistance or flow were never used.

Immediately after testing the fur sample, participants in the two flow conditions indicated how much they liked it on a scale that went from zero (not at all) to 10 (very much). They also indicated how they thought the material would look in interiors along a scale from -5 (very bad)
to +5 (very good). After this, participants were told that reactions to products are usually more stable once they have had some time to think about it. They were told that they would be asked questions about the sample they had touched a short while later, and that they should keep in mind how they felt while touching the sample so that they could answer these questions. They were told that in the interim, they would be given an unrelated task.

The unrelated task was a product preference task and participants were asked to indicate their preference for different options of jewelry. The first set consisted of two women’s bracelets, and participants were asked to choose one. The second set was for men’s pendants, and participants were asked to choose between a pair of pendants. See Appendix B for a sample. (A separate pretest with 22 participants was used to identify which of these was the more preferred option. Specifically, participants were asked to choose the option they preferred from the same sets that were used in the experiment. Results showed that the less preferred option was option A (40.91% preferred; \( t(1,21) = 5.51, p < .01 \)) for the bracelet, and option B (40.91% preferred; \( t(1,21) = 3.81, p < .01 \)) for the pendant.)

Results

**Evaluations of the Fur.** No differences were observed in participants’ liking for the fur when they moved their hands against the direction of fur growth (\( M_{\text{against\_flow}} = 6.3, \) SD = 2.06) relative to when they moved it in the direction of fur growth (\( M_{\text{flow}} = 6.5, \) SD = 2.92), \( F < 1 \). Similarly, there were no significant differences in participants’ assessment of how good it would look in furnishings in the two conditions (\( M_{\text{against\_flow}} = 1.04, \) SD = 2.39 and \( M_{\text{flow}} = 0.25, \) SD =
2.94, \( F = 1.07 \). Thus, differences in evaluations of the fur could not have been used as a standard of comparison when choosing different options.

_PREFERENCE FOR LESS PREFERRED OPTIONS._ Participants could have chosen none of the normatively less preferred, one of them or both. An average score was computed for each participant to determine how many of the less preferred options they chose and this score was analyzed as a function of the two flow conditions. As expected, participants who had experienced going against the flow were more likely to choose the less preferred options (\( M_{\text{against\_flow}} = 0.88, \text{SD = } 0.50 \)) than those who had gone with the flow (\( M_{\text{flow}} = 0.58, \text{SD = } 0.46 \)). This difference was significant, \( F_{\text{dir}}(1,47) = 3.07, p < .05 \).

Discussion

Experiment 1a provides preliminary support for our hypothesis that dynamic sensorimotor experiences might activate a behavioral disposition to go against what is normatively preferred. It also rules out the possibility that evaluations of the sensorimotor experience (as positive or negative) could have been used as a standard of comparison in judging the options that they saw later. In the following experiment, a different manipulation of flow was used and participants were asked to imagine the experience. To the extent that imagination creates a real life-like experience and people are able to imagine it well, the image schema of force should be activated and should lead to similar effects on choice.

EXPERIMENT 1B: IMAGINE GOING AGAINST THE FLOW
Method

*Design.* 175 mTurkers (40% female) participated in the experiment in return for a small payment of $.30. The participants were randomly assigned to a single factor between-subjects design in which they were asked to either imagine going against the flow or with the flow.

*Procedure.* Participants were either in the *with flow* condition or *against flow* condition as part of a mental imagery study. They were told that we were interested in how well people can visually imagine being in different situations with different types of sensory input. They were asked to view a silent video clip of a crowd walking in a subway station and to imagine the scene as vividly as possible as if they were physically experiencing it themselves (see Appendix C.1 for a still image of the video). Those in the *going with the flow* condition were asked to imagine that they were on the left conveyor belt walking in the same direction as the crowd and those in the *going against the flow* condition were asked to imagine that they were on the right conveyor belt (i.e., walking in the opposite direction to most of the crowd). Then, they were asked how easy was it to imagine the situation on a scale from zero (not at all) to 10 (very much).

Next, as an ostensibly different task, participants were then given a choice task in which they were asked to choose between two different brands of chocolates A or B (Appendix C.2). The main dependent variable was the proportion of people who showed a preference for that option. (A separate pretest with 32 participants was used to identify which of these two options was the more preferred option. Results showed that the less preferred option was option B.
(12.5% preferred; \( t(1,31) = 14.73, p < .01 \)). After participants indicated their preference, they were asked how much they liked each option, how different they thought each option was from a typical chocolate, and how appealing each option is to most people on scales from zero (not at all) to 10 (very much).

Next, they were asked to think about the initial simulation experience once again. As a manipulation check of flow, participants were asked to report the extent to which they felt they were going against the flow along an 11-point scale from zero (not at all) to 10 (very much). They were also asked whether the simulation influenced their answer in the subsequent choice task (yes or no). Some basic demographic information, such as gender, age, and race was collected.

Results

*Manipulation Check of Flow.* The manipulation of going against the flow was successful. As expected, participants who went against the flow reported that they felt like they were “going with the flow” to a lower extent (\( M_{\text{against flow}} = 2.99, \ SD = 2.72 \)) than those who went with the flow (\( M_{\text{flow}} = 7.47, \ SD = 2.91 \)), \( F(1,175) = 124.899, p < .01 \).

*Chocolate Choice.* As predicted, there was a significant interaction between the feelings of flow and how easy it was to imagine the scene on the likelihood of selecting the less preferred option. A logistic regression was performed on choice of the less preferred option (coded 1 for choosing the less preferred option and 0 for the more preferred option) with two independent variables: a) ease of imagining measured on a 0 - 10 scale; b) a dummy variable indicating flow (coded as zero) and against flow (coded as one); and (c) their interaction. The results showed no
main effect of flow (B = .13, SE = .32, Wald $\chi^2 = .17$, df = 1, $p = .68$), but a significant two-way interaction of flow and ease of imagining the scene (B = .70, SE = .36, Wald $\chi^2 = 3.86$, $p = .049$).

Spotlight analysis was performed at 2 standard deviations above and below the mean of the continuous variable - ease of imagining. When imagining was perceived as difficult, going against the flow did not make people choose the less preferred option. In contrast, when imagery was easy, going against the flow increased the probability of choosing the less preferred option.

**Thoughts About Chocolate Options.** There were also no significant differences in how much each option was liked (option A $M_{with\ flow} = 7.27$ vs. $M_{against\ flow} = 7.29$; option B $M_{with\ flow} = 6.69$ vs. $M_{against\ flow} = 6.34$), perceived to be different from the typical chocolate (option A $M_{with\ flow} = 5.81$ vs. $M_{against\ flow} = 6.13$; option B $M_{with\ flow} = 6.11$ vs. $M_{against\ flow} = 6.08$), or appealing to most people (option A $M_{with\ flow} = 7.52$ vs. $M_{against\ flow} = 7.81$; option B $M_{with\ flow} = 7.21$ vs. $M_{against\ flow} = 6.90$) between the two flow conditions (all $F$s < 2, $ps > .31$).

Discussion

Findings from Experiment 1b demonstrate that participants who found it easy to imagine the experience were more likely to choose the less preferred product when they re-experience going against the flow than when they go with the flow. Experiment 1b is important for two reasons. First, a different manipulation improves construct validity. Second, imagined self-experiences of going against the flow also lead to similar effects as long as participants find it easy to imagine.
However, the study design precluded an examination of whether the effects were driven by the experience of "going against the flow" or "going with the flow". Experiment 1c not only replicated the results in a different domain but also shed light on this issue.

EXPERIMENT 1C: EXPLORING THE DIRECTION OF THE EFFECT

Method

**Overview and Design.** One-hundred-and-twenty-six undergraduate business students (52% female) participated in the experiment in exchange for extra course credit. Participants were randomly assigned to one condition of a three level between-subjects design (flow experience: against the flow vs. with the flow vs. no flow control).

**Procedure.** The procedure was similar to Experiment 1a except as noted. Participants in the two flow conditions were given the same fur evaluation task. Those in control conditions did not receive this task. Participants then moved on to a product preference task in which they were told that the College of Business was collecting opinions from students to help design a t-shirt for the following year. Participants chose the base color of the t-shirt they preferred from a set of four plain t-shirts with no logos. Three of these were similar in color (different shades of grey), and one was different from the rest (green). See Appendix D.

Following this, participants returned to the fur evaluation task and indicated the extent to which they felt different adjectives (rough, soft, comforting, soothing, pleasing, unique, common, irritating, dull, exciting, mundane, original) characterized the fur sample along scales
that went from zero (not at all) to 10 (very much). Participants in the control condition did not 
complete this measure because they had not seen the sample. After a demand check, participants 
provided some demographic information, were thanked, debriefed and dismissed.

Results

Evaluations of the Fur. As expected, liking for the fur sample was similar in the two flow 
conditions ($M_{\text{against\_flow}} = 5.19$, SD = 2.53 vs. $M_{\text{flow}} = 5.32$, SD = 2.64; $F < 1$). Similarly, there 
were no differences in participants’ assessment of how good it would look in furnishings 
($M_{\text{against\_flow}} = -1.73$, SD = 2.37 and $M_{\text{flow}} = -1.49$, SD = 2.65; $F < 1$). Thus, as in experiment 1a, 
differences in evaluations could potentially not be used as a standard of comparison for 
subsequent differences observed in product preference.

Preference for the Less Preferred Option. To analyze the data, the three similar t-shirts 
were coded as 0 and the unique t-shirt was coded as 1. One student who did not provide a 
response was excluded from the analysis. An analysis of variance was conducted to see if the 
choice of the different t-shirt varied as a function of the two flow conditions and the control. As 
expected, an overall effect of flow involving all three conditions was significant, $F(2,122) = 3.45$, 
$p < .05$. The proportion of participants who chose the different t-shirt in the control condition 
was 7.69% suggesting that it was not a popular option. Similarly, 9.3% of the participants who 
goed with the flow chose this option and the difference between this condition and the control 
was not significant, ($F < 1$, $p = .83$). However, participants who went against the flow were more 
likely to pick the t-shirt that was different and not normatively popular (25.58%) and this was
significantly different from the control, $F(1,122) = 6.55, p < .05$; and the flow condition, $F(1,122) = 5.81, p < .05$.

*Ratings of the Fur.* Six items (rough, irritating, soft, comforting, soothing, pleasing) were combined to create a measure of roughness after reverse coding the last four ($\alpha = .89$). The other six items (mundane, common, dull, unique, exciting, and original) were combined to create a measure of uniqueness after reverse coding the first three ($\alpha = .61$). Participants’ ratings of the fur along the two dimensions were not significantly different across the two flow conditions ($F = 1.13, F < 1$, respectively). These measures were also collected in subsequent studies but since they did not yield any significant main or interaction effects with flow and other manipulated variables, they will not be discussed further.

Discussion

This experiment suggests that the sensorimotor experience of going against the flow makes participants want to seek something that is different - i.e., the option that is normatively less preferred. Apart from replicating the effect in a different domain this experiment also shows that the sensorimotor experience of going against the flow is responsible for the effect as it was localized in the condition where participants stroked the fur in a direction that was against the flow and the other flow condition was very similar to the control condition.

These results provide support for the hypothesis that experiences of going against the flow affect consumers’ preference for options that are normatively less popular. Several interesting theoretical and empirical questions about the underlying process arise based on our conceptualization. According to this conceptualization, sensorimotor experiences have to be
personally experienced for them to have an effect. To the extent that embodied experiences involve sensations experienced by the self and the associated subjective feelings, one would expect that this aspect is a critical part of the experience and the effects would not be evident if the sensorimotor experience is merely observed. Experiment 2 addressed this question by examining characteristics of the sensorimotor experience that might be necessary for the effects on preferences to be evident. Participants in this experiment were asked to a) engage in the sensorimotor experience themselves as in experiments 1a and 1b or b) to view a videotape of someone else engaging in it or c) to view a static picture of the fur in a ruffled versus smooth state. If participants choose the less preferred option only when they engage in the experience themselves, it suggests that these experiences are grounded in one's own bodily experiences and are not elicited by merely observing others' engaging in the act. Further, if participants choose the less preferred options only in the dynamic self-experience conditions and not when they see a static picture of the fur, it provides support for the idea that the dynamic or motor component of the experience is critical.

A second question pertains to the extent to which descriptive aspects of the action are responsible for the effect. It is possible that when people stroke the fur against the direction of hair growth, they notice that they are doing something different and this might activate semantic concepts such as “different”, “resist” or “flow” and these concepts might guide subsequent behavior. A lexical decision task that assesses accessibility of these concepts should be diagnostic. It is worth noting, however, that such concepts are likely to be activated even if one observes someone else stroking the fur in the direction that is against the flow and one would expect to see increased accessibility of such concepts regardless of whether the experience is one’s own or another’s.
A third question surrounds the possibility that the reason why this effect occurs is because it activates a behavioral disposition (Wyer, Xu and Shen 2012). That is, the experience of moving one’s hands over fur in a direction that is counter normative primes people to behave in a similar manner. However, if this explanation is correct, then similar effects should be evident when participants engage in the act and when they observe it (Shen, Wyer and Cai 2012). Experiment 2 provided answers to these questions.

EXPERIMENT 2: OBSERVED VS. ACTUAL SENSORIMOTOR EXPERIENCES

Method

Overview and Design. One hundred and fifty nine undergraduate business students (51.6% female) participated in the study for extra course credit. Participants were randomly assigned to one of the seven conditions of a 2 (flow experience: against the flow vs. with the flow) x 3 (type of experience: dynamic self-experience vs. observed dynamic experience vs. observed static experience) between-subjects design with a seventh control (no flow) condition.

Procedure. The procedure was similar to previous experiments except as noted. Participants were told that we were interested in how people evaluate materials based on different levels of sensory input (i.e. either tactile or visual input), and that based on the condition they were assigned to, they would be asked to evaluate the fur sample either after touching it, viewing a video of someone else touching a fur sample, or after looking at a photograph of the fur sample. As in previous experiments, participants in the dynamic self-
experience condition were asked to test a sample of fur by touching it in a direction that would mimic the experience of going with the flow or against it. In the dynamic observed experience conditions, participants were asked to view a video clip of someone either ruffling or smoothing the fur sample. The video clip captured just the hands moving over the sample and not the individual. In the static still image conditions, participants were asked to view a photograph of the fur sample either ruffled (a result of someone having gone against the flow) or smoothened (a result of someone having gone with the flow). In the control conditions, participants did not view or touch any fur sample. After exposure to the sample, participants evaluated it using the same measures as in experiments 1a and 1c and were then presented with the same product preference task used in experiment 1a (Appendix B).

To determine if descriptive semantic concepts had been activated upon exposure to the fur, participants were given a lexical decision task next. This task was presented as an unrelated task that was being completed at the behest of a professor in psychology. Participants were presented with words and non-words on a computer screen and were asked to press one of two designated keys when they saw a word and the other designated key when they saw a non-word. They were told that both speed and accuracy were important and that the computer would measure both responses. The presentation list included target words that were likely to be elicited by the experience ("different," "soothe," "flow," "resist") as well as non-target words (such as "forget", "chair" etc.). In addition there were non-words (e.g., "iocabu", "oxitil" etc.). Two stimulus lists were constructed to control for the order in which the target words appeared.

Participants were then asked to think back to the time they completed the fur evaluation task and were asked to complete a manipulation check. This check comprised five items that assessed the experience of flow by asking participants to indicate the extent to which they felt
they were experiencing something rough, going against the flow, doing something different, agitating something or someone and experiencing resistance along scales that went from 0 (not at all) to 10 (very much). After a suspicion check that asked participants to indicate what they thought the experiment was intended to measure, participants provided demographic information and were thanked, debriefed and dismissed.

Results

Manipulation Check of Flow. Participants responses to the five questions that comprised the manipulation check were aggregated ($\alpha = .77$) and analyzed as a function of flow and type of experience. As expected, participants who went against the flow reported that they felt like they were “going against the flow” to a greater extent ($M_{\text{against flow}} = 3.84, \ SD = 1.54$) than those who went with the flow ($M_{\text{flow}} = 2.82, \ SD = 1.73$), $F(1, 131) = 10.82, \ p = .01$ and this difference was not contingent on the type of experience they had, $F(1,131) = 2.91, \ p > .10$. No main effect of type of experience was observed either, $F < 1, \ p > .48$.

Evaluations of the Fur. The two items (liking of fur and how good it would look in interiors) were combined to create a fur evaluation measure ($r = .68, \ p < .01$). They were analyzed as a function of flow and type of experience. As in previous studies, the main effect of flow on fur evaluations was not significant ($F < 1, \ p > .89$). There was, however, a significant main effect of type of experience on participants’ liking for the fur ($F(1,130) = 26.24, \ p < .01$). Participants in the self-experience condition evaluated the sample more favorably ($M = 6.92, \ SD = 1.32$) than those in the observed experience condition ($M = 5.45, \ SD = 1.78$), which had a more
favorable evaluation than the *still image* condition $(M = 4.44, \text{SD} = 2.00)$. This is consistent with previous research that touching a product increases liking for it (Peck and Wiggins 2006). However, this effect was not contingent on the experience of flow $(F = 1.22, p > .29)$. Furthermore, these differences cannot explain the effects I obtain since more liking of the product should not necessarily lead to a higher likelihood of choosing an unpopular option in a different choice setting.

*Preference for the Less Preferred Option.* As in experiment 1a, an index was computed based on the number of unpopular options participants chose. A one-way analysis of variance on this index as a function of the 7 conditions showed that the seven conditions were significantly different from each other $F(6, 151) = 2.14, p = .05$. Means are tabulated in Table 1.

<table>
<thead>
<tr>
<th>Table 1. Experiment 2: Mean (SD) of unpopular choices as an effect of flow in the experience conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Control</strong></td>
</tr>
<tr>
<td>0.85 (0.66)</td>
</tr>
<tr>
<td>1.04$^a$ (0.66)</td>
</tr>
<tr>
<td>0.59$^b$ (0.68)</td>
</tr>
</tbody>
</table>

NOTE.—Mean number of unpopular choices parameters vary from 0 to 2
NOTE.—Means with dissimilar first superscripts (a, b) significantly differ at $p < .05$ for each row

Next, a 3 (type of experience) x 2 (flow condition) analysis was conducted on this index. Although there were no main effects of experience type or flow on the number of less preferred options that were selected $(F < 1)$, as predicted, a significant interaction involving the two variables emerged, $F(2, 151) = 6.35, p < .01$. Planned contrasts indicated that, in the *dynamic self-experience* condition, people were more likely to choose more of the less preferred options.
when they had gone against the flow than when they had gone with the flow ($M_{\text{against flow}} = 1.07$, SD = 0.60 vs. $M_{\text{flow}} = 0.59$, SD = 0.68; $F(1,151) = 8.12, p < .01$). This pattern of results replicates that shown in previous experiments. Interestingly, participants in the *dynamic observed experience* condition did not vary significantly in the number of unpopular options they chose ($M_{\text{against flow}} = 0.75$, SD = 0.70 vs. $M_{\text{flow}} = 0.95$, SD = 0.60; $F < 1, p = .35$). In the *static observed experience* conditions when participants merely looked at a static picture of fur that looked ruffled versus smooth, their preference for less popular options were reversed ($M_{\text{against flow}} = 0.65$, SD = 0.58 vs. $M_{\text{flow}} = 1.04$, SD = 0.66; $F(1,151) = 3.83, p = .05$) suggesting that they perhaps felt motivated to smoothen the fur out and this elicited a tendency to go with the flow.

*Lexical Decision Task: Responses to Target Words.* Participants’ reaction time to target words (soothe, flow, against, resist) were averaged and submitted to a one-way analysis of variance involving the seven experimental conditions. As expected, the conditions were not significantly different from each other ($F = 1.66, p > .13$). A follow up analysis involving the two levels of flow and three levels of experience type also revealed that the interaction of the two variables on reaction time to target words was not significant ($F = 1, p > .36$). There was also no main effect of flow ($F < 1, p > .76$). However, there was a significant main effect of experience type on reaction time to target words ($F(2,152) = 3.04, p = .05$). Pairwise comparisons indicate that those in the *observed dynamic experience* condition were 71.31 milliseconds faster in recognizing the target words ($M_{\text{observe}} = 625.77$, SD = 22.81) than the *self experience* condition ($M_{\text{self}} = 697.08$, SD = 19.11vs.; $F(1,152) = 5.75, p < .02$). However, reaction time to target words in the *static image* condition ($M_{\text{static}} = 652.06$, SD = 22.53) were not significantly different from the *self experience* ($F = 2.32, p > .12$) or *observed dynamic experience* condition ($F < 1, p > .)
Discussion

Experiment 2 provided several insights about the process underlying the effects observed in experiments 1a, b and c. First, the results suggest that self-experience of the bodily sensation of going against the flow is necessary before it can influence consumers’ choices. The absence of an effect under conditions when someone else was going against the flow suggests that observed experiences do not trigger a similar reaction among consumers. It is worth considering these results in light of the finding that imagined experience (experiment 1b) produces an effect. Imagining an experience requires that people put themselves in the situation (Jiang, Adaval, Steinhart and Wyer 2014). To the extent that they are able to successfully do so leads to the hypothesized effects. However, this imagined experience is quite different from a situation where one watches another person stroke the fur as self-experience is not involved. Thus, it is not surprising that the effects were not observed in that condition. Further, the difference in results between the static and the dynamic self-experience condition also testifies to the fact that the motor component of these embodied experiences is important and should not be neglected.

In line with this, the lexical decision task data revealed that target descriptive words were not differentially activated as a result of the experience. In other words, the descriptive aspects of the fur (i.e., its appearance of being ruffled or smooth) did not elicit any semantic concepts that could then be used as a basis for determining preference. If anything, viewing a still image of ruffled fur appeared to evoke the motivation to go with the flow and this was reflected in the preference data as more people chose the preferred options when they saw the ruffled fur sample.
Finally, the experiment also suggested that the effects were not a result of a behavioral mindset or production that was activated by seeing someone engage in an act that was counter-normative. If this were the case, then viewing someone else engage in the act should lead to similar effects either because people try to mimic the other person (Chartrand and Bargh 1999; Chartrand and van Baaren 2009) and/or via the activation of cognitive procedures (Shen, Wyer and Cai 2012; Wyer, Xu and Shen 2012).

My explanation of the effects is based on the idea that bodily experiences are often dynamic and elicit subjective feelings. Thus, going against the flow (e.g., walking against the wind or moving one's hands against the grain of the fur) evokes a subjective feeling of moving against something and these internal subjective feelings of flow (or of going against it) can serve as information in a new situations. When participants encounter a situation that requires them to make a decision about whether to pick a popular option versus one that is less popular, their subjective feelings of flow dictate what they feel like doing. If this reasoning is correct and feelings do underlie the dynamic sensorimotor experience of going against the flow, then one would expect that a classic misattribution manipulation that has often been used in the affect literature (Schwarz and Clore 1983) would be diagnostic. That is, if these subjective feelings are indeed elicited and are responsible for the effects observed, then misattributing them to another source should remove any effect they have on preferences. Experiment 3 tested this assumption.

EXPERIMENT 3: MISATTRIBUTION OF SUBJECTIVE FEELINGS ELICITED BY DYNAMIC SENSORIMOTOR EXPERIENCES

Method
Design. 118 business undergraduates (57% female) participated in the experiment in exchange for extra course credit. They were randomly assigned to a 2(flow experience: going against the flow vs. with the flow) x 2(attribution: misattribution of feelings to room vs. no misattribution) between-subjects design.

Procedure. All participants were given a brief introduction to the experiment. They were told that they would first participate in a study for a design firm, where they would examine some material for use in interiors and a second task that was a product pretest for a different study. Participants in the attribution conditions were also told that the department monitors research conditions and how participants are feeling at different points in the day and that if they were asked a few questions about this, they should answer the questions based on how they were feeling at that point.

Participants were then given the first study that was ostensibly for a design firm. As in previous experiments, to manipulate flow, participants were first given the fur product-testing task. Then they reported their reactions to the fur sample along the same scales that were used in previous studies. After being told that participants responses are often more reliable after they have had some time to think about it, they were given the product preference task. Participants in the no misattribution condition proceeded to this task directly. However, those in the misattribution condition were asked to fill out a couple of feeling measures for the department. Specifically, participants were told that others had reported that the room in which the experiment was being conducted made them feel uncomfortable. They responded to two questions and reported how comfortable they felt at the moment on a scale from -5 (very
uncomfortable) to +5 (very comfortable), and whether they were experiencing any sensations that did not feel right (yes or no). Then, they moved on to the product preference study.

The product preference task which all participants received required them to make a choice between two different brands of chocolates used in experiment 1b (Appendix C.2). The main dependent variable was the proportion of people who showed a preference for that option. The time that participants took to choose their options was recorded unbeknownst to them. After indicating their preferred option, participants answered questions about how much they liked each chocolate, how different they thought each chocolate was from a typical chocolate, and how appealing each chocolate was to most people along scales from 0 (not at all) to 10 (very much).

Following this, to match the cover story of fur product evaluation, participants returned to the product testing task and indicated the extent to which they felt different adjectives characterized the fur along scales similar to those in experiment 1c. However, because these scales did not reveal any significant effects, they are not discussed further. After a suspicion check that asked participants whether the first product sample task influenced the second choice task, and an open-ended question asking them to state the purpose of the study, participants provided some demographic information, were thanked, debriefed and dismissed.

Results

Based on the suspicion check measure, 12 participants who indicated that the first fur sample evaluation task influenced their responses in the second chocolate choice task were eliminated. Specifically, these participants showed hypothesis guessing in their comments about the study. That left us with 106 participants (51.9% female) in the analysis.
Fur Sample Evaluation. Participants ratings of the fur were averaged ($r = .48$) and analyzed as a function of flow and attribution conditions. As expected, there were no significant effects on this measure ($F$s < 1.5).

Preference for the Less Preferred Option. The number of people who preferred the unpopular option was analyzed as a function of flow and attribution conditions. The main effects of flow and misattribution conditions were each not significant ($F$s < 1). However, a significant interaction involving the two variables emerged, $F(1, 102) = 4.66$, $p < .05$. Planned contrasts showed that in the no misattribution condition, those who had gone against the flow were more likely to choose the less preferred option compared to those who went with the flow ($M_{\text{against}_\text{flow}} = 51.7\%$ vs. $M_{\text{flow}} = 23.3\%$; $F(1, 102) = 5.36$, $p = .02$). On the other hand, participants who had misattributed the feelings elicited by the sensorimotor experience to the room showed no difference when they went against the flow ($M_{\text{against}_\text{flow}} = 26\%$) and when they went with the flow ($M_{\text{flow}} = 37\%$), $F < 1$.

The time participants took to choose the chocolate option did not vary as a function of the experimental conditions (average 15.31 seconds), $F$s < 1 for main effects and interaction. This suggests that the manipulations did not affect the amount of thinking participants engaged in.

Evaluations of the Less Preferred Option. Participants’ liking for the less preferred option showed a similar pattern as that observed in the preference data. In conditions where subjective feelings could not be attributed to the room, participants showed greater liking for the less preferred option when they went against the flow ($M_{\text{against}_\text{flow}} = 7.66$) than when they went with
the flow ($M_{\text{flow}} = 6.43$), $F(1, 102) = 4.43, p < .05$. However, when participants were able to misattribute these feelings to the room, this difference was not apparent ($M_{\text{against\_flow}} = 6.39, M_{\text{flow}} = 6.79, F < 1, p > .56$). This was confirmed by a marginally significant interaction involving the two variables, $F(1, 102) = 3.33, p = .07$.

There were no differences in how different participants thought the unpopular option was from a typical chocolate ($F < 1, p > .50$), suggesting that participants did not pick this option because they thought it was different or unique. Rather, they appeared to be simply using their subjective feelings as an input in choice.

Discussion

My conceptualization assumes that these bodily experiences of flow yield results through a process in which people are unaware of the effect of these subjective feelings on choice. When they misattributed feelings to an alternate source, the effects on preference were not evident.

The findings of this experiment converge on the idea that sensorimotor experiences of going against the flow not only have a sensory component but a dynamic component as well and these in conjunction elicit subjective feelings. The feelings of flow (or lack thereof) are then used as information when a choice has to be made and this leads to a greater preference for the normatively less preferred option. That is, when participants are asked to indicate a preference, they use these internal feeling states of flow that are elicited by the sensorimotor experience as a guideline to choose things that are less popular. Although the results of this experiment showed that people did not vary in how long they deliberated over the decision of what to choose and also did not perceive the option they chose as more unique, it is nevertheless possible that such
experiences alter preferences through a more deliberative route. That is, participants might first assess what others consider popular or what they themselves think is the better option and then decide to deviate from it.

Experiment 4 was conducted to assess if the tendency to choose options that are less preferred as a function of the experience of going against the flow is likely to be evident when an external norm is made salient. That is, if people are explicitly told that 60% of the people prefer option A(B), would they necessarily deviate from this externally provided norm? My conceptualization suggests that if the external norm is made clear, participants will be less likely to be guided by internal subjective feelings and would be more likely to go with the overtly stated norm. This is predicted by past research on affect that suggests that subjective feelings are relied on when objective criteria are not available (see Clore, Schwarz and Conway 1994 for a review).

EXPERIMENT 4: A FEELING OF INTERNAL FLOW

Method

*Overview and Design.* Three hundred and eighteen university students (61.3% female) participated in the study for extra course credit. Participants were randomly assigned to one condition of a 2(flow: going against the flow vs. with the flow) x 3(external norm: no external norm provided vs. option A preferred by 60% vs. option B preferred by 60%) between-subjects design with a seventh (no flow) condition added as a control.
**Procedure.** The procedure was similar to experiment 3 no misattribution conditions except as noted. After a brief evaluation of the sample, participants moved on to a product preference task in which they were asked to choose between the two chocolate options. In the no external norm condition, the chocolates were not labeled (as in experiment 3). In the two external norm provided conditions, either option A was labeled as preferred by 60% or option B was labeled as preferred by 60% (Appendix E). Participants were asked to choose the option they preferred. After participants indicated their preference, they also indicated how much they liked each option and how different they perceived the two product options to be relative to the typical chocolate along scales from zero (not at all) to 10 (very much).

Next, to assess whether the experience of going against the flow had activated metaphors, participants were given a questionnaire containing 10 idiomatic expressions of which “going against the flow” and “going with the flow” captured the target metaphors. Other idiomatic expressions or fillers (e.g., fresh as a daisy, comfortable as an old shoe, smells fishy, washing sins away, etc.) were included as well. Participants were asked to indicate how likely they were to use the different expressions on a scale from zero (not at all) to 10 (very much).

As a manipulation check, participants were asked to report the extent to which they experienced the feeling of resistance when they moved their hands through the fur along a scale from zero (no resistance) to 10 (a lot of resistance). A suspicion check was conducted in which participants were asked about the purpose of the experiment, whether the tasks were related in any way, and whether their performance in one task affected another task. In the end, participants provided some demographic information and was thanked, debriefed and dismissed.

Results and Discussion
**Manipulation Check of Flow.** Participants reported that they experienced a greater feeling of resistance when moving their hands against the direction of fur growth ($M_{\text{against\_flow}} = 5.05$, SD = 2.62) than when they moved it in the direction of hair growth ($M_{\text{flow}} = 2.50$, SD = 2.27), $F(1, 257) = 70.85$, $p < .01$ and this effect was not contingent on norm type ($F < 1, p > .48$). These feelings also did not vary as a function of norm type as evidenced by a non-significant main effect of norm type ($F < 1, p > .65$).

**Chocolate Preference.** The control condition revealed that the unpopular option was B (38%). A one-way analysis of variance using the seven conditions on chocolate choice showed that the seven conditions were different from each other ($F(6,307) = 1.87$, $p = .085$). Planned contrasts showed that as expected, when there was no externally given norm to go by, participants followed their internal norm to go against the flow and chose the unpopular choice. Specifically, in the no norm conditions, those who went against the flow were more likely to choose the unpopular option ($M_{\text{against\_flow}} = 65.8\%$) compared to those who went with the flow ($M_{\text{flow}} = 42\%$; $F(1,307) = 4.89$, $p < .05$) and compared to the control condition ($M_{\text{control}} = 38\%$; $F(1,307) = 6.67$, $p < .05$). Thus, consistent with experiment 1b, the effect was localized in the condition in which people went against the flow.

However, as expected, if an external norm was given, people went with that external norm and the effect of this internal sense of flow was not evident. Planned contrasts indicate that when the external norm was in favor of A, participants who had gone against the flow were equally likely to pick that option as evidenced by lower numbers picking the unpopular option ($M_{\text{against\_flow}} = 44.7\%$) compared to those who had gone with the flow ($M_{\text{flow}} = 40.8\%$; $F < 1, p >$.
.52) or compared to those in the control no-flow condition ($M_{\text{control}} = 38\%; F < 1, p > .51$).

Similarly, when the external norm was in favor of B, participants who had gone against the flow were equally likely to pick that option as evidenced by similar numbers picking the unpopular option ($M_{\text{against\_flow}} = 56.4\%$ vs. $M_{\text{flow}} = 56\%; F < 1$). Although both these proportions were different from the control (see Table 2), the absence of any difference between the two flow conditions suggests that this difference from the control can be attributed to the external norm information provided and was not caused by any sense of internal flow.

**Table 2.** Experiment 4: percentage of unpopular chocolate choice (b) as an effect of flow in the norm conditions.

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Flow</th>
<th>Against Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>38.0%&lt;sup&gt;aa&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No norm</td>
<td>42.0%&lt;sup&gt;aa&lt;/sup&gt;</td>
<td>65.8%&lt;sup&gt;bb&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Norm A</td>
<td>40.8%&lt;sup&gt;aa&lt;/sup&gt;</td>
<td>44.7%&lt;sup&gt;aa&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Norm B</td>
<td>56.0%&lt;sup&gt;ac&lt;/sup&gt;</td>
<td>56.4%&lt;sup&gt;ac&lt;/sup&gt;</td>
<td></td>
</tr>
</tbody>
</table>

**Metaphor Evaluation.** Participants indicated how likely they were to use the target metaphors “go with the flow” and “go against the flow”. These were combined into a single item ($r = .44, p < .01$) and analyzed as a function of flow and norm conditions. As expected, participants who went against the flow reported that they were more likely to use the target metaphors ($M_{\text{against\_flow}} = 4.79$, SD = 2.54) than those who went with the flow ($M_{\text{flow}} = 4.30$, SD = 2.05), $F(1, 257) = 3.03, p = .08$.

Discussion
The findings suggest that the feeling of going against the flow is internal and subjective. When participants are either able to attribute the feeling to something else (experiment 3) or have some other clear criteria to rely on (experiment 4), the effects on preference for the less popular options is not evident. Experiment 4 clearly provides a boundary condition for the effect. However, it also suggests that the effect of such bodily experiences might be more ubiquitous. In many instances, people do not have clear, unambiguous information about what is popular and what is not popular. In such instances experiences that involve going against the flow, might lead to choices that deviate from what others choose or what one would typically have chosen. Experiment 5 further explores this possibility and disentangles whether participants are going against internal preferences or possible external norms participants may be thinking of.

Of interest was the finding that people who had gone against the flow were more likely to report greater likelihood of using the idiomatic expressions “going against the flow” or “going with the flow”. Although I consider participants’ self-reports of how likely they are to use such idiomatic expressions an epiphenomenon or consequence of having had the sensorimotor experience, it nonetheless validates our assumption that these experiences are likely to activate conceptual metaphors.

EXPERIMENT 5: GOING AGAINST ONE’S INITIAL FLOW OR INCLINATION

Method
Design. 121 university students (51.2% female) participated in the experiment in exchange for extra credit. The participants were randomly assigned to a (2: with flow vs. against flow) between-subjects design.

Procedure. The procedure was similar to experiment 4 no norm condition except as noted. After a brief evaluation of the sample to experience going with the flow or against the flow, participants moved on to a product preference task in which they were asked to choose between the two chocolate options. Participants were asked to choose the option (A or B) that they preferred.

After participants indicated their preference, they were asked two questions to determine if their choices were influence by a desire to try something different or if they were choosing based on what they thought was the norm (i.e. what others liked). Specifically, they were asked to indicate how much they felt like they wanted to try something different on a scale from zero (not at all) to 10 (very much) when making their choice between the two chocolate options and they also indicated how much they were influenced by what they thought others liked on a scale from zero (not at all) to 10 (very much).

Then, their reactions to the different chocolate options were measured. They were asked a) how much they liked each option, b) how different they thought each option was from a typical chocolate, and c) how appealing each option is to most people on scales from zero (not at all) to 10 (very much).

More importantly, to measure whether they were going against their internal inclination, they were asked how much they felt like going against their initial inclination on a scale from zero (not at all) to 10 (very much).
As a manipulation check, participants were asked to report the extent to which they felt they were going against the flow when they moved their hands through the fur sample along a scale from zero (not at all) to 10 (very much). A suspicion check was conducted in which participants were asked about the purpose of the experiment, whether the tasks were related in any way, and whether their performance in one task affected another task. In the end, participants provided some demographic information and was thanked, debriefed and dismissed.

Results

**Manipulation Check.** The manipulation of going against the flow was successful. As expected, participants who went against the flow reported that they felt like they were “going against the flow” to a greater extent ($M_{\text{against\_flow}} = 5.92$, $SD = 2.64$) than those who went with the flow ($M_{\text{flow}} = 3.23$, $SD = 2.58$), $F(1, 119) = 32.06$, $p < .01$.

**Choice of the Less Preferred Option.** As in the previous experiments, people were more likely to choose the less preferred option B when they had gone against the flow than when they had gone with the flow ($M_{\text{against\_flow}} = 59\%$ vs. $M_{\text{flow}} = 42\%$; $F(1,119) = 3.69$, $p = .057$).

**Wanting to Try Something Different.** Results show that participants who went against the flow reported that they felt like they when they were making the two chocolate options, they wanted to try something different to a greater extent ($M_{\text{against\_flow}} = 5.11$, $SD = 2.56$) than those who went with the flow ($M_{\text{flow}} = 3.92$, $SD = 2.40$), $F(1, 119) = 7.05$, $p = .009$. 

56
**Norm From Perceived Preference of Others.** Results showed there were no differences in the extent they were influenced by what they thought others liked ($F < 1, p = .345$).

**Thoughts About Chocolate Options.** As in previous experiments, there were no significant differences in how much each option was liked, perceived to be different, or was considered appealing to most people in the two flow conditions (all $Fs < 2, ps > .19$).

**Going Against Initial Inclination.** Results reveal that participants who went against the flow reported that they felt like they were “going against their initial inclination” to a greater extent ($M_{against\_flow} = 4.26, SD = 1.97$) than those who went with the flow ($M_{flow} = 3.28, SD = 1.75$), $F(1, 119) = 8.33, p = .005$. Thus, it appears that participants who went against the flow were more likely to feel that they wanted to go against their initial feeling.

**Eye-tracking Measures.** Results show that those who went against the flow spent slightly more time on the decision alternatives than those who went with the flow ($M_{against\_flow} = 30.41, SD = 7.64$ vs. $M_{flow} = 28.19, SD = 6.78$). This effect was marginally significant, $F(1, 119) = 2.86, p = .093$ and suggests that perhaps the tendency to go against their inclination made them spend a little more time on the decision alternatives. All other eye-tracking measures (time spent on each option, number of switches between two options, saccades, etc.) were not significant (all $Fs < 2$).

Discussion
The findings from experiment 5 provide further support for the idea that the feeling of going against the flow is internal and subjective. As experiment 4 demonstrated, the effects on choosing the less popular options is not evident when there is a clear criteria to rely on. Experiment 5 further suggests that participants are in fact going against their internal tendency or inclination and choose the less popular option. As results from experiment 3 and 5 suggest, this less popular option may not be obviously different from the other option, or perceived to be less liked by others (i.e. not being the external norm). However, subjective feelings of going against the flow made participants deviate from what they would normally do and go against their initial inclination.

In addition, eye-tracking data provide further evidence that participants are going against their initial inclination. Because they are choosing an option by going against their normal tendency, they might take more time making their decision. Although the previous reaction time measure of time spent to make the choice was not statistically significant (experiment 3), the eye-tracking measure suggests that participants do pause a bit in making their choice when they have experienced going against the flow.

Summary

To summarize, I have shown that these sensorimotor experiences of going against the flow, although non conscious, can have intriguing behavioral effects. This research examines how bodily experiences simulating the feeling of going against or with the flow affect consumers’ preferences for options that are normatively less preferred. Such sensorimotor experiences, revealed linguistically in orientational metaphors, involve both movement and have
direction. They are represented in memory as image schemas. Re-experiencing sensations activates the schema and elicits subjective feelings that trigger behavioral dispositions of going against the norm. Seven experiments show that when consumers experience sensations of going against the flow, they pick alternatives that are normatively not preferred (experiment 1a-c). Interestingly, imagined self-experience yields similar effects on choice (experiment 1b). However, these effects of consumer preferences are evident only when the sensations are experienced by the self or involve the self (experiment 2), subjective feelings are elicited (experiment 3) and no other objective norm information is supplied (experiment 4). The effects cannot be explained through simple semantic priming (experiment 2), and a feeling based explanation that participants are in fact going against their initial inclination is more supportive (experiment 5).

Several aspects of this work are noteworthy. There are several unique implications that are predicted by the conceptualization proposed. First, self-experience appears crucial to explain these results. This self-experience can be real or imagined. In the case of the latter, the more visceral or real the imagined experience is, the more likely it is that it will have the hypothesized effects. Second, the results appeared to be driven by feelings rather than through the activation of semantic concepts such as “resist”. This is supported by the results of experiment 3 where the effect was no longer evident when participants were able to misattribute the feelings to an alternative source. This classic misattribution manipulation has been used to show that feelings were the basis for the judgments being made. Third, the feeling of going against the flow had to do with one’s own internal sense of flow as was evident in the results from experiment 5. When alternative bases for making the decision were available (experiment 4) people were less likely to use this sense of flow.
The conceptualization using image schemas as the foundation or the building block of these types of experiences provides me with the flexibility of examining different underlying processes (the activation of semantic concepts, feelings that are tied to behavioral dispositions). It also allows one to see how linguistic metaphors that are associated with the experience are elicited. Further, it suggests that only when the experience is as close to the original, will we see the image schema being activated. I explore the last aspect in greater detail in part 2 of my dissertation where I examine how the active vs. passive experience of going against the flow can change the metaphorical meaning of the experience because it no longer elicits the same image schema. This part of my dissertation focuses on the motor component of the experience and suggests that the action of going against the flow can be either experienced actively when one engages in this experience or passively (e.g., when one is taken against the flow). These experiences are subjectively different and the image schemas associated with them might be quite different as well. Theoretically, they should lead to different effects (or no effects). I describe my hypotheses and the underlying logic in greater detail in the next section.
IIIb. PART 2

METAPHORICAL EFFECTS OF SENSATIONS OF GOING AGAINST THE FLOW ON PERSUASION

In the second part of my dissertation, I extend the findings to a different domain that is relevant to marketing: persuasion. In this context, I first examine if the effects of sensorimotor experiences of going against the flow have similar effects in different domain. Specifically, do these experiences affect the inclination people have to oppose an advocated position? In addressing this question, I focus on the motor aspect of sensations of going against the flow and examine the role of volition in the enactment of motor behavior. That is, I examine how the same sensory experience (e.g., resistance or flow) can be experienced actively (e.g., when you move your hand on the fur) or passively (e.g., when someone moves the fur on your hand) and the impact this has on the desire to oppose something. More specifically, I suggest that the active or passive experience of these sensations can change the metaphorical meaning and lead to differences in whether people will oppose a persuasive message.

“Motor” Aspect of Sensorimotor Experiences in Persuasion

Motor actions can influence persuasion. A large body of research in the persuasion domain suggests that bodily movements can provide proprioceptive feedback and affect judgments. In one of the earliest studies on this topic, Strack, Martin, and Stepper (1988) showed that facial expressions that are similar to smiling (as a result of holding a pen between the lips) make a cartoon seem more humorous compared to conditions in which the facial expressions
mimic frowning (holding a pen between the teeth). Subsequent research showed that bodily experiences can influence not only the amount or direction of thinking but also the confidence one has in these thoughts (Brinol and Petty, 2008; Tom, Pettersen, Lau, Burton, and Cook, 1991; Cacioppo, Priester, and Berntson, 1993; Priester, Cacioppo, and Petty, 1996). For example Tom et al. (1991) showed that moving one’s head up and down (indicating agreement) can lead to more favorable attitudes than shaking one’s head from left to right. Similarly, neutral objects are evaluated more favorably when presented during arm flexion than during arm extension (Cacioppo, Priester, and Berntson, 1993; Priester, Cacioppo, and Petty, 1996) because the former signals approach behavior while the latter signals avoidance behavior. Another study shows that a standing posture is less susceptible to message strength, whereas a reclining posture polarizes the effect of message strength as participants think more about the message (Petty and Cacioppo 2012). Collectively these studies show that motor behavior can activate certain thoughts and influence persuasion.

The cognitive processes underlying these effects can be conceptualized within the Elaboration Likelihood Model of persuasion (Petty and Cacioppo 1986). Bodily experiences can serve as simple cues or heuristics, influence the amount of thinking, influence the direction of thinking, or affect confidence in thinking.

Heuristics and Cues. When people are not motivated to process information, bodily movements can serve as peripheral cues. In this case, the valence of the bodily feedback (pleasant or unpleasant) might be used as information about one’s feelings about the attitude object (Brinol and Petty 2008). These bodily responses can also affect attitudes through changes in self-perception (Bem 1972), as one can infer or misattribute one’s bodily responses as
information about one’s attitude. For example, Taylor (1975) showed that women’s evaluations of men were more positively influenced when they were given feedback about their arousal levels and they were not thinking too deeply (i.e., they believed that they would not meet the men they evaluated).

Amount of Thinking: When people are not already stimulated to engage in deliberative or heuristic processing by other variables, bodily movements can affect the amount of thinking (Brinol and Petty 2008). For example, participants who were in a reclining position while trying on headphones to evaluate their quality were more persuaded by strong arguments than weak arguments, whereas those who were standing were not affected by whether the arguments were strong or weak (Petty, Wells, Heesacker, Brock, and Cacioppo 1983). If standing posture caused discomfort and affected attitudes as a simple cue, then the results would be different: there would be a main effect of position regardless of message strength (Brinol and Petty 2008). In this case it appeared that there was an interaction of standing position and argument strength on the valence of thoughts participants generated. Specifically, bodily responses increased the amount of thinking such that those who were reclining generated more favorable thoughts in response to the strong message and unfavorable thoughts in response to the weak message.

Valence and Direction of Thinking. When people are processing information deliberatively, bodily movements can serve as information or evidence in support of an argument or bias the valence of thoughts (Brinol and Petty 2008). For example, in the study by Wells and Petty (1980), the head-nodding (shaking) behavior could have biased one to think in positive (negative) directions. Brinol and Petty (2008) also suggest that approach and avoidance behavior
such as arm flexion and extension or pushing and pulling can influence the valence of thinking as people come closer to objects they like, and move away from objects they dislike. In line with this, participants were faster at evaluating positive words when they pulled (approach behavior) a lever, and were faster at evaluating negative words when they pushed (avoidance behavior) a lever (Chen and Bargh 1999). Similarly, Neumann and Strack (2000) found that participants categorized positive (vs. negative) words faster when they flexed (vs. extended) their arms.

Confidence in Thoughts. Bodily movements can also affect confidence in thoughts when people are deliberating on an argument because these experiences can validate thoughts about the persuasive message, self-relevant thoughts, emotional thoughts, confidence-related thoughts, and primed thoughts (Brinol, Petty and Wagner 2012). Conceptualized as embodied validation (Brinol and Petty 2003; Brinol, Petty and Wagner 2012) this increased confidence can amplify the effect of persuasion. For example, another alternative explanation for the head movement studies can be that head nodding increased confidence by self-validation (Petty et al., 2002) of favorable thoughts, which influenced attitudes (Brinol and Petty 2003). Finally, bodily experiences can serve as arguments when people are deliberating on an attitude object (Brinol, Petty and Wagner 2012). For example, bodily responses such as increased heartbeat can be used as information when forming an attitude towards a person. Similarly, the act of going against the flow could be indicative of processes one engages in when one defends against a position and the sensorimotor experience could activate this defense motivation increasing message scrutiny.

Although much of the past work discussed above suggests that bodily experiences can affect persuasion via different mechanisms, no distinction has been made between experiences that involve active movement vs. passive movement. I propose that the manner in which a
sensation is experienced could produce very different effects on subsequent judgment and decisions. The sensorimotor experience can be either experienced when one touches something, or, alternately, when one is touched. Ackerman et al. (2010) investigated the effect of holding hard and soft objects on impressions of a boss and an employee. Their results showed that when participants held a hard block, they judged the boss and employee to be more strict and rigid than those who held a soft object. In a subsequent study, they tested if similar effects would be obtained if participants experienced the sensation in some other part of their body. Participants who were sitting on a hard wooden chair or a soft cushioned chair completed both an impression formation task and a negotiation task. In the negotiation task, participants imagined shopping for a new car and subsequently placed two offers on the car, assuming that the dealer rejected the first offer. They found that participants in the hard chair condition judged the employee to be both more stable and less emotional, consistent with being a “hard” person, but not more positive overall than those in the soft chair condition. In the negotiation task, among participants who made a second offer, hard chairs induced participants to be a “hard” person and make less change in offer price than did soft chairs.

The aforementioned study demonstrates that sensorimotor experiences can influence thought even when the sensation occurs in other areas of the body and is not limited to the hands. However, it pertains to a sensation of hardness (a relatively static experience) that is quite different from the experience of going against the flow which has a “motor” component to it in addition to the sensation. Motor behavior requires action by oneself and it is unclear if the experience of going against the flow will have the same effect if it is experienced passively. In the current context, it is likely that an active experience of going against the flow might be more indicative of higher defensive processes whereas a passive experience of going against the flow
might be less indicative of such processes. To explore this idea, some early work in this area is reviewed.

Active vs. Passive Experiences

Since many of these sensorimotor experiences are acquired through touch, I examined research on active versus passive touch. According to Gibson (1962), active touch stimulates one to explore the environment through the motor activity, whereas passive touch is more receptive. Gibson (1962) compared the difference in the receptors of active vs. passive touch. Participants were given a cookie cutter form and asked to guess its shape. In the active condition, participants freely explored the form that was held above the palm with their fingertips. In the passive condition, the form was pressed down on the palm by the experimenter, so participants were not able to actively touch the form with their fingertips. Results showed that the mean frequency of correct matches was significantly higher in the active touch condition ($M = 95\%$) than the passive touch condition ($M = 49\%$). The author notes that no claim can be made for the conclusiveness of the comparison, because the fingertips are more sensitive than the palm of the hand. In another experiment, Gibson (1962) compared passive static form perception with passive moving form perception. In passive static conditions, the cookie cutter form was simply pressed into the palm of the hand. In passive moving conditions, it was pressed and continually rotated clockwise and counterclockwise with a twisting motion. Results show that judgments of the form of the object were significantly more accurate when it was rotated than when it was not (mean frequencies of correct matches were 72\% and 49\%, respectively). Note that in the second experiment, the same area of skin was stimulated in both cases unlike the previous experiment.
Thus, the static vs. moving comparison suggests that the results from the active vs. passive comparison may be because of the different stimulation to the receptors that allow one to more accurately make judgments of the touch experience.

Similar to findings by Gibson (1962), research on active motor learning vs. passive learning also shows that active interaction has a different impact than passive observation on subsequent perception and recognition (Butler, James, and James, 2011). Specifically, active learning reduced response times during audiovisual associative and unisensory recognition, and accuracy during audiovisual associative recognition. Butler, James, and James (2011) also found greater activation of motor-related regions in the brain of the active learning group compared to the passive group. These findings imply that active engagement may enhance the effect of sensorimotor experiences compared to passive engagement.

In addition, people often find it difficult to tickle themselves because sensations from the self and other is different (Blakemore, Frith, and Wolpert, 2001). Blakemore, Frith, and Wolpert (2001) found there was an increase in activity of certain areas of the brain (i.e. secondary somatosensory cortex and the anterior cingulate gyrus) when subjects experienced an externally produced tactile stimulus, compared to a self-produced tactile stimulus. In their research, the authors note that people can distinguish between sensations that are produced by their own movements and those that are caused by an external source. Furthermore, self-produced sensations can be predicted correctly, which can be used to attenuate the sensory effects of movements produced by the self. On the other hand, externally generated sensations are difficult to predict, and one may accentuate such sensory feedback.

A specific issue that I examine in this essay is the different effects of passively or actively engaging in the experience of flow. Building on the idea that the experience of the self is
important (Essay 1), I focus more on the self-initiating the experience (active) or being the recipient of the experience (passive). As noted in essay 1, the self has to experience the bodily sensation for the image schema to be activated. However, as previously noted, a person could experience the sensation actively or passively. For example, they could walk against the wind, or stand and the wind could push them back. The motor component provides information about the experience, and this experiential feedback could be interpreted differently leading to different effects on the tendency to resist persuasion.

How Volition Changes the Conceptual Metaphor that is Activated

Different metaphors can be activated depending on the specific context. The studies by Ackerman et al. (2010) stress the metaphorical specificity of the effects of sensorimotor experiences: hard objects made others seem both more negative (strict and rigid) and more positive (stable). Similarly, a recent finding shows that a sensation can be metaphorically mapped onto different categories, but is specific to the context (Slepian, Weisbuch, Rule, and Ambady, 2011). Specifically, the authors link softness and hardness with different domains and demonstrate that effects are different depending on the domain. In Study 1, some participants were asked to describe what a “hard politician,” “hard scientist,” “hard teacher,” “hard parent” and “hard business person” were like. Other participants were asked to describe what a “soft” politician, scientist, teacher, parent and business person were like. Results showed that participants used different adjectives to describe different groups (e.g., hard politicians as unyielding, but describing hard scientists as rigorous). These results suggest that the meaning of these traits is context-specific. Studies 2 and 3 show that holding a hard (vs. soft) ball led
participants to categorize people as Republicans rather than as Democrats, and academics in “hard” disciplines (i.e. physicists) than “soft” disciplines.

In sum, recent findings imply that context influences the activation and use of conceptual metaphors in subsequent judgment and behavior. Being physically high can induce either higher status or more power (Schubert, 2005) or activate positive affect (Meier and Robinson, 2004). The moral-purity metaphor is specific to the motor modality involved in moral transgression (Lee and Schwarz, 2010). It is plausible that context can change the meaning of the sensorimotor experience, which can lead to different interpretation of the sensorimotor experience. For example, a sensorimotor experience of carrying heavy weight can be interpreted as either “stressful” or “important” depending on the context. Here, I suggest the same image schema (i.e. force) activated from the same sensorimotor experience can trigger different conceptual metaphors in different contexts either because the motor behavior associated with it is different or because the situation to which it is applied is different.

Consider, for instance, the image schema that is activated when people are walking against a strong wind vs. standing still facing the wind. In both cases, there is a sense of going against the flow. But, the subjective experience and feelings elicited might be quite different. When they are active (i.e. walking) they might feel like they are going against the flow, whereas when they are passive (i.e. standing) they might feel pushed back. Thus, an active experience of going against the flow might make people feel like opposing or fighting a persuasive message, whereas a passive experience of going against the flow might make them fall back and avoid fighting the message. Volition changes the experience in a fundamental way. The experience of going with the flow can also be interpreted differently. Actively going with the flow suggests compliance. However, if the passive experience is through another agent (e.g., one is carried
against the flow by something else or through another agent) then the experience might not just be of passive acceptance but of “being led” or “forced” to do something else. In such a case, participants might feel uncomfortable about the situation they find themselves in and this could possibly increase non-compliance and message scrutiny.

Based on the above theorizing, I first test two hypotheses about the volitional aspect of going against the flow and its effects on the desire to resist a persuasive message. Specifically, I propose that:

\[H3: \text{Participants who experience going against the flow will be more likely to oppose a persuasive message relative to those who experience going with the flow.}\]

\[H4: \text{The above effect is more likely when participants experience the sensation of flow actively rather than passively.}\]

After testing these hypotheses in two experiments, I examine how the active versus passive experience of these sensorimotor sensations can change the conceptual metaphor that emerges. As noted earlier, the act of experiencing going against the flow is different from the effect of the sensation alone. For example, if one experiences flow applied by the self, it might activate the conceptual metaphor of going against the flow. On the other hand, if the same level of flow is applied by someone else, one might feel pushed. Thus, the source of the motor behavior changes the context of the conceptual metaphor that might get elicited. Prior work has documented that metaphors are context specific and I propose that the effect of the sensory experience depends
also on the motor action that goes with it. The motor action might actually change the conceptual metaphor that is elicited. The effects of this and the specific hypotheses are described later.

EXPERIMENT 6: EFFECTS OF SENSORIMOTOR EXPERIENCES OF GOING AGAINST THE FLOW ON THE DESIRE TO RESIST PERSUASIVE MESSAGES

Experiment 6 examines the effects of sensorimotor experiences in a different context: persuasion – a domain in which resistance to messages and activism in response to appeals is important. Of primary interest is the extent to which participants will “fight” or “actively oppose” a persuasive message. I also examined the role of active versus passive experience of sensorimotor experiences of going against the flow. Sensorimotor experiences of going against the flow can be experienced because one is active in seeking the sensation out and engages in it out of one’s own volition. Alternately, the sensation of going against the flow could be experienced but through the acts of another individual. I expected that the effect of going against the flow would vary as a function of whether one was active in acquiring the sensorimotor experience. The desire to go against the flow requires some amount of volition. Thus, I expected that experiencing going against the flow by oneself would lead to more resistance and a desire to fight. However, experiencing going against the flow passively might not have similar effects. Experiment 6 examined this hypothesis.

Method
Overview and Design. 53 undergraduate students enrolled in introductory business courses participated in the experiment in order to earn extra course credit. Participants were randomly assigned to a 2 (experience of flow: active vs. passive) x 2 (flow: against vs. with) between-subjects design. In the active experience conditions, participants were asked to rub the sample with their hands in a way that would either induce going against or with the flow (as in previous experiments). In passive experience conditions, the experimenter tested a fur sample on the participants to either induce going against or with the flow in a manner to be described. Immediately after testing the fur sample on the hand, participants responded to the dependent variables. First, the participants evaluated the sample. Next, as an ostensibly different task, they engaged in a social relations survey (a filler task). Then, they read a persuasive article about tuition increase.

Procedure. When participants arrived at the lab, they were told that they would be participating in several unrelated studies that had been put together to give them extra course credit. Under this pretext, they were given the first task. To induce sensations of going against the flow, participants were first asked to engage in a product testing task in which they tested a fur sample that could be used in clothing. They were given specific instructions about how to test the product sample. In the active condition, participants were given a fur sample attached to a folder and were asked to either move their hands through the fur so that it ruffles the fur (going against the flow condition) or move their hands through it so that it smoothens the fur (going with the flow condition). This was done three times in one direction as in other experiments and was put away without rearranging the fur. In the passive condition, the experimenter held the fur sample patch with one hand and moved the sample on the back of a participant’s hand three
times from the fingers to the wrist in a way that would ruffle the fur (against the flow) or smoothen it by moving it from the wrist to the fingers (with the flow).

Immediately after testing the fur sample on the hand, participants indicated how much they liked the product sample along a scale from 0 (not at all) to 10 (very much). They also indicated how they thought the material would look in interiors along a scale from -5 (very bad) to +5 (very good). Then, as in previous experiments, they were told that reactions to product samples are often more reliable after people are given some time to think about them. Therefore, they would be asked questions about the samples later and that in the interim they would be asked to complete a few ostensibly unrelated tasks.

After a few filler tasks on behavior in social situations, participants received a news article from an online student newspaper about the university’s plan to raise tuition (see Appendix F). After reading the article, participants were first asked to list down their thoughts about this move by the university. To measure the degree to which they feel persuaded, they were asked to indicate whether they agreed or disagreed that the tuition should increase along an 11-point scale from 0 (disagree) to 10 (agree) and how persuasive they felt the message from the university administration was along another 11-point scale ranging from 0 (not at all) to 10 (very much). Next, to assess the extent to which they felt like going “against the flow”, participants were asked to indicate the extent to which they were inclined to fight against the message on an 11-point scale that ranged from zero (not at all inclined) to 10 (very much inclined).

Finally, the extent to which the valence of participants feelings was affected was measured along 3 scales that ranged from -5 (very unhappy/uncomfortable/unpleasant) to +5 (very happy/comfortable/pleasant). In addition, participants indicated how irritated and aroused they felt along two scales that ranged from 0 (not at all) to 10 (very much) were assessed. After a
demand check, participants provided some demographic information and were thanked, debriefed and dismissed.

Results

_Reactions to the Sample._ As expected, liking of the fur sample was similar across all four conditions. Thus, the analysis revealed that liking of the sample did not differ as a function of the four conditions ($F < 1$).

_Thought Listings._ The thoughts were coded as (-1) negative, (0) neutral, and (1) positive. An analysis of thought listings showed no differences between conditions suggesting that participants did not differ in the cognitions that were elicited by the news article.

_Persuasiveness of Message and Inclination to Fight._ The first two measures (whether they agreed or disagreed that the tuition should increase, how persuasive was the message from the university administration) were combined to create a measure of persuasion ($\alpha = .81$). An analysis of variance using this combined measure of persuasion showed no effect of flow on the persuasion measure ($F = 1.07$).

An analysis of variance on how inclined participants are to fight the university’s move did vary as a function of both flow and the manner in which it was experienced. As expected, participants who applied the flow themselves were more inclined to fight the move when they had experienced against flow condition ($M = 5.36$) than when they had experienced with flow ($M = 3.85$), although this was not statistically significant ($F(1, 49) = 2.57, p = .115$). In contrast,
participants who experienced flow passively showed a reverse pattern, although there was no significant difference between the flow conditions ($M_{\text{against}} = 2.07$ vs. $M_{\text{with}} = 3.23$; $F = 1.44$, $p > .23$). A marginally significant interaction ($F(1,49) = 3.91$, $p = .054$) confirmed this pattern of results.

### Table 3. Experiment 6: Inclination to fight as an effect of flow in the active and passive experience conditions.

<table>
<thead>
<tr>
<th>Source of motor behavior</th>
<th>Against flow</th>
<th>With flow</th>
<th>MDiff. (High-Low)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active experience</td>
<td>$5.36^{ab}$</td>
<td>$3.85^{aa}$</td>
<td></td>
</tr>
<tr>
<td>Passive experience</td>
<td>$2.07^{ab}$</td>
<td>$3.23^{aa}$</td>
<td>$-1.16$</td>
</tr>
</tbody>
</table>

*NOTE.*—Inclination to fight parameters vary from 0 to 10

*NOTE.*—Means with dissimilar first superscripts (aa, ba) significantly differ at $p < .05$ for each row

*NOTE.*—Means with dissimilar first superscripts (aa, ab) significantly differ at $p < .05$ for each column

**Feelings.** An analysis of variance on how people felt when they rubbed the fur sample on their skin or had it rubbed on their skin in the two directions revealed no interaction effects on any of the feeling measures ($F < 1$). In addition, feelings were not significant as a function of whether they went with the flow or against it ($F < 1$). However, the source of flow had a significant effect on how the participants felt. Regardless of the type of flow participants experienced, they felt happier ($M_{\text{passive}} = 2.54$ vs. $M_{\text{active}} = .63$, $(1,49) = 8.88$, $p < .01$), more comfortable ($M_{\text{passive}} = 2.96$ vs. $M_{\text{active}} = .56$, $F(1,49) = 13.04$, $p < .01$), more relaxed ($M_{\text{passive}} = 7.38$ vs. $M_{\text{active}} = 4.74$, $F(1,49) = 17.79$, $p < .01$), and less irritated ($M_{\text{passive}} = -.95$ vs. $M_{\text{active}} = .16$, $F(1,49) = 39.18$, $p < .01$) when they had been touched impersonally by the experimenter in passive flow conditions.

Discussion
This experiment yielded several interesting insights. First, it appeared that motor behavior had to be engaged in actively in order to get the effects I observed in previous studies. Second, the effects of flow did not appear to be in how persuasiveness a specific message was perceived to be. Rather, they appeared localized in the desire to “fight” or take action against the message. This is not surprising because the inclination to “fight” is active and the effects appear to be localized in the active experience condition. That is, participants who actively experience going against the flow seem to want to do something to “go against the flow”. On the other hand, participants who experienced going against the flow via another agent appeared to be more compliant and less inclined to fight.

Thus, the effect appears to be localized in variables related to “behavioral action” rather than general agreement or disagreement with the message. To identify the underlying mechanism, and determine if these effects occur through alterations in self-perception, I ran a short experiment in which participants who had experienced going against the flow actively versus passively were asked to evaluate themselves and the experimenter who had made them go against the flow. I expected that the activation of these image schemas would lead to different effects on self-perception and experimenter perception because the passive experience of going against the flow would be quite different from that of going against the flow voluntarily.

Previous work by Wheeler, DeMarree and Petty (2007; 2014) suggests that contextual factors and primes can affect the active self-concept. Whereas the chronic self-concept refers to aspects of the self that are in long-term memory, the active self-concept refers to the self-concept that is accessible and active. Contextual primes can alter this active self-concept, which can then affect motivation and behavior in ways that are consistent with the active self-concept. These effects are usually suggested to occur through assimilation of the primed concepts to the active
self-concept, although there are also contrast effects that result from prime-inconsistent behavior (Wheeler, DeMarree and Petty 2014). In the current situation, it is conceivable that the active experience of going against the flow temporarily alters an individual’s active-self and they see themselves as less compliant. This could affect the extent to which they comply with a message.

EXPERIMENT 7

To examine whether the active versus passive experience of going against the flow had different effects, I employed a 2 (flow: against the flow vs. with the flow) x 2 (experience of flow: active vs. passive) between-subjects design. A total of 44 participants were in the analysis, which contained only participants whose English proficiency was above 4 (on a 7-point scale). The procedure used to manipulate sensorimotor experience of going against the flow was similar to that used in Experiment 6. To manipulate the source of the action, in some conditions participants performed this action themselves (experience of flow: active), while in other conditions the experimenter performed this action on the participants (experience of flow: passive).

Immediately after testing the fur sample, participants answered questions about themselves and the experimenter. Participants were asked to rate themselves along a number of dimensions many of which were filler items to mask the presence of our key measure: compliance. Other measures included measures like active, disciplined, confident, balanced, know their own mind, reasonable etc. Participants rated themselves on these measures along scales from zero (not at all) to 10 (very much). Then, they answered questions about the experimenter on dimensions that might have been influenced by the sensorimotor experience of
flow (pushy, rude, annoying, invasive of personal space) along with some fillers (i.e. easy to understand, clear, strong, attractive, etc.) on scales that ranged from 0 (not at all) to 10 (very much).

Results

Self-Evaluation. An analysis of variance was conducted to see how participants evaluated themselves when they went against the flow versus with the flow actively or passively. The interaction involving the two variables was significant, $F(1,40) = 8.312, p < .01$. Pairwise comparisons showed that when the experience of flow was active, participants rated themselves as less compliant in the against flow condition ($M = 6.17$) than in the with flow condition ($M = 7.90$), $F(1,40) = 5.59, p < .05$. On the other hand, when the experience of flow was passive, participants rated themselves as more compliant in the against flow condition ($M = 7.00$) than the with flow condition ($M = 5.75$) although this difference was not significant, $F(1,40) = 1.29, p > .10$. Apparently when participants experience the sensation of going against the flow passively (i.e., they allow external forces or persons to do something to them) it makes participants feel that they are compliant.

Table 4. Experiment 7: Self-evaluation (compliance) as an effect of flow in the active and passive conditions.

<table>
<thead>
<tr>
<th>Source of motor behavior</th>
<th>Against flow</th>
<th>With flow</th>
<th>Mean Difference (Against - With)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>$6.17^{aa}$</td>
<td>$7.90^{ba}$</td>
<td>$-1.73$</td>
</tr>
<tr>
<td>Passive</td>
<td>$7.00^{ab}$</td>
<td>$5.75^{bc}$</td>
<td>$1.25$</td>
</tr>
</tbody>
</table>

NOTE.— Self evaluation parameters vary from 0 (not at all) to 10 (very much)
NOTE.— Means with dissimilar first superscripts (aa, ba) significantly differ at $p < .05$ for each row
NOTE.— Means with dissimilar first superscripts (aa, ca) significantly differ at $p < .10$ for each row
NOTE.— Means with dissimilar first superscripts (aa, ab) significantly differ at $p < .05$ for each column
Experimenter Evaluation. Evaluations of the experimenter are provided below. The first two measures (pushy and invasive of personal space) were aggregated to come up with a measure of how intrusive the experimenter seemed \((r = .52, p = .00)\). The second two measures (rude and annoying) were averaged to come up with a measure of how offensive the experimenter was perceived to be \((r = .53, p = .00)\).

Intrusiveness of Experimenter. Participants who experienced going against the flow actively perceived the experimenter to be more pushy and invasive in the against flow condition \((M = 2.63)\) than in the with flow condition \((M = 0.55)\), \(F(1,40) = 6.84, p < .02\). However, this pattern reversed when they experienced it passively \((M = 1.80\) vs. \(2.96)\), \(F(1,40) = 2.13, p > .10\). This difference in the pattern of means was confirmed by a significant interaction, \(F(1,40) = 8.26, p < .01\).

Table 5. Experiment 7: Experimenter evaluation (intrusiveness) as an effect of flow in the active and passive conditions.

<table>
<thead>
<tr>
<th>Source of motor behavior</th>
<th>Against flow</th>
<th>With flow</th>
<th>Mean Difference (Against - With)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>2.63(^{aa})</td>
<td>0.55(^{bb})</td>
<td>2.12</td>
</tr>
<tr>
<td>Passive</td>
<td>1.80(^{aa})</td>
<td>2.96(^{aa})</td>
<td>-1.05</td>
</tr>
</tbody>
</table>

NOTE.— Experimenter evaluation parameters vary from 0 (not at all) to 10 (very much)
NOTE.—Means with dissimilar first superscripts (aa, ba) significantly differ at \(p < .05\) for each row
NOTE.—Means with dissimilar first superscripts (aa, ab) significantly differ at \(p < .05\) for each column

Offensiveness of Experimenter. Participants found the experimenter generally more rude and annoying when they experienced going against the flow \((M = 2.50)\) than when they experienced going with the flow \((M = 1.53)\), \(F(1,40) = 4.31, p < .05\). However, this main effect was qualified by an interaction involving the flow experience and whether it was experienced actively or passively, \(F(1,40) = 6.8, p < .05\). Participants experiencing the sensations actively perceived the experimenter to be more offensive in the against flow condition \((M = 3.00)\) than in
with flow condition \((M = 0.80)\). However, this difference became smaller when the experience was passive \((M = 2.0 \text{ vs. } 2.25)\).

**Table 6. Experiment 7: Experimenter evaluation (offensiveness) as an effect of flow in the active and passive conditions.**

<table>
<thead>
<tr>
<th>Source of motor behavior</th>
<th>Against flow (\text{M} = 3.00^{aa})</th>
<th>With flow (\text{M} = 0.80^{ab})</th>
<th>Mean Difference ((\text{Against - With}))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>3.00(^{aa})</td>
<td>0.80(^{ab})</td>
<td>2.20</td>
</tr>
<tr>
<td>Passive</td>
<td>2.00(^{aa})</td>
<td>2.25(^{aa})</td>
<td>0.25</td>
</tr>
</tbody>
</table>

NOTE.— Experimenter evaluation parameters vary from 0 (not at all) to 10 (very much)
NOTE.—Means with dissimilar first superscripts (aa, ba) significantly differ at \(p < .05\) for each row
NOTE.—Means with dissimilar first superscripts (aa, ab) significantly differ at \(p < .05\) for each column

**Discussion**

The results of Experiment 7 confirmed the idea that participants saw themselves as less compliant when they had experienced going against the flow of their own volition (i.e., active experience). This corresponds with the results of Experiment 6 in which participants in similar conditions exhibited a tendency to “fight” an issue in which they had some interest.

Interestingly, participants in the passive condition appeared to also show less compliance. However, this lack of compliance was more evident in the condition where they went *with* the flow. Although this difference was not significant, the pattern is intriguing and might be suggestive of the fact that being led or being made to go with the flow though some other agent or without one’s volition makes people a little wary and sensitizes them to be somewhat critical and non-compliant.

Evaluations of the experimenter showed that the experimenter was seen as more intrusive and offensive when flow experience was active and people were going against the flow. This was consistent with expectations. If people are less compliant, they are more likely to evaluate the experimenter negatively. However, when the experience of going against the flow was passive,
participants saw the experimenter as less intrusive when they went against the flow than with the flow. If anything, the experimenter was seen as most intrusive when participants went with the flow under passive conditions suggesting that they might have felt “pushed” as suggested earlier in the discussion. Taken together, the findings in the passive condition suggest that the sensorimotor experience of going against/with the flow passively (i.e., through some other agent) might activate different conceptual metaphors (e.g., “being pushed” or “being led”) that are likely to be applicable in the context of persuasion. The activation of a different conceptual metaphor which has its roots in a different type of force schema might make them feel less in control and more wary of external influence.

Experiments 6 and 7 suggest that the active experience of going against the flow affects the “inclination to fight” and how compliant people see themselves. However, it is not quite clear if the sensorimotor experience had an effect only on behavioral responses (and behavior-related measures) because of the activation of a motor behavior that generalized to a new situation or if these effects were driven by an actual change in attitudes through assessment of the persuasive content. If actual persuasion has occurred, people should be able to differentiate between strong vs. weak arguments. Thus, if the persuasive message contains strong arguments, one would be more persuaded compared to when the message has weak arguments. In addition, if the effect of going against the flow is observed in the active condition, there would be a clearer distinction between arguments in the active (vs. passive) conditions. Experiment 8 tests this hypothesis and provides insight into the underlying process by manipulating strong and weak arguments presented in a news article. Specifically, experiment 8 tests whether participants who experience flow actively will be more persuaded by strong arguments than weak arguments, whereas those
who experience flow passively will show no difference in strong arguments compared to weak arguments. Furthermore, experiment 8 replicates experiments 6 with a different flow manipulation, using a different article (i.e. the institution of comprehensive exams in a university).

Effects on Persuasion through Message Scrutiny

The sensorimotor experience of going against the flow activates the image schema of force along with its associated subjective feelings and behavioral reactions. This influences behavior in the next situation. In a persuasion context, the bodily experience of going against the flow might trigger defensive processes because of the similarity between the motor behavior of actively going against the flow and what one typically does when one defends a position. These defensive processes presumably arise from defense motivation and can influence information processing.

Defense motivation is conceptualized as a desire to make judgments that are congruent with “self-definitional” beliefs (Chaiken, Giner-Sorolla and Chen 1996). These “self-definitional” beliefs are those that are closely tied to the self such as one’s values, identities and attributes. Those who are defense-motivated aim to maintain their self-concept. This makes them process information selectively. Past research suggests that when people have low defense motivation, they are likely to engage in heuristic processing (Chen, Duckworth and Chaiken 1999). In this case, they will select heuristics that are congruent with their own beliefs, and discard the ones that are not. On the other hand, if individuals have a high defense motivation and available cognitive resources, they are likely to engage in “defense-motivated systematic
processing.” In this case, information can be scrutinized in a biased way: belief-congruent information will be processed as more favorable than belief-incongruent information, which will be scrutinized in order to derogate the validity of the information (Chen, Duckworth and Chaiken 1999).

Thus, when one actively experiences going against the flow, not only is this experience more similar to the original image schema that is formed pertaining to resistance, but it is also applicable to situations in which a persuasive attempt is being made. In such cases, high defense motivations might be elicited and participants might be more likely to process information more carefully. This should make them more persuaded by strong arguments compared to weak arguments. When one passively experiences going against the flow, they should be less likely to engage in a high defense motivation, as they already are in a passive accepting mode. Thus, they would show less discrimination between strong and weak arguments. Based on this, I propose the following two hypotheses:

\[ H5a: \text{Participants who experience going against the flow actively will be more persuaded by strong arguments than weak arguments.} \]

\[ H5b: \text{Participants who experience going against the flow passively will show no difference in strong arguments compared to weak arguments.} \]

EXPERIMENT 8: COMPREHENSIVE EXAM

In this experiment, I test whether the active vs. passive experience of going against the flow has different effects on persuasion by using a different manipulation of flow and
manipulating argument strength. I manipulated going against the flow by asking participants to view a picture of lanes (Appendix G.1). Participants were asked to either imagine walking (active) or standing (passive) on a conveyor belt in the middle lane of a shopping center. Other people on both sides were either going in the same (with flow) or opposite (against flow) direction. They were asked to imagine the situation and write about the situation. Then as a different task they were given either a strong or weak newspaper article about comprehensive exams (Appendix G.2, G.3). They were then asked questions about the message and their willingness to vote for the institution of comprehensive exams.

Method

Overview and Design. Two-hundred-and-eighty-eight university students (57.3% female) participated in the study for extra credit for a large introductory business class. The study was a 2(type: active vs. passive) x 2(flow: with vs. against) x 2(argument: strong vs. weak) between-subjects design. Participants were told they would be participating in several studies that had been put together to give them one hour of course credit. This study was conducted first in a series of other experiments in the laboratory to fulfill the hour.

Procedure. Participants viewed a picture and were asked to either imagine walking (active) on a middle lane or standing on a conveyor belt (passive) in the middle lane of a shopping center. Other people on both sides were either going in the same (with flow) or opposite (against flow) direction. They were asked to imagine how they would feel and think about the experience as if they were physically in that situation experiencing the sensations.
Then, they were asked to write about it in as detailed a manner as possible as if they were writing about the experience to a close friend.

Then, as part of a different task they were given a newspaper article about comprehensive exams (Appendix G.2, G.3). The message was previously pretested to be either strong or weak (Albarracin 1997). Participants were asked about how they felt about the newsletter along several dimensions. First, as a manipulation check of argument strength, participants were asked, “To what extent was the communication convincing” on an 11-point scale that ranged from 0 (not at all) to 10 (extremely). Second, liking for the newsletter was measured using two items that were combined ($r = .67, p = .00$). Specifically, participants responded to “How happy did this newsletter make you feel?” and “How much did you like the newsletter?” on similar 11-point scales. Third, engagement with the newsletter was measured using five items that were combined ($\alpha = .85$). The measures were “How much were you able to concentrate on the passage you read?,” “How much did you actually think about the arguments while you read the Newsletter?”, “To what extent was the issue interesting?” “To what extent was the issue engaging?” and “To what extent was the issue relevant to you personally?” all measured on similar 11-point scales.

After they had answered questions about the newsletter, they indicated their intention to vote yes for the institution of comprehensive exams. Two items were combined ($r = .90, p = .00$, “I will vote yes in this referendum,” and “I intend to vote yes in this referendum,” on an 11-point scale (not at all 0 – 10 extremely) to create this of intention to vote yes measure.

Next, I measured their attitude toward the exams and attitude towards voting. Six items were combined ($\alpha = .76$) to create a scale of attitude towards comprehensive exams. Specifically, participants were asked “The institution of comprehensive exams is:” something I don’t like (-5) to (5) something I like; unpleasant (-5) to (5) pleasant; something that makes me feel bad (-5) to
(5) something that makes me feel good; something that does not make me angry at all (-5) to (5) something that makes me feel angry; something that makes me feel unhappy (-5) to (5) something that makes me feel happy; something that ruins my mood (-5) to (5) something that improves my mood. Another set of six items was combined ($\alpha = .75$) to create a scale of attitude towards voting in favor of comprehensive exams. Specifically, participants were asked, “Voting in favor of comprehensive exams is” something I don't like/like, unpleasant/pleasant, that makes me feel bad/good, something that makes me feel angry/not angry, unhappy/happy, ruins my mood/improves my mood on similar 11-point scales anchored at -5 and +5.

Next, thirty-two items were combined ($\alpha = .95$) to create a scale of beliefs about the possible consequences of instituting comprehensive exams. Participants were asked to indicate how much they agreed with items such as “The average GPA in this campus would increase,” “Faculty and teachers would work harder,” “Admission officer at graduate and professional school would prefer students from the UI,” “ETS would market a good product,” “ETS would have a large portion of the market in 5 years.”, etc. on 11-point scales anchored at 0 (not at all) to 10 (extremely).

Then, participants were asked how they felt about the experiment. Two items (“how much did you feel like you were going against the flow” and “how much did you feel like you were going with the flow” were averaged ($r = .61, p = .00$) after reverse coding the second item to create a manipulation check of flow scale that went from 0 (not at all) to 10 (very much). Higher numbers reflected a greater tendency to go against the flow. Then they were asked how they felt about the imagination task. Two items, “How irritated did you feel when you were imagining yourself in the situation?” and “How uncomfortable did you feel when you were imagining yourself in the situation?” anchored at 0 (not at all) and 10 (very much) were
combined \((r = .71, p = .00)\) to create a scale indicating how negative they felt along.

Manipulation checks of feeling active were assessed by asking participants if they imagined they were “walking actively” and “standing passively” on scales from 0 (not at all) to 10 (very much). These two items, with the second item being reverse-coded, were averaged \((r = .40, p = .00)\) to create a manipulation check of how active they perceived themselves to be in the experience.

Results

**Manipulation Check of Active vs. Passive.** As expected, participants were more likely to respond that they imagined they were walking actively and not standing passively when they were in the active (vs. passive) condition \((M_{active} = 6.13 \text{ vs. } M_{passive} = 5.03; F(1,279) = 15.96, p < .01)\). This difference was not contingent on flow \((F < 1, p = .819)\) or argument strength \((F < 1, p = .763)\). There were no other significant main effects or interaction effects (all \(Fs < 1, ps > .48\), except for interaction of flow and argument strength: \(F = 2.17, p = .142\)).

**Manipulation Check of Flow.** As expected, participants who went against the flow (opposite direction) reported that they felt like they were “going against the flow” to a greater extent \((M_{against\_flow} = 5.65)\) than those who imagined going with the flow \((M_{with\_flow} = 3.90; F(1,279) = 38.73, p < .01)\). There were no other significant main effects or interaction effects (all \(Fs < 2, ps > .18\)).

**Manipulation Check of Argument Strength.** As expected, the message was perceived to be stronger when participants read the strong message \((M_{strong} = 5.31)\) than the weak one \((M_{weak} = 4.46; F(1, 279) = 11.09, p = .001)\).
There was, however, an unexpected though significant 3-way interaction involving active, flow and argument strength ($F(1, 279) = 4.71, p = .031$). Means are tabulated in Table 7. The means show that when participants experienced passive flow, the effect of flow was stronger in the weak ($M_{\text{diff}} = .89$) than the strong argument condition ($M_{\text{diff}} = -.50$; $F(1,279) = 3.60, p = .058$). However, when participants experienced active flow, there was no significant interaction between flow and argument strength, ($F = 1.80, p = .18$). There were no other significant main effects or interaction effects (all $Fs < 2, ps > .16$). It is conceivable that those who experienced flow passively felt pushed and this alerted them or drew their attention to argument strength.

Table 7. Experiment 8: Mean (SD) of manipulation check of argument strength as an effect of flow in the active and passive experience and argument strength conditions.

<table>
<thead>
<tr>
<th></th>
<th>Against flow</th>
<th>With flow</th>
<th>Mdiff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(walk)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strong</td>
<td>6.03$^{aa}$ (1.73)</td>
<td>5.11$^{ca}$ (2.30)</td>
<td>.92</td>
</tr>
<tr>
<td>(N=34)</td>
<td>(N=37)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weak</td>
<td>4.53$^{ab}$ (2.25)</td>
<td>4.43$^{ca}$ (2.02)</td>
<td>.10</td>
</tr>
<tr>
<td>(N=38)</td>
<td>(N=35)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mdiff.</td>
<td>1.50</td>
<td>.68</td>
<td></td>
</tr>
<tr>
<td>Passive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(stand)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strong</td>
<td>4.80$^{aa}$ (1.78)</td>
<td>5.30$^{aa}$ (2.26)</td>
<td>-.50</td>
</tr>
<tr>
<td>(N=35)</td>
<td>(N=37)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weak</td>
<td>4.89$^{aa}$ (2.24)</td>
<td>4.00$^{cb}$ (2.51)</td>
<td>.89</td>
</tr>
<tr>
<td>(N=36)</td>
<td>(N=35)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mdiff.</td>
<td>-.09</td>
<td>1.30</td>
<td></td>
</tr>
</tbody>
</table>

NOTE.—Manipulation check of argument strength parameters vary from 0 to 10.
NOTE.—Means with dissimilar first superscripts (aa, ba) significantly differ at $p < .05$ for each row
NOTE.—Means with dissimilar first superscripts (aa, ca) significantly differ at $p < .10$ for each row
NOTE.—Means with dissimilar second superscripts (aa, ab) significantly differ at $p < .05$ for each column
NOTE.—Means with dissimilar second superscripts (aa, ac) significantly differ at $p < .10$ for each column

Newsletter – liking. As expected, no main effects or interaction effects were significant ($Fs < 2, ps > .25$; except for the 3-way interaction of active, flow and argument strength $F = 2.42, p = .121$).

Newsletter – engaging. Participants who received strong arguments were likely to think the newsletter as less engaging ($M_{\text{strong}} = 5.37$) than those who received weak arguments ($M_{\text{weak}}=$
6.02; $F(1,279) = 8.04, p = .005$). In addition, participants were more likely to think the newsletter was less engaging when they were in the passive (vs. active) condition ($M_{\text{active}} = 5.44$ vs. $M_{\text{passive}} = 5.95$; $F(1,279) = 4.82, p = .029$). No other main effects or interaction effects were significant ($Fs < 2, ps > .18$).

*Intention to Vote Yes.* As expected, participants who received strong arguments had a higher intention to vote yes in the referendum ($M_{\text{strong}} = 3.84$) compared to those who received weak arguments ($M_{\text{weak}} = 3.05$; $F(1,279) = 6.26, p = .013$).

| Table 8. Experiment 8: Mean (SD) of intention to vote yes as an effect of flow in the active and passive experience and argument strength conditions. |
|-----------------|-----------------|-----------------|-----------------|
|                 | Against flow    | With flow       | MDiff.          |
| **Active**      |                 |                 |                 |
| (walk)          |                 |                 |                 |
| Strong          | 4.51$^{aa}$ (2.52) | 3.80$^{aa}$ (2.62) | .72             |
| (N=34)          | (N=37)          |                 |                 |
| Weak            | 2.83$^{ab}$ (2.57) | 3.60$^{aa}$ (2.98) | -.77            |
| (N=38)          | (N=35)          |                 |                 |
| **Mdiff.**      | **1.68**        | **.20**         |                 |
| **Passive**     |                 |                 |                 |
| (stand)         |                 |                 |                 |
| Strong          | 3.31$^{aa}$ (2.55) | 3.74$^{aa}$ (2.63) | -.43            |
| (N=35)          | (N=37)          |                 |                 |
| Weak            | 3.08$^{aa}$ (2.88) | 2.69$^{ac}$ (2.69) | .40             |
| (N=36)          | (N=35)          |                 |                 |
| **Mdiff.**      | **.23**         | **1.05**        |                 |

**NOTE.**—Intention to vote yes parameters vary from 0 to 10.

**NOTE.**—Means with dissimilar first superscripts (aa, ba) significantly differ at $p < .05$ for each row

**NOTE.**—Means with dissimilar first superscripts (aa, ca) significantly differ at $p < .10$ for each row

**NOTE.**—Means with dissimilar second superscripts (aa, ab) significantly differ at $p < .05$ for each column

**NOTE.**—Means with dissimilar second superscripts (aa, ac) significantly differ at $p < .10$ for each column

There was a marginally significant 3-way interaction of active, flow, and argument strength, $F(1, 279) = 3.34, p = .069$. Means are tabulated in Table 8. Consistent with H5a, the means show that in the active flow conditions, the effect of argument strength was stronger when they went against the flow ($M_{\text{diff}} = 1.68$) than when they went with the flow ($M_{\text{diff}} = .20$). The two-way interaction involving these variables was significant, $F(1, 279) = 3.30, p = .07$. In contrast, when one looks at the passive flow conditions, H5b is also supported. For participants
who had a passive experience, the effect of argument strength on voting did not significantly depend on whether they went against the flow ($M_{\text{diff}} = .23$) or with the flow ($M_{\text{diff}} = 1.05$). The interaction involving these variables was not significant, $F < 1, p = .37$. No other main effects or interaction effects were significant ($Fs < 1, ps > .60$, except the main effect of active, $F = 2.28, p = .132$).

*Attitude towards Voting in Favor.* Participants who received strong arguments had a more positive attitude towards voting in favor of comprehensive exams ($M_{\text{strong}} = 4.26$) compared to those who received weak arguments ($M_{\text{weak}} = 3.73; F(1,279) = 5.54, p = .019$).

<table>
<thead>
<tr>
<th>Active (walk)</th>
<th>Against flow</th>
<th>With flow</th>
<th>MDiff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong</td>
<td>4.83$^{ab}$ (1.72)</td>
<td>3.92$^{ba}$ (2.08)</td>
<td>.91</td>
</tr>
<tr>
<td>Weak</td>
<td>3.72$^{aa}$ (1.59)</td>
<td>4.00$^{aa}$ (2.18)</td>
<td>-.28</td>
</tr>
<tr>
<td>Mdiff</td>
<td>.66</td>
<td>-.08</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Passive (stand)</th>
<th>Against flow</th>
<th>With flow</th>
<th>MDiff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong</td>
<td>4.03$^{ab}$ (1.86)</td>
<td>4.27$^{ac}$ (1.91)</td>
<td>-.24</td>
</tr>
<tr>
<td>Weak</td>
<td>3.69$^{aa}$ (2.09)</td>
<td>3.49$^{aa}$ (1.88)</td>
<td>.20</td>
</tr>
<tr>
<td>Mdiff</td>
<td>.34</td>
<td>.78</td>
<td></td>
</tr>
</tbody>
</table>

NOTE.—Attitude towards voting in favor of comprehensive exams parameters vary from 0 to 10.
NOTE.—Means with dissimilar first superscripts (aa, ba) significantly differ at $p < .05$ for each row
NOTE.—Means with dissimilar first superscripts (aa, ca) significantly differ at $p < .10$ for each row
NOTE.—Means with dissimilar second superscripts (aa, ab) significantly differ at $p < .05$ for each column
NOTE.—Means with dissimilar second superscripts (aa, ac) significantly differ at $p < .10$ for each column

As expected, a similar pattern was observed on attitude towards voting. A 3-way significant interaction of active, flow, and argument strength emerged, $F(1,279) = 3.23, p = .073$. Means are tabulated in Table 9. In the active flow conditions, the effect of argument strength was stronger when they went against the flow ($M_{\text{diff}} = .66$) than when they went with the flow ($M_{\text{diff}} =$
The two-way interaction involving these variables was significant, $F(1, 279) = 3.43, p = .07$. In contrast, when one looks at the passive flow conditions, the effect of argument strength on voting did not significantly depend on whether they went against the flow ($M_{\text{diff}} = .34$) or with the flow ($M_{\text{diff}} = .78$). The interaction involving these variables was not significant, $F < 1, p = .48$. No other main effects or interaction effects were significant ($F$s < 2, $ps > .27$).

*Attitude towards Comprehensive Exams.* As expected, participants that received strong arguments had a more positive attitude towards institution of comprehensive exams ($M_{\text{strong}} = 4.05$) compared to those who received weak arguments ($M_{\text{weak}} = 3.62$), $F(1,279) = 3.77, p = .053$.

Table 10. Experiment 8: Mean (SD) of attitude towards institution of comprehensive exams as an effect of flow in the active and passive experience and argument strength conditions.

<table>
<thead>
<tr>
<th></th>
<th>Against flow</th>
<th>With flow</th>
<th>MDiff.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Active</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(walk)</td>
<td>Strong</td>
<td>4.58&lt;sup&gt;ab&lt;/sup&gt; (1.77)</td>
<td>3.85&lt;sup&gt;aa&lt;/sup&gt; (1.88)</td>
</tr>
<tr>
<td></td>
<td>(N=34)</td>
<td>(N=37)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weak</td>
<td>3.66&lt;sup&gt;aa&lt;/sup&gt; (1.64)</td>
<td>3.73&lt;sup&gt;aa&lt;/sup&gt; (2.17)</td>
</tr>
<tr>
<td></td>
<td>(N=38)</td>
<td>(N=35)</td>
<td></td>
</tr>
<tr>
<td><strong>Passive</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(stand)</td>
<td>Strong</td>
<td>3.43&lt;sup&gt;aa&lt;/sup&gt; (1.90)</td>
<td>4.34&lt;sup&gt;bb&lt;/sup&gt; (1.82)</td>
</tr>
<tr>
<td></td>
<td>(N=35)</td>
<td>(N=37)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weak</td>
<td>3.74&lt;sup&gt;aa&lt;/sup&gt; (2.08)</td>
<td>3.34&lt;sup&gt;aa&lt;/sup&gt; (1.84)</td>
</tr>
<tr>
<td></td>
<td>(N=36)</td>
<td>(N=35)</td>
<td></td>
</tr>
</tbody>
</table>

Note. — Attitude towards institution of comprehensive exams parameters vary from 0 to 10.
Note. — Means with dissimilar first superscripts (aa, ba) significantly differ at $p < .05$ for each row
Note. — Means with dissimilar first superscripts (aa, ca) significantly differ at $p < .10$ for each row
Note. — Means with dissimilar second superscripts (aa, ab) significantly differ at $p < .05$ for each column
Note. — Means with dissimilar second superscripts (aa, ac) significantly differ at $p < .10$ for each column

As in previous cases, there was a 3-way significant interaction of active, flow, and argument strength, $F(1, 279) = 5.54, p = .019$. Means are tabulated in Table 10. However, these means show that when participants experienced flow actively, the effect of argument strength was greater when they went against the flow ($M_{\text{diff}} = .92$) than when they went with the flow.
However, the interaction involving these two variables was not significant, $F = 1.60, p = .21$. In contrast, when participants experienced flow passively, the effect of argument strength was greater when they went with the flow ($M_{diff} = 1.00$) than when they went against the flow ($M_{diff} = -0.31$), $F(1, 279) = 4.26, p = .04$. This was surprising. No other main effects or interaction effects were significant ($Fs < 2, ps > .18$).

Beliefs about the Consequences of Comprehensive Exams. As expected, no main effects or interaction effects were significant ($Fs < 2, ps > .20$).

Negative Feelings While Imagining – Irritated and Uncomfortable. There were no significant main effects or interaction effects (all $Fs < 2, p > .18$) on how irritated or uncomfortable participants felt while imagining the scene.

Discussion

The results of experiment 8 provide some interesting insights about the effect of going against the flow. Consistent with the results of experiment 7, the experience of actively going against the flow elicits a defense motivation and increases message scrutiny. That is, people who had experienced going against the flow actively were more attentive to whether the message was strong or weak. Consequently, the effect of argument strength was greater in those conditions than in the other conditions. Thus, H5a was supported. H5b was also supported, as the passive experience did not affect message scrutiny. It is also interesting to note that the effects of actively going against the flow appear to be localized in variables that have to do with action.
(voting and attitude towards voting). This is consistent with results obtained in experiment 7. It is not surprising that sensorimotor experiences that are action oriented have an effect on dependent measures that are related to such actions.

However, an interesting anomaly was noticed in the data for the overall attitude towards comprehensive exams. Specifically, when participants imagined going with the flow passively, they were also more likely to discriminate between strong and weak arguments. Although this effect was significant only for the attitude towards comprehensive exams, it was directionally present for all dependent measures. Although the initial prediction was that the experience of going against the flow should activate a defense motivation because of the similarity between this experience and a previously formed image schema pertaining to resistance as well as its applicability to situations in which a persuasive attempt is being made, it appears that the passive experience of going with the flow also increases the tendency to scrutinize the message. It is possible that when people lose their sense of control, they feel like they are the target of an influence attempt and this leads to a tendency to attend to all aspects of the situation (Langer, 1989; Petty and Cacioppo, 1986). Consequently, both strong and weak arguments are scrutinized; strong arguments are accepted and weak arguments are rejected increasing the effect of argument strength.

Framed in terms of the image schema of force, participants in this condition likely felt like they were being led (or in terms of a conceptual metaphor “taken for a ride”) and this might have activated defense motivation and greater message scrutiny. When considered in the context of other attitudinal measures such as those in experiments 6 and 7 where the passive experience of going with the flow appeared to non-significantly increase a) the tendency to fight b) self-assessment of compliance and c) judgments of the experimenter as intrusive and offensive, this
result is noteworthy and interesting albeit not part of the earlier predictions. It is also interesting to note that there were no effects on beliefs suggesting that these experiences do not have an effect on persuasion through belief-change. Rather, the effects appear to be driven by defense motivations that are activated when there is a match between the sensorimotor experience and previously formed schemas of situations in which one actively went against the flow or was led down the proverbial garden path (i.e., felt forced to do something). The match between these experiences triggers defense motivation and increases message scrutiny.

Summary

To summarize the effects obtained in this part of my dissertation suggest that the effects of going against the flow are likely to influence the extent to which people agree with a persuasive message. Specifically, going against the flow actively made people more likely to resist a message. The effect was more evident in the active-against flow conditions and suggests that the experience has to be one that is engaged in voluntarily by the self. When participants experienced it passively, the nature of the experience and its metaphorical meaning changes. This leads to null effects or in some cases a different pattern of effects.

An interesting implication of the results pertains to its effects on perceptions of the self. As experiment 7 showed, participants rated themselves as less compliant when they experienced going against the flow actively. This presumably led to greater defense motivations and a tendency to scrutinize messages. This was supported in experiment 8 in which participants experiencing going against the flow actively showed bigger effects of argument strength suggesting that they were paying more attention to the quality of arguments. Thus, when the
argument quality was good (strong arguments), participants were more likely to accept the argument even though they were going against the flow. However, when the argument quality was bad (weak arguments), they were more likely to reject it. Overall, these results have implications for how people might respond to different types of messages that are put out by marketers. Experiences of going against the flow lead to a desire to resist the message only when it is weak (weak argument conditions of Experiment 8) or relatively ambiguous in terms of strength (Experiment 6).
IV. GENERAL DISCUSSION

Past research shows that bodily experiences can activate concepts to which they are metaphorically linked and can influence judgments in other unrelated domains. Many of the studies that have been done focus on experiences that are likely to elicit "semantic concepts" that are likely to be relevant to the target being judged (e.g., experience of physical warmth affects judgments of how “warm” a person is, experience of a fishy odor leads people to consider something as “fishy or suspicious” etc.). A few other embodied experiences that have been studied do not fall into this category and an explanation of these effects has relied on subjective feelings that are elicited. In this dissertation, I tried to provide a comprehensive framework within which all these types of experiences (both dynamic and static) can be examined. Then, I focused on one type of metaphorical effect, "going against the flow" that has a dynamic and directional component and showed how it can influence subsequent consumer choices and persuasion.

The findings from seven experiments in part 1 converged on the idea that sensorimotor experiences of flow can affect consumer preferences in a different context. Experiments 1a, b and c showed that in three different product contexts, using two types of manipulations, participants who had experienced the sensation of going against the flow chose options that were normatively not preferred. Interestingly, the effects were driven by the experience of going against the flow and not by the experience of going with the flow. Imagining the experience led to the same effect if it was experienced vividly. Experiments 2 and 3 provided useful information about the embodied nature of the effect and the underlying process. Specifically, Experiment 2 showed that the effects were only evident when people actually experienced the sensations
themselves. Merely observing others engage in the experience did not lead to similar effects. This experiment was important because it also showed that the results could not be explained through the activation of semantic concepts because these would have been activated through the act of observing someone else. The null effects are not surprising since the experience is hard to capture verbally because of its dynamic nature. Further, the importance of the dynamic nature of the experience was highlighted by the fact that static images of the fur sample did not yield similar effects.

Experiment 3 provided evidence for the fact that subjective feelings of going against the flow are responsible for the effect because when these feelings were misattributed to another source, the effects on choice were not evident. Experiment 4 built on this work to show that these internal subjective feelings of flow are relied on when other objective information about norms is not provided. When external criteria about normative behavior are clear, then people avoid using their subjective feelings and default to the externally provided norms. This is consistent with past research on affect, which suggests that individuals are more likely to consult their feelings when they have little other information available. Experiment 5 provided further evidence that participants are in fact going against their initial inclination. Eye-tracking data provided additional evidence to support these conclusions through the time participants took to make their choice.

In part 2, three experiments showed how sensorimotor experiences of going against the flow can affect persuasion. Importantly, the active experience of flow was more likely to elicit the desire to resist a persuasive message relative to the passive experience of flow. Thus, participants who actively experienced going against the flow were more likely to fight against the message, whereas those who passively experienced going against the flow did not seem to
show a difference (experiment 6). Experiment 7 provided interesting insights on how participants' evaluations of themselves changed as a function of this experience. Specifically, participants rated themselves as less compliant when they had experienced going against the flow actively suggesting that defense motivations might be elicited. Experiment 8 then replicated the results on persuasion with a different flow manipulation and messages that were strong and weak. This allowed me to assess if participants who experienced flow actively vs. passively were more sensitive to argument strength. The results of this experiment provided support for H5a and H5b.

The results presented here are important theoretically because they examine more dynamic orientational metaphors and bring in the role of self-experience. To our knowledge, this has not been examined and clearly demonstrated before. Although orientational metaphors have been examined (Chae and Hoegg 2013; Meier and Robinson 2004; Zhang and Schwarz 2011), they have typically not examined the sensory and motor aspects of the experience separately. I consider this research important because it goes beyond the descriptive representation of sensations to a consideration of motor aspects of sensorimotor experiences. Such experiences, because they involve action and direction, possess the power to alter not just judgments but also what people choose in unrelated situations (i.e., their behavior). Similarly, the role of self-experience has not been studied leading to the misperception that semantic priming can explain most embodied effects. Our studies provide some evidence that this criticism is not warranted and not all embodied experiences can be explained through simple semantic priming.

Note that these effects are also different from a conditional behavioral response. Experiencing sensorimotor experience of going against the flow activating of the image schema of force itself may be considered similar to classical conditioning, only if it has an effect in the
same situation. Conditioning is restricted to the situations that have led to the conditioned response. It should not affect judgments in other situations (e.g., a second unrelated task). However, here I examine the effect of sensations of going against the flow on a different domain. Furthermore, the fact that it can be corrected when there is an external norm (as shown in Experiment 4, part 1) suggests that this is not a conditioned response.

It is interesting to note that in Experiment 4, when participants were provided with idiomatic expressions and asked how much they were likely to use these different expressions in everyday speech, those who had stroked the fur in a way that went against the flow were more likely to report a greater tendency to use such expressions compared to those who stroked it in the direction that went with the flow. This is consistent with recent work in cognitive neuroscience which suggests that the processing of idiomatic expressions requires greater elaboration than literal processing (Mashal et al. 2008; Nail et al. 2000). The authors document right hemisphere activation (which is related to higher elaboration, imagery etc.,) when idioms are processed. It is likely that the experience of going against the flow leads to greater elaboration of the experience and is more likely to activate the metaphor.

The current research also has important substantive implications. In the context of choice, it is very common for people to go with the normatively popular option. Yet, as suggested earlier, people might want to maintain some level of distinctiveness and be different. Factors that make them choose options that are not popular are obviously important because they allow people to try out new products. Experiment 4 shows that people are more likely to go against the norm when there is no obvious external norm information present. It is worth noting that marketers often fail to indicate which items are popular and, in these cases, consumers are likely to use their own internal sense of flow to make their choices. Bodily experiences that result from
walking in the direction that is opposite to store traffic, touching sample materials in a certain way might disrupt this sense of flow and lead consumers to choose options that are less preferred. These experiences could provide marketers with a subtle tool to move slower moving items off the shelf through strategic placement.

The effects obtained in the persuasion domain have to do with getting consumers to act. They add to the general conceptualization of sensorimotor experiences by examining the role of self and volition in the process. They suggest that the experience has to be engaged in by the self and has to be actively experienced. Thus, metaphorically speaking, going against the flow is quite different from being carried against the flow. These experiences are not only subjectively different but also elicit different effects because they presumably signal different things to the individual. As the results of experiments 7 and 8 suggest, an active experience might elicit a tendency to not comply and a defense motivation that increases message scrutiny.

The findings of this set of studies might be of interest to organizations that encourage consumer activism of any sort. Although this work is preliminary, it appears to suggest that the effects are localized in “activism” and not persuasion per se. The fact that the findings are specific to a particular type of behavior suggests that they can be used in fairly specific situations that require consumers to take action. Although the current studies are limited to examining only pro-messages, future research could examine situations in which the message is itself one that is consistent with going against the flow or with it (i.e., pro-messages and anti-messages).

I used a broad framework to conceptualize these effects; i.e., the notion of image schemas as building blocks of conceptual metaphors. This conceptualization is flexible enough in that it allows me to examine different underlying cognitive mechanisms (e.g. the activation of semantic concepts, feelings, behavioral dispositions, linguistic metaphors etc.). Past research in embodied
cognition has focused on showing many different kinds of effects and there is no unified theoretical framework within which they can be examined. My conceptualization adds to the literature and provides such a framework. It also allows for the examination and explanation of different aspects of sensorimotor experiences - those that are relatively static and also those that have a dynamic motor component that is central to the experience.

To summarize, I have shown that sensorimotor experiences of going against the flow, although non conscious, can have intriguing behavioral effects on choice and persuasion. These feelings of flow are important but have rarely been studied in the context of behavioral norms. As a first step, this research paves the path for additional work on how people use their own sense of flow to make decisions about what to choose, what to oppose and what to say. Future research can be extended to consider similar types of dynamic sensorimotor experiences.
REFERENCES


APPENDIX A. EXAMPLES OF SENSORIMOTOR EXPERIENCES OF GOING AGAINST THE FLOW IN DAILY LIVES

https://flic.kr/p/o1P7EB
https://flic.kr/p/6l6JHy
https://flic.kr/p/pFmsFB
https://flic.kr/p/KdUkj
https://flic.kr/p/2aQCwB
APPENDIX B: EXPERIMENTS 1A AND 2 JEWELRY OPTIONS

A

B

A

B
APPENDIX C: EXPERIMENT 1B FLOW MANIPULATION AND CHOCOLATE OPTIONS

APPENDIX C.1: EXPERIMENT 1B FLOW MANIPULATION SCREENSHOT

APPENDIX C.2: EXPERIMENTS 1B, 3 AND 5 CHOCOLATE OPTIONS

LAKE CHAMPLAIN

BODEGA

A

B
APPENDIX D: EXPERIMENT 1C T-SHIRT OPTIONS

(a)  
(b)  
(c)  
(d)
APPENDIX E: EXPERIMENT 4 CHOCOLATE OPTIONS

1) No norm condition

2) Norm as option A condition

3) Norm as option B condition
UI president talks with students about tuition, faculty raises

Friday, October 29, 2010

URBANA – President Michael Hogan on Wednesday challenged University of Illinois students to help him find ways to keep tuition low without further hurting faculty who are vital to the value of their degree.

Hogan acknowledged that the 9.5 percent tuition increase for incoming freshmen this year was second-highest among public universities in the Big Ten, and said he wasn't happy about that. But he also said the UI is second-ranked in the Big Ten.

"You're getting what you pay for," he said.

He noted that the rate over four years is 3.6 percent a year, one of the lowest in the country.

To students who would argue for a tuition freeze, Hogan said, "I will say to you, 'What will you give up?' Don't tell me, 'I will give up faculty compensation,' because you have no right to say that.

"Tell me what you will give up that won't sacrifice the academic quality of this institution, and then we'll have a real conversation," Hogan said.

Hogan said the $46 million budget cut imposed on the UI by the state this year is just about equal to the amount brought in by the 9.5 percent tuition hike. The university had hoped to spend the new tuition income to replace services that had been cut from classrooms, or provide raises for faculty who've gone without increases for two years and also taken furloughs.

"We are spending at a rate of $75 to $80 million a month. So do the math," he said. "We're already in debt by a large amount of money. We're spending money we're not getting from the state."

"Every dollar we lose from the state confronts us with a challenge. We either make that up in other revenue streams or we suffer deterioration in the quality of the instruction we deliver and a deterioration of the value of your degree," he said.
APPENDIX G: EXPERIMENT 8 FLOW MANIPULATION AND NEWS ARTICLES

APPENDIX G.1: EXPERIMENT 8 FLOW MANIPULATION PICTURES

1) Against flow

2) With flow
The University of Illinois is arranging to hold a referendum to decide on the possibility of instituting comprehensive exams. This policy has been a topic of discussion for more than ten years. Recently, there has been a firm decision to have a referendum in which students, faculty and alumni will express their opinions on this issue. If the referendum supports the institution of comprehensive exam, then the policy will affect students of this campus. Specifically, first years, sophomores, juniors and seniors will be required to take them before graduating.

The issue is obviously controversial. As a first reaction, students think of it as an additional burden to their already exhaustive schedule. Nevertheless, you should be aware of the arguments that have been raised to favor this position. We have carefully compiled some of the arguments that are usually used to support this change in the university policy.

The National Scholarship Achievement Board recently revealed the results of a five-year study conducted on the effectiveness of comprehensive exams at Duke University. The results of the study showed that since the comprehensive exam has been introduced at Duke, the grade point average of undergraduates has increased by 31%. At comparable schools without the exams, grades increased by only 8% over the same period. The prospect of a comprehensive exam clearly seems to be effective in challenging students to work harder and faculty to teach more effectively, it is likely that the benefits observed at Duke University could also be observed at other universities that adopt the exam policy.

Graduate schools and law and medical schools are beginning to show dear and significant preferences for students who received their undergraduate degrees from institutions with comprehensive exams. As the Dean of Harvard Business School said: “Although Harvard has not and will not discriminate on the basis of race or sex, we do show a strong preference for applicants who have demonstrated expertise in an area of study by passing a comprehensive exam at the undergraduate level”.

A member of the Board of Curators has stated publicly that alumni nationwide are citing lack of a comprehensive exam as a major reason for decreases in financial support. Accreditation by the NAB enhances a University’s reputation to graduate schools, employers, and demonstrates to alumni that the school is worth supporting. A recent survey of influential alumni incorporations and the state legislature has revealed that contributions would improve significantly if the exams were instituted. With increased alumni support, continued increases in tuition might be avoided.

Faculty members at universities with the comprehensive exams who were interviewed by researchers form the Carnegie Commission on Higher Education revealed that the comprehensive exams appeared to provide an incentive for students to study the material in their major area. A thorough study undertaken by the department of Education at the University of Notre Dame showed that universities with comprehensive exams have resisted the national trend of declining scores on standardized achievement tests. Average scores on achievement tests for the universities with comprehensive exams have actually raised over the last five years; we refused to increase their contributions to the University because of what they led are lax educational standards. In fact, the prestigious National Accrediting Board of Higher Education (NAB) has recently rejected the University’s application for membership.
APPENDIX G.3: EXPERIMENT 8 NEWS ARTICLE, WEAK ARGUMENT

STUDENTS NEWSLETTER
THE COMPREHENSIVE EXAMS POLICY

The University of Illinois is arranging to hold a referendum to decide on the possibility of instituting comprehensive exams. This policy has been a topic of discussion for more than ten years. Recently, there has been a firm decision to have a referendum in which students, faculty and alumni will express their opinions on this issue. If the referendum supports the institution of comprehensive exam, then the policy will affect students of this campus. Specifically, first years, sophomores, juniors and seniors will be required to take them before graduating.

The issue is obviously controversial. As a first reaction, students think of it as an additional burden to their already exhaustive schedule. Nevertheless, you should be aware of the arguments that have been raised to favor this position. We have carefully compiled some of the arguments that are usually used to support this change in the university policy.

The National Scholarship Achievement Board revealed results of a study they conducted on the effectiveness of comprehensive exams at Duke University. One major finding was the student anxiety had increased by 31%. At comparable schools without the exam, anxiety increased by only 8%. The Board reasoned that anxiety over the exams, or fear of failure, would motivate students to study more in their courses while they were taking them. It is likely that this increase in anxiety observed at Duke University would also be observed and be of benefit at other universities that adopt the exam policy.

Graduate students have always had to take a comprehensive exam in their major area before receiving their degrees, and it is only fair that undergraduates should have to take them also. As the Dean of the Harvard Business School said, “If a comprehensive exam is considered necessary to demonstrate competence for a masters or doctoral degree, by what logic is it excluded as a requirement for the bachelors degree? What administrators don’t realize is that this is discrimination just like discrimination against blacks and Jews. There would be a lot of trouble if universities required only whites to take comprehensive exams but not blacks. Yet universities all over the country are getting away with the same thing by requiring graduates students but not undergraduates to take the exams.” Thus, the institution of comprehensive exams could be useful for undergraduates as they have been for graduate students.

A member of the Board of Curators has stated publicly that his brother had to take a comprehensive exam while in college and now he is the manager of a large restaurant. He indicated that he realized the value of the exams since their father was a migrant worker who didn’t even finish high school. He also indicated that the university has received several letters from parents in support of the exam. In fact, 4 of the 6 parents who wrote in thought that the exams were an excellent idea. Also, the prestigious National Accrediting Board of Higher Education seeks input from parents as well as students, faculty, and administrators when evaluating a university. Since most parents financially contribute to their child’s education and also favor the exams, the university should institute them. This would show that the university is willing to listen to and follow the parents’ wishes over those of students and faculty who may simply fear the work involved in comprehensive exams.

A study conducted by the Educational Testing Service of Princeton, New Jersey revealed that many universities are considering adopting comprehensive exams. Thus, any university that adopted the exams could be at the forefront of a national trend. Some professors at schools with the exams who were interviewed felt that high school students would be impressed by a university that kept pace with current trends. In fact, whether or not a school had a comprehensive exam might be determining factor in their choice of a university. Therefore, the enrollments of universities with the exams should increase as the information about the exams spreads among high school students.