THESIS

EFFECTS OF GOAL-FRAMED AND DYNAMIC NORM MESSAGES ON NATIONAL

PARK CAMPERS' INTENTIONS TO COMPLY WITH WILDLIFE ATTRACTANT

STORAGE GUIDELINES

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ABSTRACT

EFFECTS OF GOAL-FRAMED AND DYNAMIC NORM MESSAGES ON NATIONAL

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Wildlife habituation and conditioning have posed persistent issues for managers of U.S. national parks and protected areas. The tendency for park campers to unintentionally feed wildlife by improperly storing known attractants contributes to these issues. There are park regulations requiring campers to properly store wildlife attractants that often go unfollowed. There is a noted management preference for addressing this noncompliance through communication. Previous research suggests that goal-framed and dynamic norm message frames may be effective at fostering behavioral antecedents and intentions to engage in pro-environmental behaviors such as proper attractant storage. This study examined if goal-framed and dynamic norm messages were effective at encouraging compliance. Results demonstrate no statistically significant impact on antecedents or intentions to store attractants from either goal-framed messages, dynamic norm messages, or goal-framed messages paired with dynamic norm messages. However, these statistically nonsignificant findings are aligned with a growing body of literature that have highlighted the complexities of accurately measuring the effects of goal-framed messages and the potential limited effectiveness of dynamic norm messages. Future research should focus on exploring these complexities in order to better understand how goal-framed and dynamic norm messages might be useful tools to park managers in mitigating the effects of negative human-wildlife interactions.

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"I know not all that may be coming, but be it what it will, I'll go to it laughing." – Herman Melville

TABLE CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1. INTRODUCTION

Wildlife habituation and conditioning have posed persistent issues for managers of U.S. national parks and protected areas (hereafter, parks; Marion et al., 2008; Leong et al., 2016). The tendency for visitors to either intentionally feed wildlife or to leave out known wildlife attractants at parks has contributed to this issue in that wildlife often attempt to return looking for more attractants. This increased proximity between visitors and wildlife also increases the potential for interactions resulting in human or wildlife injury or death. Given this, there are park regulations requiring visitors to properly store wildlife attractants, however these regulations are often not followed. While there are many strategies to mitigate the likelihood of visitors engaging in these behaviors (e.g., area closures or citing violators), there is a noted management preference for achieving voluntary compliance through indirect methods such as communication (Dietsch et al., 2016; Winter et al., 2000). Recent research (Abrams et al., 2020) examining the effectiveness of a visitor-centered message approach for increasing compliance with park regulations has demonstrated promise. With this in mind, this thesis attempted to test the effectiveness of visitor-centered goal-framed and dynamic norm messages at fostering behavioral antecedents and intentions using a between-subjects online experiment.

1.1 Overviews and Rationales

In 2019, there were 327.5 million recreation visits to U.S. national parks – marking both the fifth consecutive year exceeding 300 million visits and the third highest total since record keeping began in 1904 (NPS, 2021). This noticeable increase in park visitation numbers has coincided with an increase in the number of individuals who participate in nature-based outdoor recreation activities (such as wildlife viewing or camping); from 2000 to 2009, nature-based

outdoor recreation grew by 7.1 percent and similar growth is expected through 2060 (Cordell, 2012). Much of this outdoor recreation occurs on land managed by the U.S. National Park Service (NPS) which is charged with preserving "unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of this and future generations" (NPS, 2020; Vincent et al., 2020).

A tension has emerged in many parks between the dual mission of preserving natural resources while providing recreation and education opportunities for visitors. Noncompliant behaviors (behaviors that violate park rules and regulations; Dietsch et al., 2016; Goh et al., 2017) that threaten park biodiversity have posed formidable, persistent issues for park managers (Marion, et al., 2008; Orams, 2002; Rickard, 2014). Specifically, noncompliant behaviors that result in human-wildlife interactions in which the potential for severe consequences exist for both wildlife and visitors have been noted as important behaviors to manage. Wildlife feeding (either intentional or unintentional) falls under this category of behavior as it can cause wildlife to become conditioned (when an animal changes its behavior due to consistent positive consequences to a stimulus; in this case, wildlife attractants such as anthropogenic food) and then subsequently come into closer proximity to humans searching for more attractants (Lackey & Ham, 2004; Leong et al., 2016; Peine, 2001). Park regulations outline proper ways to store known wildlife attractants; for instance, park campers may either stay within an arm's reach from attractants while they are out or store them in their vehicle or a bear box, if provided at each campsite. Campers are important targets for this specific behavior given that they spend more time in the park than day visitors and likely bring more attractants with them. Although proper storage regulations are highlighted by park staff and park signage, many parks still struggle to gain voluntary compliance (i.e., without the use of fines or other legal repercussions).

One reason for this may be because much park messaging is wildlife-centered; that is, messages have focused on how compliant behaviors benefit wildlife/biodiversity or how noncompliant behaviors threaten wildlife/biodiversity (Abrams et al., 2020; Martinek et al., 2019). This type of messaging may be ineffective at fostering compliant behaviors because the benefits to complying may not be tangible or immediately evident to campers. Further, the cost (e.g., time) of having to comply is often immediate; for example, asking a camper to properly store all wildlife attractants in a vehicle or bear box whenever they are not within arm's reach of them may not be effective because the investment in time to do so may not outweigh their more immediate motivation to go secure their spot on a beach. By paying more attention to campers' motivations for engaging in noncompliant behaviors, park managers may be able to more effectively position compliant behaviors as being more likely to lead to campers' desired park experiences. Indeed, recent park message testing informed by the social marketing approach has demonstrated this (Abrams et al., 2020; Kotler & Lee, 2008).

Prior work on message framing lends itself to this decidedly more visitor-centered approach to park messaging. In the context of human-wildlife interactions, there has been a considerable amount of work done examining the effects of gain and loss frame messages on fostering behaviors that keep both visitors and wildlife safe (Abrams et al., 2020; Lu, 2016; Lu et al., 2018, 2016). This line of framing is heavily informed by prospect theory's (Kahneman & Tversky, 1979) assumption that humans are loss averse; that is, we feel losses more potently than we feel equivalent gains. Thus, it is posited that loss-framed messages should be more effective when trying to foster risky behavior (e.g., investing) while gain-framed messages should be more effective at fostering cautious behavior (i.e., the compliant behaviors detailed in this paper). However, work examining these claims has found mixed results (Van 't Reit et al., 2016).

Construct validity in many studies claiming to manipulate gain or loss frame comparisons is likely a key reason for mixed results rather than a problem with loss aversion and prospect theory (Ruggeri et al., 2020; Young, 2018). One proposed solution to this issue is to take a Regulatory Focus Theory approach to gain and loss framing (Young, 2018).

Regulatory Focus Theory provides a framework that can allow for more intentional message framing (Cesario et al., 2013). This theoretical perspective attempts to explain what motivates people to act and operates under the assumption of a hedonic principle. This essentially claims that individuals seek out pleasure and avoid pain (Higgins, 1997). The way in which individuals go about maximizing pleasure and minimizing pain is contextual to each individual and the needs they are seeking (Higgins, 1997). This perspective posits that an individual's regulatory focus refers to how they respond to information based on their motivations and needs and that this may play out in two differing ways (Higgins, 1997). 1) An individual may be motivated by experiencing pleasure, seeking good outcomes, nurturing their needs, and making sure things go right when pursuing a goal (i.e., a promotion focus). 2) Conversely, an individual may be motivated by avoiding pain or bad outcomes, focusing on their security needs, and making sure things do not go wrong when pursuing a goal (i.e., a prevention focus; Higgins, 1997; Young, 2018). Thus, message frames that position the compliant behavior as one that promotes positive outcomes (gains) or that prevents negative outcomes (non-losses) – which will be referred to as either promotion or prevention messages or, when referred to in tandem, goal-framed messages – may be more effective at increasing compliance than messaging focused solely on impacts to wildlife.

However, because behavior is often influenced by a number of factors, it is typically best to approach message framing with more than one single theoretical perspective. Another

potentially powerful influence on camper behaviors are the implicit and explicit social norms pertaining to non-compliant behaviors (Ajzen, 1991; Cialdini et al., 1990). In this context, there may be a lack of knowledge or misperceptions of social norms pertaining to proper wildlife attractant storage (e.g., "Well, no one else uses their bear box"). Further, visible signs that other campers are not complying with attractant storage guidelines (e.g., food left on picnic tables with no one in sight) may signal to individuals that non-compliance is the norm (Cialdini et al.,1990). In a park context, normative message frames, frames which attempt to convey the social norms pertaining to a specific behavior, have shown relative effectiveness at increasing compliance for such behaviors as staying on trail while hiking and leaving natural artifacts within parks (Cialdini et al., 2006; Winter, 2008). Prior park message testing has focused on two types of norms: descriptive (what we think others are doing) and injunctive (what we ought to do; Cialdini et al., 1990). However, recent work has introduced the notion of dynamic norms – norms that refer to how others are changing over time or *trying* to change (Sparkman & Walton, 2017). The literature around dynamic norms examines how individuals conform to norms that are changing over time; for instance, "Increasingly, campers are *attempting* to properly store their wildlife attractants." This type of norm is predicated on the notion that a norm that is increasing in salience may signal to individuals that there is an increase in importance being placed on the norm itself (e.g., properly storing attractants) and thus may motivate them to reconsider the barriers to engaging in the norm themselves (e.g., an individual taking the time to properly store their attractants, even though they will have to put in the time and energy to store them in a bear box; Sparkman & Walton, 2017, 2019). Message frames that incorporate these types of dynamic normative messages may indicate to visitors that storing attractants properly is a worthwhile and increasingly popular action – potentially leading to voluntary compliance. However, dynamic

norm messages have yet to be widely tested; thus, this thesis provides an opportunity to expand our understanding of how these norms may influence human behavior.

We specifically examined the effects of goal-framed and dynamic norm messages on behavioral antecedents and intention. By behavioral antecedents, we mean the constructs that prior research has demonstrated influence behavioral intentions and, in theory, behavior. These factors include behavioral attitudes, subjective norms, and perceived behavioral control (Ajzen, 1991). Utilizing a between-subjects experimental design, we attempted to examine how goal-framed and dynamic norm messages influenced participants' behavioral antecedents and intentions to properly store their wildlife attractants.

1.2 Goal and Research Questions

The goal of this research was to test the effectiveness of message frames informed by regulatory focus theory and the emerging concept of dynamic norms at fostering behavioral antecedents and intentions of park campers to properly store wildlife attractants.

RQ1: Are promotion and/or prevention messages effective at fostering behavioral antecedents and intentions to comply with wildlife attractant storage guidelines in national park campers?

RQ2: Are dynamic norm messages effective at fostering behavioral antecedents and intentions to comply with wildlife attractant storage guidelines in national park campers?

RQ3: Are goal-framed messages each paired with a dynamic norm message effective at fostering behavioral antecedents and intentions to comply with wildlife attractant storage guidelines in national park campers?

To examine these research questions, a between-subjects online experiment was conducted in which different groups were exposed to different message conditions. After exposure to a message condition, participants were then asked to complete a survey attempting to gauge their behavioral antecedents and intentions to properly store wildlife attractants at national parks.

1.3 Organization of Proposal

Chapter 2 of this thesis contains a review of the literature pertaining to message framing, regulatory focus theory, dynamic norms, behavioral intentions, and how these perspectives can be used to inform better park messaging. Chapter 3 explains, in depth, the methodology of this study, the justification of that methodology, the specific message frames used, how participants were chosen to participate, and how data was analyzed. Chapter 4 presents the results of the study. Chapter 5 will provide discussion and implications of the study. Chapter 6 provides references cited throughout the study. Finally, Chapter 7 contains relevant appendices.

CHAPTER 2. LITERATURE REVIEW

This research study is informed by literature focused on human-wildlife conflict and

message framing to investigate the effectiveness of certain messaging strategies at increasing

park campers' intentions to comply with park wildlife attractant storage guidelines. Prior

research on human-wildlife interaction is presented to demonstrate how noncompliance with

these guidelines leads to potentially dangerous interactions for both park campers and

biodiversity. Literature pertaining to message framing through regulatory focus theory and

dynamic norms provide theoretical guidance in crafting wildlife attractant storage messaging.

2.1 Background and Context

Wildlife are an important component of the natural resources protected by the U.S.

National Park Service (Leong et al., 2016; NPS, 2020). Parks provide vital habitat for wildlife

and park staff often work to preserve and restore species of wildlife in an effort to sustain

naturally functioning ecosystems (Leong et al., 2016). However, with increased visitation rates in

many parks (NPS, 2021), protecting wildlife has become more challenging for park managers.

The unique opportunity to interact with wildlife that parks provide visitors is one in which park

managers recognize can assist in fostering stewardship values; however, this opportunity has also

forced managers to come up with effective ways to facilitate these interactions while keeping

both visitors and wildlife safe (Marion et al., 2008).

While some visitors (such as those whose visit is centered on wildlife viewing) may

perceive human-wildlife interactions as beneficial to their park experiences, these interactions

may have negative consequences for themselves and wildlife (Cordell, 2012). For one, these

interactions increase the likelihood of visitor injury or death caused by wildlife (Lalasz, 2013;

Marion et al., 2008). Interactions can also significantly alter wildlife behavior in ways that negatively affect wildlife health and reproduction, lead to increased disease transmission, and which can cause wildlife to increasingly frequent more exposed recreation sites where they are vulnerable to a myriad of anthropogenic threats (Marion et al., 2008; Orams, 2002).

2.1.1 Wildlife Habituation and Conditioning

One key issue stemming from human-wildlife interactions pertains to the effects of intentional and unintentional feeding of wildlife (Orams, 2002). The availability of food is perhaps the single most important factor in determining how wildlife spend their time (Adeyemo, 1997; Baldellou & Adan, 1997; Goodson et al., 1991; Shepherdson et al., 1993; Stock & Hofeditz, 1996). Thus, when wildlife are intentionally fed by visitors or are able to locate anthropogenic food (i.e., food sources derived from human activities) on their own, they may devote significantly less time to foraging and hunting (Orams, 2002). This increase in free time has been shown to lead to increased population sizes and altered migration patterns (Boutin, 1990; Paton et al., 1992). Perhaps most importantly to the context of this study, wildlife feeding may also lead to wildlife habituation and conditioning (Leong et al., 2016; Orams, 2002).

Wildlife habituation is defined as the "waning of a behavioral response following repeated exposure to a nonthreatening stimulus" (Leong et al., 2016). In the context of human-wildlife interactions, habituation is often used to describe wildlife's lack of fear towards humans after repeated, nonthreatening exposures (Herrero et al., 2005). Wildlife conditioning on the other hand refers to "the process by which an animal's response to a stimulus becomes more frequent or more intense as the result of a reward or punishment…associated with the stimulus" (Leong et al., 2016; McFarland, 1981). In parks, the stimulus is people and the reward associated with people is often food or other known wildlife attractants such as scented toiletries, cosmetics,

sunscreens, bug repellent, and even fuel (NPS, 2017). Food conditioning, in particular, is a noted issue concerning wildlife within park boundaries as conditioned wildlife are more likely to approach visitors and damage property as well as have sub-optimal diets or habitats (Leong et al., 2016). On the most extreme level, food conditioned wildlife that are regularly involved in interactions with visitors must be removed or killed.

2.1.2 Management Strategies to Mitigate Food Conditioned Wildlife

In order to manage wildlife habituation and conditioning, the NPS has implemented regulations on both wildlife feeding and proper attractant storage within its sites (36 CFR, 1984). However, attaining compliance with these regulations has proved to be challenging for park managers. Reasons for noncompliance often vary depending on the behavior and the context surrounding the behavior, this is particularly true when thinking about attractant storage behaviors. The motivations and barriers to engaging in proper storage may differ depending on the type of visitor (i.e., day-use visitor versus camper) and the environment in which parks are asking visitors to comply (e.g., whether or not there is adequate access to bear boxes). One important segment of visitors to focus on are frontcountry park campers (i.e., campers that drive to an established campground maintained by the NPS). Because frontcountry campers are staying within park boundaries for longer periods of time than day-use visitors, they may be more likely to carry known wildlife attractants with them. Many campsites within parks provide bear box containers to store attractants at each campsite (Mazur, 2008); however, Martin and McCurdy (2009) highlight that the inconvenience of using containers, negligence, and lack of knowledge of how to properly use containers serve as barriers to compliance. Thus, managers often allow visitors to store their attractants in their vehicles if bear boxes are not available.

Prior research has highlighted management strategies directed at increasing compliance, and this work has highlighted management preference for indirect methods to mitigate the impact of these behaviors by attaining "voluntary compliance" (Dietsch et al., 2016; Winter et al., 2000). Such indirect measures include use of signage, brochures, websites, social media, and interpersonal communication between park staff and visitors as opposed to more direct methods such as constructing barriers, closing areas, and citing violators. Importantly, prior research has demonstrated that visitors share a preference for indirect methods as they are less obtrusive and result in a more unconfined visitor experience (Manning & Anderson, 2012). These indirect measures dovetail with the NPS emphasis on education and position research on strategic communication and message framing as apt areas of scholarship to inform future park messaging.

2.1.3 Proper Wildlife Attractant Storage Communication Strategies

While the NPS has recognized communication as a useful tool to encourage compliant behaviors within park boundaries, much of this communication has been focused on either protecting natural resources, enforcement of park regulations, or providing procedural information (Abrams et al., 2020; Marion et al., 2008; Ward et al., 2011; Winter, 2008). Procedural messages are used to highlight and provide information to visitors and campers about the behaviors that managers want them to engage in; for instance, this type of message might inform campers to "never leave food or trash unattended" or to "keep a clean tent" (NPS, 2017). An enforcement message meant to deter noncompliance might read, "Leaving food unattended is prohibited (36 CFR2.0 D)." Often, park signs highlight natural resource protection. These messages might read, "Please store your food in order to protect local wildlife." While protecting wildlife might be a motivating factor to properly store food for the park staff who create these

messages, it may not be for all park visitors. These types of messages may be effective in attaining compliance from visitors who are like-minded and motivated to comply, however messages that take into account characteristics of visitors such as their desired park experiences or motivations for engaging in noncompliant behaviors may be more effective for a broader audience (Abrams et al., 2020).

Further, communication messages that are crafted to be persuasive by pulling from the well-established message framing literature are likely to prove more effective than messages that aim to simply educate visitors on park regulations or the importance of protecting resources (Abrams et al., 2020; Dietsch et al., 2016). Prior research in parks has demonstrated the relative effectiveness of certain message frames in a park context (Cialdini et al., 2006; Hockett & Hall, 2007; Lu et al., 2016). Further, and important to this study, Young et al. (2018) examined the utility of message frames informed by regulatory focus theory by testing how manipulating different goals (or consequences) of compliance (or noncompliance) in messaging effected visitors' intentions to comply with park attractant storage guidelines. While researchers here did not find statistically significant differences in message frames, their work provides intriguing insights into potentially efficacious ways to frame park messaging. The current study was informed by this message framing literature to determine which frames might possess the potential for increasing camper compliance with food storage guidelines.

2.2 Theoretical Perspectives

Prior research has demonstrated that message frames can be successful at persuading receivers to change their behavior (Nabi & Moyer-Guse, 2012). Utilizing theoretical frameworks such as regulatory focus theory, theories pertaining to the influence of social norms, and the theory of planned behavior to inform message frames provides guidance in understanding how

message frames might be able to persuade park campers to properly store their known wildlife attractants. Messages informed by regulatory focus theory may speak to campers' behavioral motivations while those that incorporate social norm information may correct misperceptions about how popular or important to others properly storing attractants is. To follow, a brief section on the theory of planned behavior and prior research on persuasion serve to highlight the mechanisms through which message framing may be effective at attaining campers' compliance. While the purpose of this thesis is not to test the theory of planned behavior itself, it affords us an explanation of the antecedents to behavior and, thus, to behavior change.

2.2.1 Persuasion and Behavior Change

While many definitions of persuasion exist, Nabi and Moyer-Guse (2012) define it as "a process whereby a message sender intends to influence an (uncoerced) message receiver's evaluative judgements regarding a particular object" (p. 2). Thus, with our above definition, it is clear that strategic (i.e., intentional) use of message frames (i.e., referring to how a message is constructed and organized; Shah et al., 2009) could be considered attempts at persuasion. The persuasion literature highlights multiple cognitive approaches (Eagly & Chaiken, 1993; Petty & Cacioppo, 1986) that attempt to explain why persuasive messages are effective and they all credit the ability of these types of messages to influence behavioral attitudes, behavioral intentions, and behavior (Nabi & Moyer-Guse, 2012).

The above psychological constructs of behavioral attitudes and intentions have long been seen as antecedents to actual behavior (Fishbein & Ajzen, 1975; Ajzen, 1985, 1991). Fishbein and Ajzen's (1975) theory of reasoned action and Ajzen's (1985) more recent theory of planned behavior are often used models to understand how these constructs are connected. Researchers here posit that behavioral intentions – or how hard an individual is willing to try to perform a

behavior – directly influence the likelihood of an individual engaging in a behavior. It is generally assumed that the stronger an individual's intentions to perform a behavior, the more likely they are to actually perform the behavior; however, it is important to note that more recent research has highlighted that there are many factors that can prevent individuals from performing a behavior even when they intend to do so (see Sniehotta et al., 2014). This is not an indictment of the theoretical perspectives outlined above, but rather an example of the complexity of trying to understand all of the factors that influence human behavior. Further, Ajzen (1985, 1991) partially addresses these complexities in his theory of planned behavior by incorporating the construct of perceived behavioral control (PBC; to be outlined in further detail below).

The theory of planned behavior posits that behavioral intentions are directly influenced by attitude toward a behavior, subjective norms, and PBC (Ajzen, 1985, 1991). Attitude toward a behavior refers to the degree to which an individual has a favorable or unfavorable appraisal of the behavior in question. These attitudes are informed by the behavioral belief which is defined as the individual's belief about the likely outcomes of performing a behavior. The subjective norm refers to the perceived social pressure an individual feels to perform or not perform a given behavior. These norms are influenced by the normative belief, or the perceived behavioral expectations of others (especially those important to the individual). Finally, PBC is defined as an individual's perceptions of their ability to perform a behavior; this construct is informed by control beliefs which refer to the perceived presence of factors that may facilitate or impede on an individual's ability to perform a behavior. These factors are all proposed to influence intentions, either directly or indirectly, which can directly influence future behavior. However, many studies that attempt to gauge intentions will bypass measuring behavioral beliefs as it is generally accepted that direct measures of behavioral attitudes, subjective norms, and PBC

account for these beliefs (Ajzen,2021; Hurtado-de-Mendoza et al., 2019; Kanters et al., 2008). We refer to these antecedent influencers of intentions as behavioral antecedents.

By including information that accounts for these predictors of behaviors in message frames, communicators may be able to influence the behavioral antecedents and intentions that lead to behaviors and, thus, behavior itself. Indeed, prior research has found this to be true; importantly, research utilizing the theory of planned behavior in a park context has found support for the perspective (Martin & McCurdy, 2009; St. John et al., 2014; Young, 2018). For instance, Martin and McCurdy (2009) found that the presence of food storage containers may influence park campers' beliefs that they are able to properly store their wildlife attractants (i.e., the presence of food storage containers may have increased campers' PBC, which may have, in turn, increased their likelihood of properly storing their attractants).

How messages are framed can impact persuasion by influencing message receivers' behavioral antecedents and intentions. With this in mind, how wildlife attractant storage messages are framed is important because those frames may determine how the message is interpreted and, thus, how successful the message is at changing the behavioral antecedents, intentions, and behaviors of park campers (Young, 2018). It is important, then, to gain a better understanding of the framing literature in order to make informed decisions about how to best frame park wildlife attractant storage messages.

2.2.2 Framing

Entman (1993) defined framing as selecting "some aspects of a perceived reality and [making] them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation" (p. 52). While there are many competing definitions for what constitutes framing, this definition

highlights the importance of information selection in the crafting of messages and the effect that selection has on message receivers' processing. To restate, message framing makes salient certain information which receivers may notice, process, and store in a manner consistent with the message frame, which may influence how receivers make evaluations based on the information (Fiske & Taylor, 1991; Nabi & Moyer-Guse, 2012; Price & Tewksbury, 1997). Generally speaking, two broad types of framing dominate the literature: emphasis framing and equivalence framing. Emphasis framing refers to when the actual content of messages is manipulated (Cacciatore et al., 2016). Conversely, equivalence framing refers to when different frames contain logically equivalent information and only the way in which the information is presented is manipulated. Research examining the latter is relevant here in that much prior framing research in a park context has focused on this type of framing (e.g., gain and loss framing; Lu et al., 2016; Lu et al., 2018; Masterson, 2006). How a message is framed affects receiver processing which in turn affects the persuasiveness of a message, thus, the argument can be made that framing research has implications for how to best craft persuasive messages aimed to increase compliance with attractant storage guidelines.

2.2.2.1 Theoretical Underpinnings of Framing

To zoom out some, the concept of framing has been studied from the perspectives of multiple fields, most notably communication, psychology, and behavioral economics. This interdisciplinary research agenda underscores why there is still relative ambiguity regarding the exact theoretical underpinnings regarding framing. Still, much prior work posits that framing effects occur because individuals have limited cognitive resources; that is, individuals are cognitive misers (Chaiken & Trope, 1999; Fiske & Taylor, 1984, 1991). Because of this, humans form schema (also known as mental models and knowledge structures) in order to more easily

interpret information (Fiske & Taylor, 1991; Scheufele, 2000). As individuals navigate the world, they begin to form schema around certain objects or ideas in order to help them save time and effort when processing information (Fiske & Taylor, 1991). Framing, then, works by activating these schema – which are used to interpret the incoming information.

To illustrate, a park camper will likely have some sort of schema around wild bears. This schema may contain information pertaining to what bears look like and where they live; however, the campers' schema may not take into account, for example, what bears eat. Park messages that mention bears will activate campers' prior experiences and schema related to bears and, depending on the information provided, may add to that existing schema. A camper, whose schema did not previously include potential food sources for bears, that comes across a park message communicating proper attractant storage to prevent bears from coming into close proximity to their campsite may have their schema updated. Thus, framing is effective by tapping into individuals' prior experiences and schemas.

Communication scholars often approach message framing from two different perspectives: 1) literature examining how issues are framed through the media and 2) literature, informed more heavily by psychology scholarship, examining how altering either the content or the way content is presented affects message efficacy (Entman, 1993; Druckman, 2001; Tversky & Kahneman, 1981; Scheufele, 2000). This study focuses on the latter of those two approaches. As mentioned previously, emphasis framing refers to when the actual content of messages is manipulated and equivalence framing refers to when different frames contain logically equivalent information and only the way in which the information is presented is manipulated (Cacciatore et al., 2016; Kahneman & Tversky, 1979; Tversky & Kahneman, 1981).

2.2.2.2 Message Framing in Prospect Theory

Equivalence framing stems from work testing out Kahneman and Tversky's (1979) prospect theory. Prospect theory has been an influential approach to understanding how individuals make decisions under risky and/or uncertain contexts. Early research here demonstrated that individuals treat losses differently than gains in the context of risky choice decisions such as those involving money. Prior to this work, psychologists promulgated the theory that humans made rational choices when making decisions (Keeney & Raiffa, 1976); however, Kahneman and Tversky (1979, 1981) found that when two messages that were logically equivalent yet framed in terms of positive or negative outcomes, individuals make different decisions – especially in risky contexts.

This specific approach to equivalence framing is often termed risky choice framing and messaging manipulations commonly focus on what the receiver of the messages stands to gain by adopting a message's recommended behavior or what they stand to lose by failing to adopt a message's recommended behavior (Tversky & Kahneman, 1981). The main findings of this type of message testing found that in risky decision contexts, when risks were framed as losses, individuals were more likely to act. Conversely, when risks were framed as gains, individuals tended to be less likely to take the risk; that is, individuals were risk averse. Kahneman and Tversky (1971, 1981) coined this phenomenon "loss aversion"; this concept essentially argues that the hedonic reaction to loss is stronger than the hedonic reaction to gains (Brenner et al., 2007).

In communication scholarship, prospect theory is often utilized to underpin the testing of gain and loss message frames. Much of this work has been executed in a health communication context (wherein individual behavior can often lead to healthy or unhealthy outcomes). From this

context, two key theoretical assumptions have merged; researchers here posited that for prevention behaviors (such as wearing sunscreen to protect oneself from skin cancers), gain-framed messages would be more effective and for detection behaviors (such as annual cancer screenings), loss-framed messages would be more effective (because detection behaviors can be perceived as riskier given the potential of discovering cancer; Rothman et al., 2006). While these assumptions seem to fall in line with prospect theory's main arguments, research has consistently found mixed results in health communication contexts as well as in a human-wildlife interaction context (Cesario et al., 2013; Lu et al., 2018; O'Keefe & Nan, 2012).

In a human-wildlife context, messaging informed by prospect theory is often utilized to communicate risk to visitors. Risk communicators prominently frame messages in terms of the benefits to be obtained by adopting a behavior (i.e., gain-framed) or the losses to be incurred by not adopting the behavior (i.e., loss-framed; Lu et al., 2016; Rothman et al., 2006). Research examining these types of message frames has found mixed results and suggests that the validity of these assumptions is context specific. Applied to conservation or environmental behaviors, researchers have had difficulty in examining gain-versus-loss framing effectiveness given the fact that frameworks from fields where this type of framing is well-established (such as health communication) don't easily apply in these contexts. Further, studies testing gain-versus-loss framing effectiveness in garnering conservation behaviors, specifically, has been relatively scant until recently (Abrams et al., 2020; Lu, 2016; Lu et al., 2018, 2016). This is concerning given that these frames are often employed in human-wildlife contexts with little empirical research to speak to their persuasive efficacy (Lu et al., 2016; Masterson, 2006).

Recent research has argued that the reason for these mixed findings likely has less to do with issues with prospect theory and more to do with how message frames incorporating the

theory are operationalized (Cesario et al., 2013; Van 't Reit et al., 2016). For example, Cesario et al. (2013) argue that while much research has focused on gains and losses, this may be too narrow to capture the full range of what is actually happening here. That is, gain- and loss-framing literature up until this point has failed to adequately capture the full range of possible outcomes. Further, much prior research has failed to consider the potential effect that an individual's conception of the behavior in a message may be key in that framing effects require the individual to have a similar conceptualization of the behavior as the researcher. For example, some women may view breast self-exams as risky behaviors (because of the potential to discover cancer) but other women may view these same exams as health-affirming behaviors (Cesario et al., 2013). This demonstrates that individuals likely have different motivations and perceptions when it comes to making decisions in risky contexts. One way these inconsistent findings have been addressed in recent work is through the application of regulatory focus theory (Abrams, 2010; Cesario et al., 2013; Young, 2018).

2.2.3 Regulatory Focus Theory

Recently, regulatory focus theory has been utilized by some framing researchers to evaluate the outcomes of certain message frames more intentionally by rectifying some of the clarity issues related to message operationalization (Cesario et al., 2013). This theoretical perspective builds off of the hedonic principle, which essentially posits the individuals are motivated to seek pleasure and avoid pain (Freud, 1952; Higgins, 1997). Regulatory focus theory takes this idea a step further, however, and argues that the way individuals go about maximizing pleasure (gains) and minimizing pain (losses) depends on the motivation of an individual and the needs an individual is seeking, which is referred to as their regulatory focus (Higgins, 1997).

Foundational research here has identified two main regulatory focuses: a promotion focus and a prevention focus.

Those with a promotion focus will regulate their behaviors away from negative outcomes, and those with a prevention focus will regulate their behaviors towards positive outcomes (Higgins, 1998). Promotion-focused individuals have what are known as approach goals, in which the individual attempts to maximize the presence of positive outcomes (gains) or minimize the absence of positive outcomes (non-gains). Conversely, individuals with a prevention focus have avoidance goals in which they attempt to minimize the presence of negative outcomes (losses) or maximize the absence of negative outcomes (non-losses; Higgins, 1997, 1998). An individual's regulatory focus is influenced by three factors. 1) A chronic regulatory focus, which is determined by caretaker-child interactions; here, a child's behavior that is regulated with positive reinforcement may result in promotion goals whereas a child's behavior that is regulated with negative reinforcement may result in prevention goals. 2) Regulatory focus is also influenced by contextual priming during or before a task. 3) Finally, regulatory focus can be determined by the decision task itself.

2.2.3.1 Self-Regulatory Framework

Cesario et al. (2013) present the self-regulatory framework in which regulatory focus theory is applied to message framing. Researchers here argue that this framework addresses some of the inconsistencies in gain- and loss-frame message testing by recognizing that individuals may also be influenced by the absence of gains (non-gains) and the absence of losses (non-losses). This approach allows communicators to frame messages in four distinct ways (which differ depending on whether the target audience has a promotion focus or a prevention focus; Cesario et al., 2013). These include the hedonic consequences, outcome sensitivities,

regulatory concerns, and strategy for pursuing goals that are specific to the individual. Message framing guided by this framework directly addresses an individual's motivations and, therefore, may be effective at persuasion given that we know that when individuals are motivated to process a message, they are more likely to be persuaded by it (Eagly & Chaiken, 1993). From here, we will refer to messages informed by regulatory focus as either promotion or prevention messages or, if referred to in tandem, as goal-framed messages.

Hedonic consequences refer to an individual's desired end-state. More specifically, some individuals are motivated by the pleasures of adherence, while others are more motivated by the pains of non-adherence (Cesario et al., 2013). Those with a promotion focus should be more motivated by the pleasures of adhering to a behavior and those with a prevention focus should be more motivated by the pains of not adhering to a behavior. Outcome sensitivities are the subjective definitions of pleasure and pain which differ between promotion and prevention focuses. For those with a promotion focus, pleasure is defined as the presence of a positive outcome (gain) whereas pain is the absence of a positive outcome (non-gain). For those with a prevention focus, pleasure is defined as the absence of a negative outcome (non-loss) and pain is defined as the presence of a negative outcome (loss; Cesario et al., 2013). Regulatory concerns refer to the kinds of outcomes that individuals care about; that is, it concerns what individuals perceive their needs to be. Promotion-focused individuals are concerned with fulfilling growth and nurturance needs while prevention-focused individuals are concerned with meeting safety and security needs (Cesario et al., 2013). Finally, goal-pursuit strategies are the strategies that individuals use to attain their goals. As mentioned earlier, promotion-focused individuals rely on approach strategies whereas prevention-focused individuals utilize avoidance strategies.

When a message frame takes into account these factors, the frame is more likely to achieve what is referred to as regulatory fit. This is when the information presented in the message is complimentary to the activated regulatory focus of an individual. Messages that induce a feeling of regulatory fit may be more persuasive because individuals may evaluate messages more positively when they speak directly to their motivations (Florack et al., 2005). That is, information that fits an individual's regulatory focus is processed more fluently (Lee & Aaker, 2004), feels right (Camacho et al., 2003), and is more persuasive (Cesario et al., 2013; Melnyk et al., 2013). Given this, messages that fit with an individual's regulatory focus may increase attitudes and intentions toward a promoted behavior as the individual conflates feelings of "rightness" produced by the message with their evaluation of the behavior (Aaker & Lee, 2006; Melnyk et al., 2013). Importantly, research also demonstrates that messages that achieve "fit" may be easier to process (Lee & Aaker, 2004). This subjective experience of what is called processing fluency can lead to positive evaluations, and thus positive attitudes, of the behavioral ask.

Much research of this perspective has been conducted in health context (Cesario et al., 2013), and thus testing the efficacy of this approach at increasing compliant behaviors in a park context is warranted. Indeed, Young (2018) examined the effectiveness of goal-framed messages at increasing park campers' compliance with attractant storage behaviors, however statistically significant results were not found here potentially due to a small sample size and response bias. Because of this, attempting to apply this framework to increasing wildlife attractant storage behaviors may still prove to be more effective than current park communication efforts and this study could help to resolve some of the ambiguity with Young's (2018) prior study. Importantly, it is still relatively unclear whether a promotion or prevention message frame will be more

effective at fostering compliant behavioral intentions in park campers. Recent research (Bhatnagar & McKay-Nesbitt, 2016) has highlighted an association between a promotion focus and environmental concern, adherence to pro-environmental recommendations, and intentions to engage in pro-environmental recommendations. Given that proper attractant storage behaviors can be considered pro-environmental, a promotion message may be more effective at fostering compliant behavioral antecedents and intentions. Research has also demonstrated that individuals may anticipate future regret stemming from their actions and take actions to avoid feeling that regret (Sandberg & Conner, 2008). In fact, Sandberg and Conner (2008) found this anticipated regret to directly influence intentions. In this context, this might indicate that a prevention frame that highlights that compliance can help campers avoid ruining their camping experience may encourage proper attractant storage. Thus, this thesis can shed light on the influence of these goal-framed messages on the behavioral antecedents and intentions of campers to properly store their attractants.

2.2.4 Social Norms

Generally speaking, because behavior is often underpinned by multiple intrinsic processes, much of the literature regarding behavior change advises to use more than one behavior change theory (e.g., see Chau et al., 2018; McKenzie-Mohr, 2011). While a goal-framing approach may better speak to park campers' desired experiences, this messaging strategy may not be enough to foster compliant behavior if visible social norms do not support the desired behavior or if there are misconceptions and/or a lack of knowledge regarding the actual social norms of a given behavior (Cialdini et al., 1990; World Bank Report, 2015). Park managers and prior research have noted that this may indeed be the case with some noncompliant behaviors in parks (Abrams et al., 2020; Cialdini et al., 2006). For example, if a

camper sees that the campers at the sites on either side of them have left all of their food on their picnic tables unsupervised, the camper may conclude that this the appropriate way to behave. Thus, taking social norms into consideration may be key in changing campers' behaviors – particularly those regarding attractant storage given that noncompliant behaviors here may be highly visible.

Social norms are our perceptions of what we think others are doing and what we think they ought to do, and these perceptions exert a powerful influence on our behavior. Some (Elster, 1989) posit that these norms are the "glue" that holds society together given that humans seem hard wired to adhere to them (Henrich & Henrich, 2007; World Bank Report, 2015). Much of the literature distinguishes between two types of norms – descriptive and injunctive (Cialdini, Reno, & Kallgren, 1990) – that are pertinent to this study. Descriptive norms are what we perceive most other people are doing and they are thought to inform behavior by signaling to individuals what is likely the most "effective and adaptive action"; essentially, these types of norms act as decisional shortcuts that allow people to make decisions more efficiently – which is optimal given the limited cognitive capabilities of individuals (Cialdini et al., 1990; Simon, 1945). Conversely, injunctive norms refer to "rules or beliefs as to what constitutes morally approved or disapproved conduct" (Cialdini et al., 1990, p. 1015). These norms signal what ought to be done and motivate individuals through the implicit social rewards and punishments thought to be brought on by acting in a given way. For example, most of us are aware that we are expected to throw our trash away rather than litter. While there are regulations to encourage us to throw our trash away, we are also worried about what others might think of us if they see us littering. We have learned from past experience that throwing our trash away is the socially acceptable thing to do. We know that if we attempt to break this norm (i.e., litter), we risk being judged by other

visitors and/or park staff. It is important to highlight that injunctive norms have been found to be closely related to the subjective norms construct from the theory of planned behavior (Niemiec et al., 2020).

Prior work has demonstrated that social norms must be salient to foster conformity and that individuals will conform to whichever aspect of a social norm is most salient (Cialdini et al., 1990). For example, if the descriptive aspect of the norm regarding attractant storage is more salient (e.g., there is food left out in campsites) than the injunctive aspect (e.g., properly storing food), it may be more likely that individuals will conform to the descriptive aspect. Thus, it is important for those aiming to use normative information to influence behavior to be selective with which aspect of a norm they are highlighting as there may be a different outcome depending on which is highlighted.

2.2.4.1 Social Norm Framing

It is clear, then, that an understanding of the norms pertaining to noncompliant behaviors is integral to fostering complaint behaviors through park communication efforts. Prior research has demonstrated the need for park managers to be conscious of how their communications may be inadvertently signaling norms to visitors. In their study at Arizona's Petrified Forest National Park, Cialdini et al. (2006) attempted to test messaging to mitigate artifact theft. They observed that much of the park's communication pertaining to this issue focused on descriptive norms (e.g., "Many past visitors have stolen petrified wood from this park"). Researchers here found that although these messages were well-intentioned, they were actually signaling to visitors that the noncompliant behavior was the dominant behavior; thus, the messaging was ineffective at lowering the rate of artifact theft. This finding is supported by research in other contexts that have observed similar adverse reactions (Sheffrin & Triest, 1992; Winter, 2008). In light of these

findings, it has been recommended that messages focus audiences' attention on injunctive norms (Cialdini et al., 2006). However, highlighting positive descriptive norms (e.g., "Most people leave artifacts intact for future visitors") has also been found to be effective in attaining compliance (Winter, 2008). In the context of front-country camping, Moghimehfar et al. (2018) found that social norms considerably influenced campers' intentions to practice pro-environmental behaviors such as proper attractant storage.

2.2.4.2 Proscriptive and Prescriptive Normative Framing

Much normative message testing in parks has also examined the influence that proscriptive and prescriptive framing have on message efficacy (Cialdini et al., 1990; Winter, 2008; Winter et al., 2000). Both descriptive and injunctive norms can be framed either proscriptively or prescriptively. Prescriptively framed messages *prescribe* approved behaviors by encouraging individuals to engage in them; for example, a prescriptive-injunctive norm message might read, "Please store all food and other wildlife attractants when not using them!" Proscriptively framed messages, on the other hand, *proscribe* (or denounce) disapproved behaviors by discouraging individuals from engaging in them; to illustrate, a proscriptive-injunctive norm message might read, "Please do not leave food or other wildlife attractants out unsupervised!" (Winter, 2008).

In a park context, prior research suggests that proscriptive-injunctive norms messages are the most effective at gaining compliance behavior within parks; that is, negatively framing what visitors ought to do (e.g., "Please don't take seashells from the beach") (Cialdini, 2003; Winter, 2008). Further, as Abrams et al. (2019) highlight, combining proscriptive (i.e., informing visitors of what not to do) messages with prescriptive-injunctive messages (i.e., advising visitors of what they should do) might help to make messaging more effective in scenarios when visitors may not

know the desired behavior. Prescriptive-descriptive messages (e.g., "Most visitors help protect the park's ecosystem by leaving seashells where they find them") have also been relatively successful at gaining compliance.

It is important to reiterate that normative messaging may fail to be effective if noncompliant descriptive norms are highly visible. For example, if visitors see large crowds forming around wildlife, they may ignore normative messaging that tells them that most other visitors view wildlife from a safe distance. Or, a less obvious representation of descriptive norms, if visitors see large piles of trash while camping in the backcountry, they may leave their trash instead of packing it in because "everybody else is doing it." While the impacts of these highly visible norms can be difficult to mitigate, park managers can make an attempt by ensuring that staff and volunteers model the compliant behavior in visible ways. More so, if parks have the resources, placing volunteers where noncompliant behaviors are likely to occur have been shown to decrease noncompliance (Kidd et al., 2015). In recent years, there has also been work that examines novel approaches to normative message framing that may help communicators when these challenges exist.

2.2.4.3 A Novel Normative Framing Approach: Dynamic Norms

As highlighted in previous sections, much of the work focusing on normative messaging in a park context has highlighted the efficacy of injunctive normative messages at increasing compliance. However, because we know that descriptive norms around some desired park behaviors (i.e., compliant behaviors) are not yet where managers would like them to be, they may actually increase those engaging in the noncompliant behavior; thus, simply outlining what one *should* do may not be enough to foster compliance. Recent work has demonstrated the

effectiveness of novel dynamic norms to address these challenges (Sparkman & Walton, 2017; 2019).

Dynamic norms refer to the aspect of a social norm that is changing over time (Sparkman & Walton, 2017, 2019). That is, instead of highlighting what others are doing or what an individual should do, this type of normative information highlights an increasingly widespread *change* in others' attitudes or behaviors (Loschelder et al., 2019; Sparkman & Walton, 2017). For example, a dynamic norm message pertaining to attractant storage might read, "More and more park campers are trying to properly store their wildlife attractants." This type of normative information might be particularly useful when trying to encourage sustainable behaviors, akin to the ones we are dealing with in this study, wherein the descriptive or injunctive norms (or both) are not yet aligned with desired behavioral outcomes (Sparkman & Walton, 2017).

While research examining dynamic norms is scarce, foundational work affords a tentative understanding of why this type of normative information may be effective. Sparkman and Walton (2017, 2019) posit that when individuals are exposed to dynamic norm information they may conform to the changing norm because 1) they may "anticipate ongoing change and a future world in which [the] behavior is the norm" – what they coin, *preconformity* – and 2) learning that many others are changing may lead individuals to reevaluate the barriers they assumed would prevent change. To illustrate the latter point, if park campers learn that many other campers are properly storing their wildlife attractants, they may reason that changing their behavior may be easier than they first thought.

In line with these hypotheses, researchers have found that dynamic norms also exert an effect on a wide array of known mechanisms for behavior change such as individuals' self-efficacy and social-identity compatibility (Cheng et al., 2020; Sparkman & Walton, 2019). To

illustrate, self-efficacy is the extent to which an individual believes they are capable of doing

something (Bandura, 1977); in regard to dynamic norms, this refers to the extent they believe

they are capable of change. We know that self-efficacy is shaped by social information, so when

dynamic norm information is presented to an individual, the notion that others are capable of

change might cause them to reassess their own judgements of capability. This is important in the

context of this study as we are, in part, examining the effectiveness of dynamic norms at

influencing behavioral intentions, of which self-efficacy (referred to as PBC under the theory of

planned behavior) is argued to be an antecedent (Ajzen, 1991). At the same time, if the dynamic

norm information highlights that those who are changing are similar to the individual, this may

signal that they may be the "type" of person who engages in change – what is referred to as

social-identity compatibility (Sparkman & Walton, 2019).

Interestingly, Sparkman and Walton (2019) found that not only were dynamic norms

effective in these contexts, but that they were actually helpful in addressing whichever barriers to

change were most salient to an individual. For example, while researchers were attempting to

determine if dynamic norms exerted an influence on perceived importance of a given change,

they found it was not as relevant a barrier as social-identity compatibility, which the dynamic

norms were able to remedy (Sparkman & Walton, 2019). These findings, in particular, make a

strong case for the utility of dynamic norms when attempting to change behavior. Further,

dynamic norms have been found to be effective in circumstances where current norms are not

aligned with desired behaviors, where they are improving, and where they are already positive

(Sparkman & Walton, 2019). While we still have much to understand about how this type of

normative information influences other psychological processes pertaining to behavior change,

they show promise in situations where descriptive and injunctive norms are not aligned with desired behavioral outcomes, such as the situation this thesis is attempting to address.

Importantly, recent research has provided compelling arguments for the inclusion of different types of norms within traditional intention-behavior models (such as the theory of planned behavior; Niemiec et. al, 2020). This literature has found that the inclusion of descriptive and personal norms in these models, for example, significantly reduces the effect of subjective norms (which are often the only type of norm included in these types of models) on behavioral intentions. Jones and Niemiec (2020) expanded this research and found that dynamic norms, too, helped predict behavioral outcomes; importantly, this research was also examining the effectiveness of dynamic norms at fostering pro-environmental behaviors. Thus, in this thesis, we will include dynamic norms in our model of the theory of planned behavior (see Figure 1).

2.2.5 Merging Self-Regulatory Framework and Dynamic Norms

Recent research (Lindenberg & Stegg, 2013; Melnyk et al., 2013) has examined the relationship between regulatory focus and normative information. Particularly relevant to this study, Melnyk et al. (2013) tested the extent to which conformity to norms depends on the accessibility of goals. That is, the extent to which certain types of normative information contribute to the achievement or avoidance of certain outcomes. Researchers here hypothesized that descriptive norms would be more effective when embedded in a promotion mindset and that, conversely, injunctive norms would be more compatible with a prevention mindset. They posited that descriptive norms lead to desirable outcomes in that they provide social proof that "a specific behavior is successful to achieve a goal in a specific situation…or by showing behavior relevant to be adopted in a peer group" (Melnyk et al., 2013, p. 192). Thus, descriptive norms

relate to the achievement of goals in a specific situation. Injunctive norms on the other hand may be interpreted as a request, and following the request is a way to avoid negative social consequences; thus, relating more to the avoidance/prevention of outcomes in a specific situation (Cialdini et al., 1990; Melnyk et al., 2013). This is all to say, certain normative information may "fit" better with certain regulatory focuses.

In actuality, researchers here found that while descriptive norms did, indeed, exert a more powerful influence on individual attitudes when paired with a promotion focus, their hypothesis regarding an injunctive norm-prevention focus relationship was not supported. Their results consistently demonstrated that injunctive norms were relatively effective at fostering positive attitudes regardless of regulatory focus (Melnyk et al., 2013). While future research is still needed to further explore the relationship between regulatory focus and injunctive norms, these results were in line with earlier findings from Melnyk et al. (2011) demonstrating that descriptive norms lead individuals to think positive thoughts about the benefits of a desired behavior, whereas injunctive norms lead individuals to think both positive and negative thoughts.

This research is important in the context of this study in that it complements the earlier noted findings that demonstrate an association between a promotion focus and environmental concern, adherence to pro-environmental recommendations, and intentions to engage in pro-environmental recommendations. (Bhatnagar & McKay-Nesbitt, 2016). These studies demonstrate a potential connection between a promotion focus, normative information, and pro-environmental behaviors. Because we know that descriptive norms are not yet aligned with our desired behavioral outcomes, pairing that information with the promotion focus may not be conducive for fostering compliance in this context. However, this study offers an opportunity to examine how novel dynamic norms may interact with regulatory focus. Given that dynamic

norms provide information about both increasing adoption of a behavior by a specific population (possibly akin to descriptive norms) and the perceived importance being attributed to that behavior due to this increasing adoption (possibly akin to injunctive norms), it is unclear whether dynamic norms might be better paired with a promotion or a prevention focus message (Sparkman and Walton, 2017, 2019). Insight into this relationship could provide valuable message design guidance to park management, as well as to those attempting to foster similar pro-environmental behaviors.

This thesis will attempt to examine the relationship between these two theoretical perspectives in the context of their ability to affect the behavioral antecedents and intentions to comply with wildlife attractant storage guidelines in park visitors. The conceptual model for this thesis is included in Figure 1.
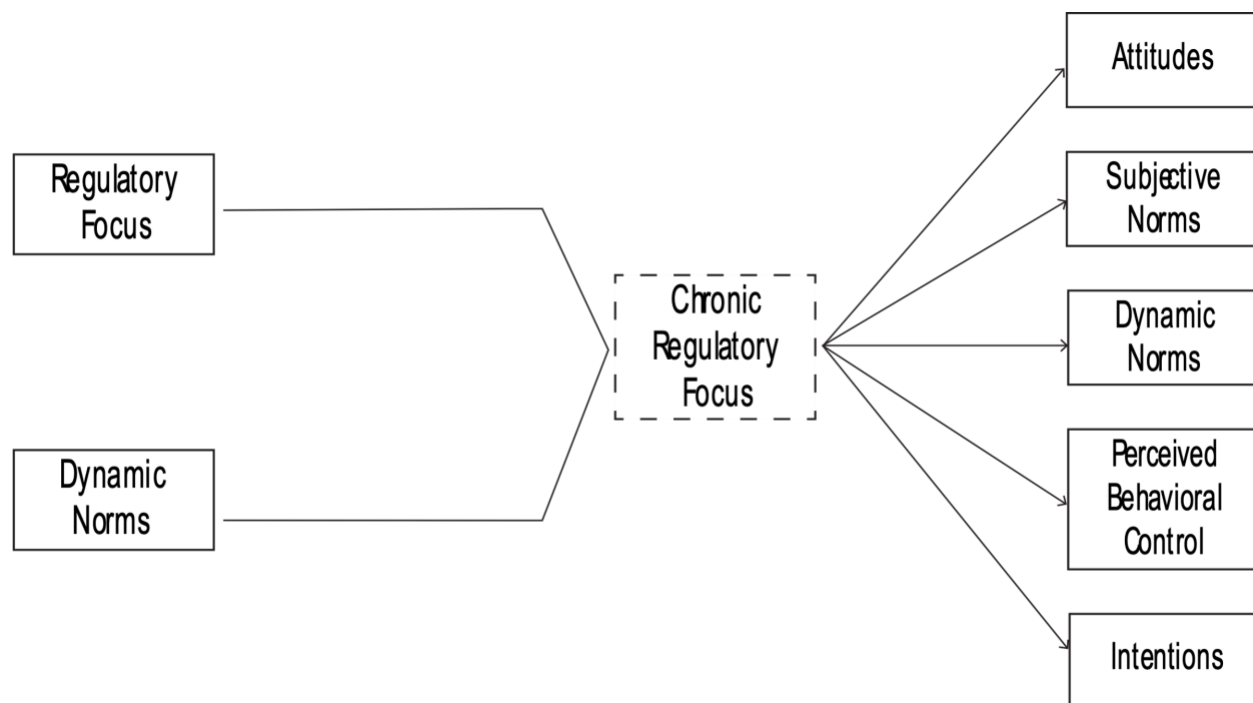

Figure 1. Conceptual Model

2.3 Research Questions and Hypotheses

As outlined in this chapter thus far, the unintentional feeding of wildlife through improper wildlife attractant storage by park campers is a noted issue throughout the national park system. Traditional park communication often focuses on natural resources protection, enforcement, or the provision of procedural knowledge. To help mitigate this issue, park messaging may be more efficacious by integrating theoretically informed communication approaches. Specifically, we will be examining the effect that goal-framed and dynamic norm messages have on park campers' behavioral antecedents and intentions to comply with wildlife attractant storage guidelines. We use the term **goal-framed messages** to refer to both promotion and prevention frames in tandem. We refer to the constructs that prior research has demonstrated influence behavioral intentions and, in theory, behavior as **behavioral antecedents**. These factors include behavioral attitudes, subjective norms, and PBC (Ajzen, 1991); further, we include dynamic norms in the traditional TPB model given recent research has shown their predictive power on intentions and behavior when included in behavioral models (Jones & Niemiec, 2020). We will also examine the effectiveness of these types of message frames relative to a procedural message, which will be included in all message frames. This is advantageous for two reasons: 1) it will allow us to ensure that all participants in the study are operating with the same procedural knowledge and 2) it will allow us to use the procedural message as a control condition.

The current study aims to examine if messages informed by regulatory focus theory are effective at increasing compliance with storage guidelines. It is still unclear whether park visitors and campers may be more persuaded by promotion or prevention messaging, and this thesis can help better understand ambiguities here by asking the following:

RQ1: Are promotion and/or prevention messages effective at fostering behavioral antecedents and intentions to comply with wildlife attractant storage guidelines in national park campers?

The literature makes clear that messages frames that contain persuasive information that speaks to individuals' motivations may be more persuasive than messages that do not. Both promotion and prevention messages contain information that directly speaks to individuals' motivations as demonstrated by the literature above. Thus, we hypothesize the following:

H1a: Both promotion and prevention messages will be more effective than a control message with procedural information only.

Further, prior research has demonstrated a connection between pro-environmental concerns, attitudes, and intentions and a promotion focus. Given that proper wildlife attractant storage behaviors can be considered pro-environmental behaviors, we also hypothesize the following:

H1b: A promotion message will be more effective than a prevention message.

Still, because we know behavior is informed by multiple processes, the literature often advises to use more than one behavior change theory. While goal-framing messages may highlight how properly storing their attractants may assist in achieving their desired park experiences, this messaging may not be enough to foster compliance if visible social norms (or misperceptions of those norms) do not work to support the desired behavior. Recent work has demonstrated that novel dynamic norms may be effective influencing attitudes and intentions in such situations. Thus, this thesis attempts to answer the following question:

RQ2: Are dynamic norm messages effective at fostering behavioral antecedents and intentions to comply with wildlife attractant storage guidelines in national park campers?

Recent research has demonstrated the relative efficacy of dynamic norm messages at fostering behavioral intentions. Given this, we hypothesize the following:

H2: A dynamic norm message will be more effective than a control message with procedural information only.

Past work has also examined the relationship between goal-framed and social norm messaging, however this research has yet to extend to dynamic norms. This study allows an opportunity to closely examine this relationship; specifically, we will attempt to answer the following question:

RQ3: Are goal-framed messages each paired with a dynamic norm message effective at fostering behavioral antecedents and intentions to comply with wildlife attractant storage guidelines in national park campers?

Because these message frames contain persuasive information that speaks to individuals' motivations as well as dynamic norm messages that have been found to influence intentions, we hypothesize the following:

H3a: Both goal-framed messages (promotion, prevention) paired with a dynamic norm message will be more effective than a control message with procedural information only.

Prior work also demonstrates that promotion messages may be more effective than prevention message at fostering compliant behavioral antecedents and intentions when dealing

with pro-environmental behaviors (see H1b), thus we hypothesize that this may also be true

when paired with a dynamic norm message:

H3b: A promotion message with a dynamic norm message will be more effective

than a prevention message with a dynamic norm message.

CHAPTER 3. METHODOLOGY

This study used a 3 (promotion-framed message vs prevention-framed message vs none) x 2 (dynamic norm message present vs dynamic norm message absent) between-subjects, factorial design administered using an online survey tool. This design was used to ascertain 1) the effect of goal-framed messages on camper behavioral antecedents and intentions to properly store their attractants, 2) the effect of dynamic norm messages on camper behavioral antecedents and intentions to properly store attractants, and 3) the effect of goal-framed messages each paired with a dynamic norm message on camper behavioral antecedents and intentions to properly store their attractants. Procedural information was included in all six experimental conditions which, theoretically, helped us ensure that all participants are equipped with the same procedural knowledge. Park messaging often contains procedural information with no other persuasive framing, so this design also allowed us the opportunity to ascertain the relative effectiveness of goal-framed and dynamic norm messages by using procedural knowledge as a control condition.

Participants were recruited via the Prime Panel service by CloudResearch. Participants were directed to a Qualtrics survey and randomly assigned to one of six experimental conditions. They were then asked to complete a questionnaire designed to measure attribute variables such as demographic information and past and near future camping behavior, chronic regulatory focus, perceptions of dynamic norms, behavioral antecedents, and intentions to properly store wildlife attractants while camping. The instrument also included manipulation checks to ensure that goal-framed and dynamic norm messages are valid.

Experimental designs are commonly used to test message frames in communication research (Cheng et al., 2020; Lu, 2016; Lu et al., 2016, 2018; von Wagner et al., 2019).

Importantly, experimental designs allow researchers to 1) manipulate the independent variables in a study and 2) control for extraneous variables (variables other than the independent and dependent variables; Price et al., 2015). These affordances give us the ability to make stronger causal and associative inferences from data collected and analyzed. Similarly, survey methods are often used to gauge the effect specific messages have on participant demographics and psychological characteristics not dissimilar to those we are testing in this thesis (Cesario et al., 2013; Lee & Aaker, 2004; Lu et al., 2016, 2018; Melnyk et al., 2013; Sparkman & Walton, 2019). Further, surveys are often used in studies that utilize the theory of planned behavior (Ajzen, 1991). Thus, a questionnaire was designed to measure the effects that goal-framed messages and dynamic norm messages had on participant behavioral antecedents and intentions to properly store wildlife attractants. Limitations of using surveys include the ability of the participants to leave the survey before finished, skip questions, complete the survey too quickly, or give the same or nearly the same response for every question (Kennedy et al., 2020). We attempted to mitigate these concerns by using the response requirements and validation tools that Qualtrics provides.

3.1 Variables

This thesis examined whether goal-framing messages and/or dynamic norm messages fostered behavioral antecedents and intentions to follow park regulations regarding proper wildlife attractant storage. Independent (I), dependent (D), and attribute (A) variables and the theory and/or source from which they are derived from are outlined in Table 1. We differentiate attribute variables because we do not have research questions or hypotheses about their relationship with other variables in the study. Because all variables were measured through a single questionnaire, method of data collection has been omitted from this table for parsimony.

Table 1. Measured Variables

Variables	Theory/Source
Regulatory Focus (I)	Regulatory Focus Theory; Haws et al., 2010; Young, 2018
Dynamic Norms (I)	Melnyk et al., 2013; Sparkman and Walton, 2017, 2019
Chronic Regulatory Focus (Covariate)	Haws et al., 2010
Behavioral attitudes (D)	Theory of Planned Behavior; Ajzen, 1991, 2019; Martin and McCurdy, 2009; Young, 2018
Subjective Norms (D)	
Dynamic Norms (D)	Sparkman and Walton, 2017, 2019
PBC (D)	Theory of Planned Behavior; Ajzen, 1991, 2019; Martin and McCurdy, 2009; Young, 2018
Behavioral Intentions (D)	
Past camping participation (A)	
Future camping participation plans (A)	
Demographic information (A)	

3.1.1 Independent Variables

3.1.1.1 Regulatory Focus

Promotion- and prevention-framed messages have been shown to increase persuasiveness in certain contexts (Cesario et al., 2013). One aim of this study was to discern if one or both of these frames is effective at fostering behavioral antecedents and intentions to comply with attractant storage guidelines. It is important to note that this research is primarily concerned with if there is any significant difference in behavioral antecedents and intentions after exposure to promotion- or prevention-framed messages. However, because *chronic* regulatory focus is a

strong predictor of persuasiveness of messages when there is regulatory fit, we will treat it as a control covariate variable in the analyses if our data shows it to be a strong correlate (Lee & Aaker, 2004). Our survey utilized a slightly adapted composite regulatory focus scale (see Table 2) developed by Haws et al. (2010) to measure chronic regulatory focus. Information gathered from this scale helped us discern how chronic regulatory focus affects how participants respond to promotion- and prevention-framed messages. All items were be ranked on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Table 2. Chronic Regulatory Focus Scale

Promotion Focus (4 Measures)
I feel like I have made progress toward being successful in my life.
When I see an opportunity for something I like, I get excited right away.
I frequently imagine how I will achieve my hopes and aspirations.
I see myself as someone who is primarily striving to reach my "ideal self" to fulfill my hopes, wishes, and aspirations.
Prevention Focus (4 Measures)
I usually obeyed rules and regulations that were established by my parents.
Not being careful enough has gotten me into trouble at times (R).
I worry about making mistakes.
I frequently think about how I can prevent failures in my life.

3.1.1.2 Dynamic Norms

Dynamic norm messages may foster behavioral antecedents and intentions to properly store wildlife attractants via a number of psychological mechanisms. Of particular interest to this research are the findings from recent research that indicate the influence dynamic norm

information has on self-efficacy, which is similar to PBC – a direct antecedent of behavioral

intentions according to the theory of planned behavior (Ajzen, 1991). Prior research has yet to

robustly examine the effect of dynamic norm messages on other behavioral antecedents such as

beliefs, attitudes, and intentions. By manipulating which groups receive exposure to a dynamic

norm message, we were able to better examine these relationships. Our dynamic norm message

was adapted from prior research (Cheng et al., 2020; Sparkman & Walton, 2019).

3.1.2 Dependent Variables

The primary dependent variable of concern to this thesis is the effect of message frames

on intentions. However, given that the theory of planned behavior outlines certain antecedents to

behavioral intentions, such as attitudes, subjective norms, and PBC, these were all measured as

theory of planned behavior components. Dynamic norms were also included in the traditional

theory of planned behavior model and were measured as a dependent variable as well.

3.1.2.1 Theory of Planned Behavior Components

The theory of planned behavior (TPB) posits that behavioral beliefs, normative beliefs,

and control beliefs are indicative of an individual's behavioral attitudes, subjective norms, and

PBC, respectively (Ajzen, 1991). However, many studies that attempt to gauge intentions will

bypass measuring behavioral beliefs as it is generally accepted that direct measures of behavioral

attitudes, subjective norms, and PBC account for these beliefs (Ajzen,2021; Hurtado-de-

Mendoza et al., 2019; Kanters et al., 2008). Thus, we refer to the constructs of attitudes,

subjective norms, and PBC as behavioral antecedents and measure them in lieu of measuring

behavioral beliefs. These antecedents inform an individual's intention to engage in a given

behavior. By measuring the intentions, as well as the behavioral antecedents that inform

intentions, of participants here, this research allows for insights into the effectiveness of both

goal-framed and dynamic norm messages at persuading participants to properly store their attractants. It is key to note that we will not be testing the TPB model; rather, we will be using the model to help measure the above constructs shown to be indicative of intentions and behavior. This is particularly useful if little or no message effects on intentions are observed. In cases such as that, researchers can examine if messages had any influence on the behavioral antecedents, which could still provide insights to the nature of the relationship between message frames and intentions.

Importantly, we added the normative construct of dynamic norms to the traditional theory of planned behavior model. Recent research (Niemiec et al., 2020) has demonstrated that when added to behavior-intention models, descriptive and personal norms decreased the explanatory power of subjective norms. Further, Jones & Niemiec (2020) found that dynamic norms also predicted pro-environmental behavior when included within behavior-intention models. While it was not the goal of this study to ascertain the explanatory power of dynamic norms in relation to subjective norms, the inclusion of dynamic norms as a construct allowed us to more closely examine the behavioral antecedents influenced by dynamic norm messages.

3.1.2.1.1 Behavioral Attitudes

For our survey, we adapted scales from prior research utilizing the theory of planned behavior (Ajzen, 2019) and research that utilized the theory in an attractant storage context (Martin & McCurdy, 2009; Young, 2018). Behavioral attitudes were measured by asking participants to evaluate ten statements using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree; see Table 3).

Table 3. Behavioral Attitudes Scales

Properly storing my wildlife attractants seems fun.

Properly storing my wildlife attractants seems easy.
Properly storing my wildlife attractants seems good.
Properly storing my wildlife attractants seems valuable.
It seems necessary to store my wildlife attractants properly.
It seems effective to store my wildlife attractants properly.
It seems desirable to store my wildlife attractants properly.
It seems practical to store my wildlife attractants properly.
It seems exciting to store my wildlife attractants properly.
It seems enjoyable to store my wildlife attractants properly.

3.1.2.1.2 Subjective Norms

Subjective norms can inform researchers about how much social pressure participants feel to properly store their attractants. Prior research (Martin & McCurdy, 2009) has identified important groups of others that may influence campers to properly store their attractants: the people most important to the camper, other campers, and park staff. Subjective norm items were adapted from Young (2018) and Martin and McCurdy (2009). Subjective norms were measured by asking participants how often friends and family of theirs properly store their attractants while camping (1 = never, 5 = always).

3.1.2.1.3 Dynamic Norms

Dynamic norms will be included alongside subjective norms in our model. Prior research has demonstrated the utility of integrating different types of norms into traditional intention-behavior models such as the theory of planned behavior (Niemiec et al., 2020). By including dynamic norms, we may be able to increase the explanatory power of our model. The dynamic norm scale was adapted from previous studies (Sparkman & Walton, 2017) and was utilized to measure dynamic norms. The dynamic norm measure read, "More and more park campers are trying to properly store their attractants" and was ranked on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

3.1.2.1.3 Perceived Behavioral Control

Items pertaining to PBC were adapted from Martin & McCurdy (2009) and Young (2018). All items were ranked on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree; see Table 4).

Table 4. Perceived Behavioral Control Scales

I decide how to store my wildlife attractants.
I know how to store my wildlife attractants properly.

3.1.2.1.4 Behavioral intentions

Behavioral intentions are of the utmost concern of this thesis. All items in pertaining to intentions were adapted from Martin & McCurdy (2009) and Young (2018). All items were ranked on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree; see Table 5).

Table 5. Behavioral Intentions Scales

I will properly store my attractants on my next camping trip to a national park.

3.1.3 Attribute Variables

3.1.3.1 General Demographic Information

Information regarding participants' gender identity and age was collected.

3.1.3.2 Past Camping Participation and Future Camping Participation Plans

Participants were asked to indicate their past and near future camping behavior to ascertain if they can be considered "likely park campers." An example question being, "Do you plan to camp at a national park within the next two (2) years?" (1 = "Yes, definitely", 2 = "Yes, likely", and 3= "No"). This information helped maintain the external validity of the study by ensuring we sampled individuals as close as possible to those who would actually camp at a national park.

3.1.4 Manipulation Checks

In order to ensure that message frames were accurately conveying promotion and prevention information, dynamic norm information, and procedural information a manipulation check question was included in the questionnaire as well. The question asked participants, "Based on the information in the poster image above, choose the one option that best describes what the message is about." See Table 6 for the available options.

Table 6. Manipulation Check Answer Options

The message gives information about the increasing number of park campers who are making an effort to properly store their attractants.
The message makes you think about having a great camping experience as a result of properly storing your wildlife attractants.
The message makes you think about avoiding ruining your camping experience as a result of properly storing your wildlife attractants.
The message gives information about the increasing number of park campers who are making an effort to properly store their attractants AND makes you think about achieving a great camping experience as a result of properly storing your wildlife attractants.

The message gives information about the increasing number of park campers who are making an effort to properly store their attractants AND makes you think about avoiding ruining your camping experience as a result of properly storing your wildlife attractants.

The message is only about how to properly store and monitor wildlife attractants.

3.2 Stimulus Materials

Stimulus materials consist of six distinct message frames. Each participant was exposed to only one message frame before completing the questionnaire. Once introduced, the stimuli were presented on all subsequent pages of the instrument for participant reference. These messages consisted of text, color, and graphic illustrations meant to resemble actual park signage. We included graphic illustrations that reinforce the procedural information because in natural settings, park messages are often accompanied by such images or illustrations. Further, we included procedural information in all experimental conditions to ensure that all participants receive the same procedural knowledge. All messages included the same color scheme, procedural information, and procedural graphic illustrations to closely control the differences between conditions, thereby increasing the likelihood that any examined effects stem from our framing manipulations. These frames were informed by regulatory focus theory and/or dynamic norm information. Messages were presented to each participant via the online survey tool. The stimuli are provided in full in Figures 2-7 and explained in detail thereafter.

Figure 2. Promotion Message

Figure 3. Prevention Message

49

National Park Service
U.S. Department of the Interior

Store your wildlife attractants properly:

✓ Someone is within 3ft of your food

OR

✓ Scented items are put away in your vehicle or a food storage box

✓ Trash is in a wildlife-resistant dumpster

More and more park campers are working to properly store their wildlife attractants!

Figure 4. Dynamic Norm Message

National Park Service
U.S. Department of the Interior

Be sure to properly store your wildlife attractants to ensure a great camping experience!

Store your wildlife attractants properly:

✓ Someone is within 3ft of your food

OR

✓ Scented items are put away in your vehicle or a food storage box

✓ Trash is in a wildlife-resistant dumpster

More and more park campers are working to properly store their wildlife attractants!

Figure 5. Promotion Frame with Dynamic Norm Message

Figure 6. Prevention Frame with Dynamic Norm Message

Figure 7. Procedural Message (Control)

3.2.1 Promotion Frame

The promotion-framed message read: "Be sure to properly store your wildlife attractants to ensure a great camping experience!" This message makes salient the notion that participants can achieve the goal of having a great camping experience by properly storing their wildlife attractants. The message reinforced by a graphic smiley face to highlight the promotion frame.

3.2.2 Prevention Frame

The prevention-framed message read: "Be sure to properly store your wildlife attractants to avoid ruining your camping experience!" This message makes salient the notion that participants can prevent the negative outcome of ruining their camping experience from occurring by properly storing their wildlife attractants. The message reinforced by a graphic frowning face to highlight the prevention frame.

3.2.3 Dynamic Norm Frame

The dynamic norm message frame read: "More and more park campers are working to properly store their wildlife attractants!" This message frame makes salient normative information pertaining to the growing number of campers who are engaging in the desired behavior. Because measuring rates of compliance is difficult for storage behaviors – due to the inability of park staff to observe all campers, all the time – we used "more and more" to indicate the dynamic norm in lieu of statistical information regarding the norm, which has been used in prior dynamic norm message experiments (Cheng et al., 2020; Sparkman & Walton, 2017, 2019). A small graphic depicting three people in a small circle was included as well.

3.2.4 Promotion Frame with Dynamic Norm Message

This condition paired the promotion message frame with the dynamic norm message frame. The full message contained the promotion message ("Be sure to properly store your

wildlife attractants to ensure a great camping experience!") on the left side of the flyer. It also included the dynamic norm message ("More and more park campers are working to properly store their wildlife attractants!") on the bottom right of the flyer.

3.2.5 Prevention Frame with Dynamic Norm Message

This condition paired the prevention message frame with the dynamic norm message frame. The full message contained the prevention message ("Be sure to properly store your wildlife attractants to avoid ruining your camping experience!") on the left side of the flyer. It also included the dynamic norm message ("More and more park campers are working to properly store their wildlife attractants!") on the bottom right of the flyer.

3.2.6 Procedural Message (Control)

In this condition, participants will not be exposed to a goal-framed message, a dynamic norm message, or any combination thereof. Instead, participants in this condition will be shown a message containing only procedural information. This will be the same procedural information included in all of the treatment frames. This frame contains text that highlights acceptable attractant storage behaviors as well as graphic illustrations that visually reinforce the text (e.g., a hand in close proximity to an apple; a cross section of a vehicle showing attractants properly stored; and a cross section of a wildlife resistant dumpster with trash inside):

Make sure you can check these off your list:

- Someone is in touch with your food.

  or

- Scented items are put away in your vehicle or a food storage box.

- Trash is in a wildlife-resistant dumpster

By holding this procedural information consistent across all conditions, ensuring that the behavioral ask is clear across conditions, we can utilize it as a control here when it appears in isolation from either a goal-framed or dynamic norm message.

3.3 Data Collection

To test messages, we conducted a web-based experiment using the Qualtrics Online Survey Software. A 3x2 between-subjects experimental design was employed in which participants were randomly assigned to one of six conditions. We used the Qualtrics Online Survey Software to house our survey instrument. Participants were recruited using the Prime Panel service provided by CloudResearch. Qualified participants were directed to our Qualtrics survey instrument and asked to fully complete the survey. Qualtrics automatically records all participant data and provides researchers with the option to anonymize these recordings to ensure all responses cannot be connected to respondents. At the end of the survey period, response information was exported from Qualtrics into an excel spreadsheet for data analysis. We used SPSS statistical software to analyze data. All data will be destroyed three (3) years after the finishing of this thesis and subsequent academic journal manuscripts have been drafted.

3.3.1 Sample and Recruitment

This study utilized the Prime Panel service to recruit participants who indicated they have camped in a national park within the last 3 years and/or planned to camp in a national park within the next 2 years. The additional year included for past camping experiences was to give cushion for a lack of camping due to Covid-19 travel restrictions and national park campground closures and occupancy reductions in 2020. To ascertain their recent or planned campaign trips in national parks, two screening questions screened out those who did not meet at least one of these parameters. Further, one attention check question was included to gauge if respondent's

were actually reading response choices; if respondent's did not answer this question correctly, they were also screened out. Power analysis suggested at least 64 participants were needed in each condition for a 95% confidence level and assuming a 5% margin of error. We received 64 complete participant responses for each condition except for the control, in which we received 65 complete participant responses. With six conditions, our target sample size was 384 participants. Once live, the survey tool received 1,226 participant responses. Of those, 385 participants successfully passed our screener questions and fully completed the survey, which constitutes 31% of all responses. All participants who completed the survey received monetary compensation though the Prime Panels platform.

3.3.2 Data Collection Procedures

Participants were randomly assigned to one of six experimental conditions using the Qualtrics Randomizer tool. Participants were exposed to either a promotion message, prevention message, dynamic norm message, promotion message with a dynamic norm message, prevention message with a dynamic norm message, or the control message (procedural information). Once introduced, the stimuli were presented on all subsequent pages of the instrument for participant reference. These conditions are presented in experimental notation in Table 7 and were implemented as follows:

R = random assignment, X = treatment (independent variable), O = measures (dependent variables)

X_{A1} = Promotion message

X_{A2} = Prevention message

X_{A3} = Neither promotion nor prevention message (control)

X_{B1} = Dynamic norm message

X_{B2} = No dynamic norm message (control)

Participants in all six conditions were instructed to complete the same survey. The only difference within the instrument between conditions was the message frame shown to participants. All variable measures within the instrument remained consistent. Qualtrics allows researchers the ability to include measures for similar constructs in blocks. Items for the same constructs were presented together in the same block, however their order within the block was randomized in order to reduce the potential for order effects.

Table 7. Experimental Conditions

Experimental Notation	Treatment Condition
R X_{A1B2} O	Promotion message
R X_{A2B2} O	Prevention message
R X_{A3B1} O	Dynamic norm message
R X_{A1B1} O	Promotion message with dynamic norm message
R X_{A2B1} O	Prevention message with dynamic norm message
R X_{A3B2} O	Control (Procedural information only)

3.3.3 Pilot Test

The survey instrument was pilot tested for a two-week period in June 2021 to ensure that all questions and statements were easily comprehensible, that the survey was an appropriate length, and that constructs were being accurately measured. This pilot test utilized a convenience

sample of likely park campers via researchers' social networks. We received 120 participant responses to the pilot survey with 65 of those participants having fully completed the survey. Data collected from those 65 responses were analyzed with SPSS statistical software. A number of questions as well as the stimuli were updated based on respondent feedback to increase clarity.

The reliability of the four scales included within the survey instrument (i.e., the chronic regulatory focus scales for both promotion and prevention, the behavioral attitude scale, and the PBC scale) were tested using Cronbach's Alpha to ensure they were measuring what we intended them to measure (see Table 8). A Cronbach's Alpha of 0.7 is generally accepted to indicate a good level of internal consistency.

Table 8. Scale Reliabilities

Scale	Reliability
Attitude	$\alpha = 0.88$
Perceived Behavioral Control	$\alpha = -0.05$
Chronic Regulatory Focus: Promotion	$\alpha = 0.59$
Chronic Regulatory Focus: Prevention	$\alpha = 0.51$

The attitude scale was found to be reliable with a Cronbach's Alpha of $\alpha = 0.88$. However, the PBC scale was not reliable with a Cronbach's Alpha of $\alpha = -0.05$. We changed one of the two questions within the PBC scale to address the internal inconsistency. One of the scale's questions originally read, "I know how to use the food storage boxes often provided at campsites." The updated question read, "I know how to store my wildlife attractants properly." The updated wording more closely reflected the wording used in the other PBC question which read, "I decide how to store my wildlife attractants." Researchers decided to examine the two

scales individually, versus as a single scale, during data analysis with the former question labeled as "PBC (Know How)" and the latter as "PBC (My Choice)."

The chronic regulatory focus promotion scale had a Cronbach's Alpha of $\alpha = 0.59$ and the chronic regulatory focus prevention scale had a Cronbach's Alpha of $\alpha = 0.51$. One measure from both the promotion and prevention scales were removed in order to increase reliability, as indicated by results of the Cronbach's Alpha procedure. After removing these items, the promotion scale had a Cronbach's Alpha of $\alpha = 0.63$ and the prevention scale had a Cronbach's Alpha of $\alpha = 0.71$. Because the promotion scale is relatively close to 0.7 and because prior research has reliably used the scale to measure this construct (Haws et al., 2010), we chose to continue using the scale.

We also utilized manipulation checks to ensure that promotion, prevention, and dynamic norm messages were conveying what they were intended to. We used one-way analysis of variances (ANOVA) to determine whether there was a statistically significant difference between conditions on how they responded to the promotion and prevention check questions (Laerd Statistics, 2022a). The ANOVA for the promotion frame manipulation check revealed that there were not statistically significant differences between condition and response to the promotion manipulation check ($p = 0.71$). Similarly, the ANOVA for the prevention frame manipulation check revealed that there were not statistically significant differences between condition and response to the prevention manipulation check ($p = 0.14$). To attempt to remedy these issues, we added visual elements to the promotion, prevention, and dynamic norm stimuli. For the promotion message and the prevention message, a black background was added behind the text indicating whether the message was promotion or prevention focused in order to make this text

stand out. A smiley face was also added to reinforce the promotion message while a sad face was added to reinforce the prevention message.

To determine if there was a statistically significant difference in proportions between conditions pertaining to how they responded to the dynamic norm manipulation check question, we used Fisher's Exact Test (2 x C) (Laerd Statistics, 2022b). The analysis indicated that there was a statistically significant difference in proportions of responses to the dynamic norm manipulation check question, $p = .000$; that is, those participants who received a dynamic norm message, indicated correctly that they did. Still, for the dynamic norm message, an icon graphically illustrating three people was added to reinforce the normative aspect of the message.

3.4 Validity and Reliability

3.4.1 Reliability

Specific steps were taken to ensure the reliability of the current study. All items attempting to measure regulatory focus, dynamic norms, and theory of planned behavior components were adapted from prior (and largely, recent) research in which these items were found to be sufficient in measuring the relevant constructs in each theoretical perspective (Ajzen, 1991, 2019; Haws et al., 2010; Lee & Aaker, 2004; Martin & McCurdy, 2009; Melnyk et al., 2013; Sparkman & Walton, 2017, 2019; Young, 2018).

In order to ensure reliability of our measurements, each participant regardless of condition received the exact same questionnaire. We also included manipulation check questions pertaining to the two main independent variables (regulatory focus and dynamic norms) to be sure that message frames were, indeed, conveying the information that we designed them to convey. Finally, pre-testing was done to ensure that the survey instrument was comprehensible and accurately measuring constructs.

3.4.2 Internal Validity

By conducting a controlled, web-based experiment, our study design was able to better account for the confounding variables often associated with other types of designs, such as field experiments (Price et al., 2015). We also took several steps to increase internal validity for the study. First, we measured variables that could influence the effect that our message frames have on behavioral antecedents and intentions such as demographic variables (e.g., age and gender) and the potential covariate of chronic regulatory focus. Second, all characteristics of our message conditions contained the same color schemes and graphic illustrations to minimize the potential that these characteristics might call attention to one frame versus another. Third, we utilized a control condition by which to compare the effectiveness of each of our treatment conditions. Fourth, participants were randomly assigned to each condition using the Qualtrics Randomization tool ensuring comparable distributions between each condition. Finally, aside from which message frame they were exposed to, all participants engaged with the same survey material.

3.4.3 External Validity

It is important to note that all participants of this experiment had to be likely national park campers. This was ascertained through the attribute variable questions pertaining to past and planned park participation. In order to take the survey, participants need to indicate that either the 1) planned to camp within the next two years or 2) had camped in a national park within the previous three years. Thus, the inferences of this study may only be generalized to park campers in general. The Prime Panel service offers a wider (i.e., more diverse) pool of potential participants to sample from, thus increasing our ability to attain a more representative sample of campers based on geography, gender, age, and other demographic variables.

3.4.4 Ecological Validity

To maintain ecological validity, we designed each message frame to closely resemble how participants might engage with this type of communication in uncontrolled settings (i.e., the "real" world). First, we included a typical NPS header as well as the NPS logo as these would surely be included in any official NPS communication. We also included graphic elements such as text fonts, color, and illustrations as these would also be elements that would likely be included in actual park communication to better capture campers' attention. Procedural messaging was included to give context to the behavioral ask embedded within each theoretically informed message frame.

3.5 Data Analysis

We used IBM SPSS Statistics Premium, Version 27 to analyze data to answer our hypotheses. Descriptive statistics were run for all variables including attribute variables. We used a one-way multivariate analysis of covariance (MANCOVA) to answer all hypotheses. One-way MANCOVA is an extension of a traditional ANOVA analysis for situations where there is more than one dependent variable and where there is a covariate to be accounted for (Laerd Statistics, 2022c, 2022d). Specifically, a one-way MANCOVA allowed us to examine if there were any statistically significant differences between conditions on our dependent variables while accounting for the covariate of chronic regulatory focus (Laerd Statistics 2022c, 2022d), and also allowed for post hoc tests to follow up and examine which and how conditions differed. Thus, this analysis allowed us to answer H1a, H1b, H2, H3a, and H3b. Reliability tests were run on all measurement scales during the pilot test to ensure they were measuring what they were intended to. Finally, promotion, prevention, and dynamic norm frame manipulation checks were analyzed using a chi-square test for association (Laerd, 2022e).

CHAPTER 4. RESULTS

4.1 Participants

The survey received a total of 385 responses (see Table 9 for number of respondents in each condition). Respondents tended to be female (62.6%, $n = 241$) versus male (36.4%, $n = 140$), and four respondents (1%) identified as non-binary or third gender. 32.2% ($n = 124$) of participants indicated they were between the ages of 35-49 years old, 25.5% ($n = 98$) indicated they were between 25-34 years old, 19% ($n = 73$) indicated they were between 50-64 years old, 13% ($n = 50$) indicated they were between 18-24 years old, 10.1% ($n = 39$) indicated they 65 years old or older, and finally, 0.3% ($n = 1$) preferred not to state their age.

The survey also collected data on how respondents camped, their previous exposure to camping at sites that require attractant storage, and their motivations for properly storing attractants. Though not directly related to the hypotheses of the study, these data are important in understanding how these motivations and previous camping experiences influenced responses. Regarding camping dwelling, 47.5% respondents indicated that they most often camped in a tent in a designated campground ($n = 183$). The second most popular form of camping amongst respondents was in an RV or hard-sided camping vehicle in a designated campground (25.2%, n = 97). Only 8.3% (n = 32) indicated that they backcountry camped (i.e., outside of a designated campground). The majority of respondents (65.7%, n = 253) indicated that they had previously camped in a national park where they were required to store wildlife attractants. More so, 52.5% (n = 202) of respondents indicated that they have either camped with children within the past three years or plan to within the next two years. Finally, 39.5% (n = 152) indicated that protecting their friends or family was a very important influence in their decision to store

wildlife attractants versus only 13% (n = 50) who indicated it had little or no influence on their decision.

Amongst responses to the open-ended question soliciting top reasons respondents go camping, a connection to nature was the top cited first reason (*n* = 130) while relaxation was the top cited second reason (*n* = 63) for those who provided a second reason (see Figures 8 and 9).
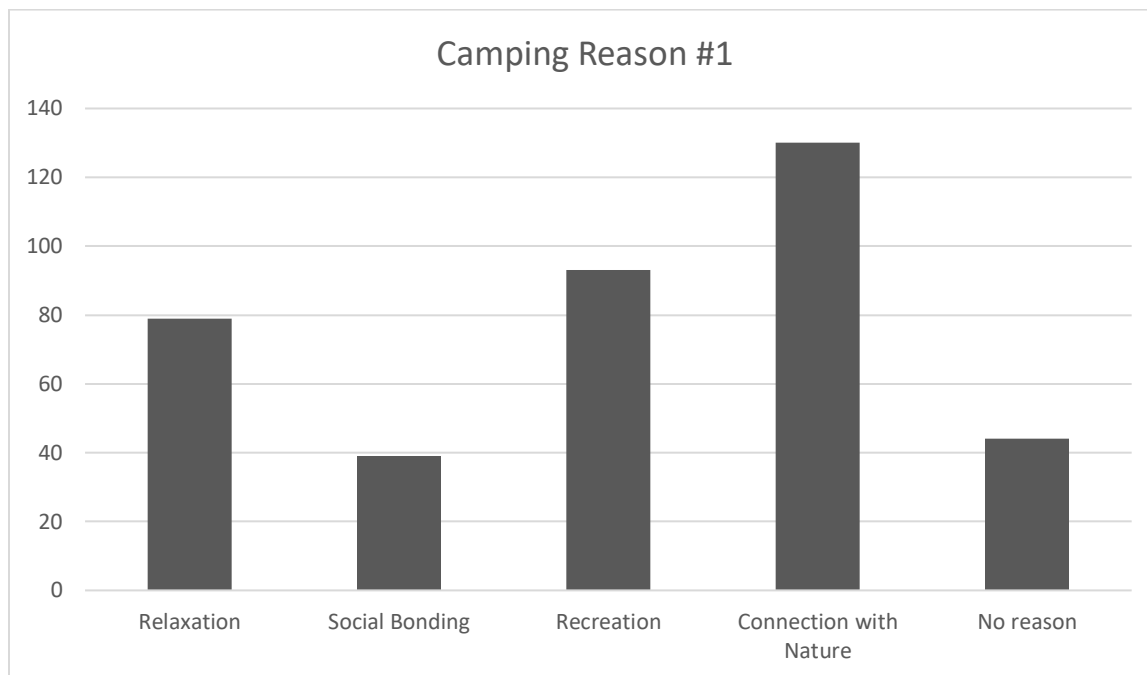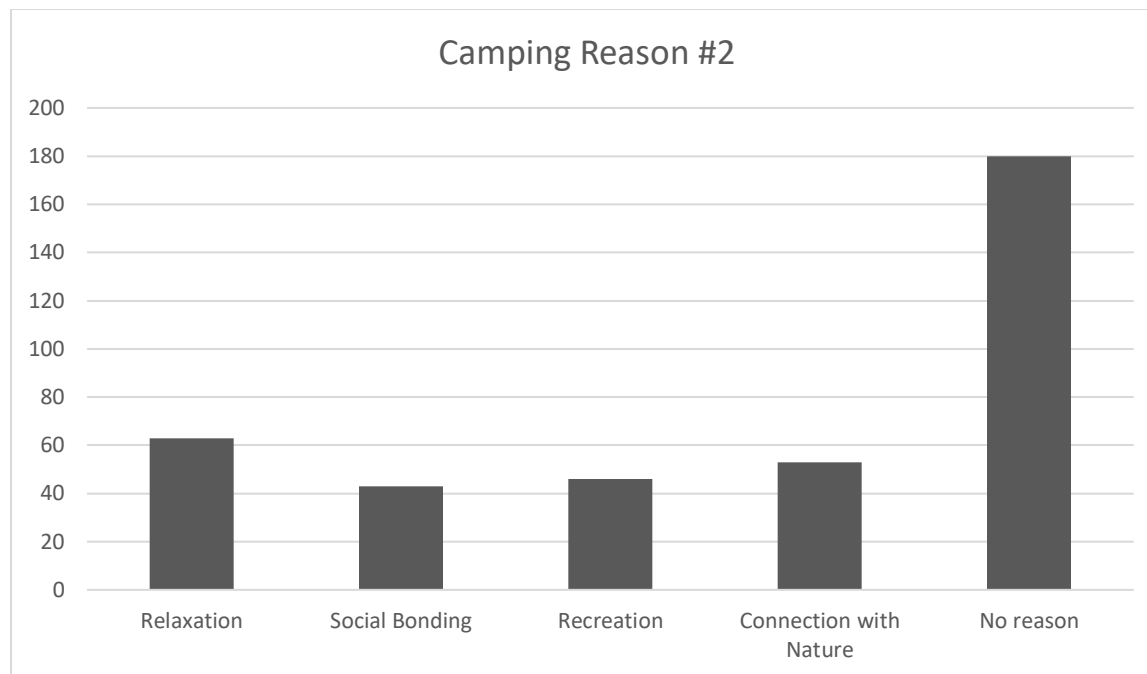

Figure 8. Camping Reason #1

Figure 9. Camping Reason #2

4.2 Manipulation Check

A chi-square test of association was conducted between the independent variable (i.e., condition) and responses to the manipulation check question to assess whether message frames were accurately conveying promotion and prevention information, dynamic norm information, and procedural information. All expected cell frequencies were greater than five. There was a statistically significant association between condition and responses to the manipulation check question, $\chi2(1) = 60.068$, $p = .000$. That is, participant responses indicated that messages were accurately conveying study constructs.

4.3 One-way MANCOVA

A one-way MANCOVA was used to test all hypotheses. Some assumptions were violated: 1) multivariate and univariate outliers were present, and 2) residuals were not normally distributed, as assessed by Shapiro-Wilk's test ($p < .05$). Some assumptions were met: 1) there

was a linear relationship between each pair of dependent variables for each experimental condition as assessed by visual inspection of a scatterplot, 2) there was a linear relationship between the covariate, chronic regulatory focus, and each of the dependent variables for each experimental condition as assessed by visual inspection of a scatterplot, 3) there was homogeneity of regression slopes as assessed by the interaction term between the independent variable and covariate, $F(25, 1,372.3) = 1.480$, $p = .060$, and 4) there was homogeneity of variances and covariances using the significance value of Pillai's Trace ($p = .004$). It is important to note that the assumption of homogeneity of variances and covariances was initially violated, thus we utilized the Pillai's Trace score as it is considered to be the most powerful and robust when there are departures from assumption (Pillai, 1955). The one-way MANCOVA is a robust statistical test (Laerd Statistics, 2022c), so we decided to move forward with the analysis despite violating the aforementioned assumptions.

The one-way MANCOVA demonstrated that there was a statistically significant difference between the experimental conditions on the combined dependent variables after controlling for chronic regulatory focus, $F(30, 1,494) = 1.630$, $p = .017$, Wilks' $\Lambda = .879$, partial $\eta 2 = .025$. Mean, standard deviation, adjusted mean, standard error, and sample size are outlined by condition and dependent variable in Table 9.

Table 9. One-way MANCOVA Descriptive Statistics

Condition	N	Behavioral Antecedents	Mean (SD)	Adjusted Mean (Std. Error)
Promotion	64	Attitude	3.98 (.599)	3.98 (.072)
		Subjective Norm	3.83 (1.229)	3.83 (.137)
		Dynamic Norm	3.61 (.789)	3.61 (.105)
		PBC (Know How)	3.97 (.835)	3.97 (.104)
		PBC (My Choice)	3.91 (.849)	3.90 (.109)
		Behavioral Intentions	4.38 (.766)	4.37 (.100)
Prevention	64	Attitude	4.15 (.491)	4.15 (.072)
		Subjective Norm	4.19 (.957)	4.19 (.137)
		Dynamic Norm	4.06 (.732)	4.06 (.105)
		PBC (Know How)	4.17 (.788)	4.17 (.103)
		PBC (My Choice)	4.00 (.976)	4.00 (.109)
		Behavioral Intentions	4.52 (.642)	4.51 (.100)
Dynamic Norm	64	Attitude	3.95 (.646)	3.96 (.072)
		Subjective Norm	3.83 (1.062)	3.83 (.137)
		Dynamic Norm	3.78 (.881)	3.78 (.105)
		PBC (Know How)	4.09 (.811)	4.10 (.104)
		PBC (My Choice)	4.05 (.785)	4.05 (.109)
		Behavioral Intentions	4.20 (.912)	4.21 (.100)
Promotion and Dynamic Norm	64	Attitude	3.92 (.603)	3.92 (.072)
		Subjective Norm	4.08 (.931)	4.08 (.137)
		Dynamic Norm	3.97 (.776)	3.97 (.105)
		PBC (Know How)	4.00 (.992)	4.00 (.104)
		PBC (My Choice)	3.98 (.845)	3.99 (.109)
		Behavioral Intentions	4.25 (.909)	4.26 (.100)
Prevention and Dynamic Norm	64	Attitude	4.18 (.551)	4.18 (.072)
		Subjective Norm	3.92 (1.238)	3.92 (.137)
		Dynamic Norm	3.95 (.898)	3.95 (.105)
		PBC (Know How)	4.27 (.761)	4.26 (.103)
		PBC (My Choice)	4.08 (.896)	4.08 (.109)
		Behavioral Intentions	4.44 (.852)	4.43 (.100)
Control	65	Attitude	4.14 (.581)	4.14 (.072)
		Subjective Norm	4.08 (1.108)	4.08 (.136)
		Dynamic Norm	3.66 (.923)	3.66 (.104)
		PBC (Know How)	4.26 (.756)	4.26 (.103)
		PBC (My Choice)	4.09 (.879)	4.09 (.108)
		Behavioral Intentions	4.60 (.680)	4.60 (.099)

Because the one-way MANCOVA was statistically significant, we followed up with multiple one-way ANCOVAs (one for each of our five dependent variables) in order to assess if the adjusted means score for each dependent variable differed between the six experimental

conditions of our study. A Bonferroni adjustment was made such that statistical significance was accepted at $p < .008$ (Laerd, 2022c). There were no statistically significant differences in the adjusted means for attitudes, subjective norms, dynamic norms, PBC (Know How), PBC (My Choice), or behavioral intentions (See Table 10).

Table 10. Post Hoc Univariate One-way ANCOVA Results for One-way MANCOVA

Dependent Variable	Sig.
Attitudes	.034
Subjective Norms	.32
Dynamic Norms	.01
PBC (Know How)	.19
PBC (My Choice)	.84
Behavioral Intentions	.05

4.4 Hypothesis testing

H1a posited that both promotion and prevention messages will be more effective than a control message with procedural information only in fostering behavioral antecedents and intentions to store wildlife attractants. The analysis does not support H1a.

H1b posited that a promotion message will be more effective than a prevention message in fostering behavioral antecedents and intentions to store wildlife attractants. The analysis does not support H1b, and actually demonstrates that prevention messages were more effective in fostering dynamic norms than promotion messages.

H2 posited that a dynamic norm message will be more effective than a control message with procedural information only in fostering behavioral antecedents and intentions to store wildlife attractants. The analysis does not support H2.

H3a posited that both goal-framed messages (promotion, prevention) paired with a dynamic norm message will be more effective than a control message with procedural information only in fostering behavioral antecedents and intentions to store wildlife attractants. The analysis does not support H3a.

H3b posited that a promotion message with a dynamic norm message will be more effective than a prevention message with a dynamic norm message in fostering behavioral antecedents and intentions to store wildlife attractants. The analysis does not support H3b.

4.5 Exploratory Analysis

To examine how variables measured contributed to respondents' behavioral intention to properly store their wildlife attractants, we ran a multiple linear regression. The R^2 for the overall model was 52.5% with an adjusted R^2 of 51.0%, a large effect size according to Cohen (1988). The model was statistically significant, $F(12, 368) = 33.903$, $p < .001$. Attitude, PBC (Know How), subjective norms, protecting others in their party while camping, and age were statistically significant in predicting intention to store attractants in that when any of those independent variable values are higher, so is intent to store attractants. Planning to bring children on a future camping trip and planning to camp in a camper, recreational vehicle (RV), or vehicle each predict a decrease in intention to store attractants. See Table 11 for regression coefficients and standard errors.

Table 11. Multiple Regression Results for Intention to Properly Store Wildlife Attractants on Next Camping Trip

Behavioral intention	B	95% CI for B		$SE\ B$	β	R^2	ΔR^2
		LL	UL				
Model						.53	.51***
(Constant)	.653	.195	1.110	.233			
Attitude	.387	.26	0.513	.064	.283***		
PBC (Know How)	.206	.109	.302	.049	.209***		
Subjective Norms	.167	.101	.233	.033	.229**		
Binary Gender[a]	.114	-.007	.236	.062	.069		
Protect Others in Party	.094	.041	.148	.027	.139**		
Age[b]	.072	.021	.123	.026	.106**		
Dynamic Norms	.047	-.027	.122	.038	.05		
CRF	.044	-.034	.122	.04	.04		
Past Storage Behavior[c]	-.039	-.166	.089	.065	-.023		
Children in Party[d]	-.121	-.239	-.004	.06	-.076*		
Dwelling[e]	-.187	-.302	-.072	.059	-.117**		
PBC (My Choice)	1.46E-05	-.078	.078	.04	.000		

Note. "PBC" stands for Perceived Behavioral Control.
[a] Binary Gender dummy coded as 0 = male; 1 = female (nonbinary and prefer not to say treated as missing data).
[b] Age coded as 1 = 18-24 years old, 2 = 25-34, 3 = 35-49, 4= 50-64, 5 = 65+, "Prefer not to say" recoded as missing data.
[c] Past Storage Behavior dummy coded as 0 = Unsure or No; 1 = Yes.
[d] Children in Party coded as 0 = no; 1 = yes.
[e] Dwelling dummy coded as 0 = tent in front- or back-country campground; 1 = Camper, RV, or camp in vehicle.
p < .05. **p* < .01. ***p* < .001.

CHAPTER 5. DISCUSSION

Wildlife habituation and conditioning have posed persistent issues for managers of parks (Marion et al., 2008; Leong et al., 2016). The tendency for visitors to either intentionally feed wildlife or to leave out known wildlife attractants at parks has contributed to this issue in that wildlife often attempt to return looking for more attractants. While there are many strategies to mitigate the likelihood of visitors engaging in these behaviors, there is a noted management preference for achieving voluntary compliance through indirect methods such as communication (Dietsch et al., 2016; Winter et al., 2000). Recent research (Abrams et al., 2020) has demonstrated the effectiveness of visitor-centered messaging approaches to address non-compliance in parks; in particular, recent studies have shown the potential effectiveness of goal-framed (Cesario et al., 2013) and dynamic norm (Sparkman and Walton, 2017, 2019) message frames.

This study sought to add to the literature by examining if both goal-framed and dynamic norm messages were more effective at fostering intentions to properly store wildlife attractants than simple procedural messages instructing participants on how to store attractants. This study also sought to understand whether promotion or prevention message frames were more effective in this context, and whether the addition of a dynamic norm message to both of these goal-framed messages changed their relative effectiveness in relation to a simple procedural message and to one another. This study suggests that while the effects of our study's message frames did significantly differ in relation to the combined dependent variables (i.e., behavioral antecedents and intentions) while controlling for chronic regulatory focus, post hoc tests indicated that when

looked at individually, no one frame significantly impacted behavioral antecedents nor intentions to store attractants. Potential reasons for this are discussed below.

5.1 Effects of Different Message Frames

The results of the one-way MANCOVA indicated that message frames statistically significantly differed based on the combined dependent variables (i.e., behavioral antecedents and intentions) after controlling for chronic regulatory focus. However, post hoc univariate one-way ANCOVAs, meant to elucidate which message frames differed and how they differed in terms of each behavioral antecedent and intention to properly store attractants, were not statistically significant.

It is generally understood that it is possible to have a statistically significant one-way MANCOVA, but no statistically significant post hoc one-way ANCOVAs (Laerd, 2022c). One reason cited for this phenomenon is due to the fact that the one-way MANCOVA examines combined dependent variables. This means that the one-way MANCOVA creates a linear composite of the multiple dependent variables and compares the groups of the independent variables based on this composite; that is, one-way MANCOVA is a useful analysis when researchers desire to look at multiple dependent variables as a whole (Laerd, 2022c).

This study sought to examine goal-framed and dynamic norm message effects on behavioral antecedents and intentions. As previously mentioned, the Theory of Planned Behavior (Ajzen, 1991) posits that attitudes, subjective norms, and PBC are direct influencers of behavioral intentions. Recent research (Niemiec et al., 2020) has also found evidence of dynamic norms exerting influence on intentions, and thus we included it in this study as a behavioral antecedent. Given the influential relationship between behavioral antecedents and intention, we chose to use a one-way MANCOVA because it allowed us to examine the dependent variables as

a whole via the MANCOVA procedure itself as well as to examine message frame effect on each dependent variable singularly via post hoc univariate ANCOVAs.

5.2 Goal-Framed Messages versus Control Message (H1a)

Informed by prior research (Cesario et al., 2013), we hypothesized that goal-framed messages would be more effective in fostering behavioral antecedents and intentions to properly store wildlife attractants. Message framing guided by Regulatory Focus framework directly addresses an individual's motivations and, therefore, we posited may be effective at persuasion given that we know that when individuals are motivated to process a message, they are more likely to be persuaded by it (Eagly & Chaiken, 1993). We found no statistically significant differences on antecedents and intention between either goal-framed messages (promotion or prevention) and the control message, indicating that goal-framed messages were no more effective at fostering intentions to store attractants than a procedural message.

Previous research in a natural resource management context found similar results (Young, 2018). Researchers in that study posited that the non-significant findings were due to small sample size or response bias. Another potential explanation could be construct validity. Recent literature (Vriend et al., 2023) posits that there are critical flaws with the instruments researchers are currently using to operationalize and measure promotion and prevention foci which may be contributing to mixed study results. Researchers here argue that regulatory focus operates across a motivational hierarchy including the system level (the goals that people strive for), the strategic level (the strategies they employ in goal pursuit), and the tactical level (the decisions they make and behaviors they perform to achieve their goals), and yet current measurement instruments primarily conceptualize and operationalize promotion and prevention at the system level or tend to conflate levels (Scholer et al., 2010; Vriend et al., 2023).

Indeed, Haws et al. (2010) argue similarly and crafted an adapted chronic regulatory scale to address some of the concerns highlighted in the literature. We utilized the scale to measure the chronic regulatory focus covariate and further adapted it following a pre-test that determined removal of two questions would increase reliability. Within this context, an observation that this study's promotion and prevention messages highlight the system level (the goal of having a great camping experience or to avoid ruining a camping experience), the strategic level (ensuring a great experience or avoiding ruining the experience), and the tactical level (achieving the aforementioned goals by properly storing attractants) could be warranted. However, given the study's focus on understanding the effectiveness of goal-framed messages on behavioral antecedents and intentions, highlighting these levels might be equally warranted as we intentionally sought to prime which strategic level (i.e., a promotion or prevention approach) predominated when participants were responding to the survey and given that the tactical level deals with behaviors. Still, further research would need to be done to be able to say for certain whether or not the measurement tools and message frame operationalizations used in this study are accurately conceptualizing chronic regulatory focus.

Finally, these theoretical discussions may also apply to below sections in which goal-framed messages were present.

5.3 Promotion Message versus Prevention Message (H1b)

Results showed that there was no statistically significant difference between promotion and prevention messages on behavioral antecedents and intention to properly store attractants. Prior research has demonstrated a connection between pro-environmental concerns, attitudes, and intentions and a promotion focus (Bhatnagar & McKay-Nesbitt, 2016). Given that proper wildlife attractant storage behaviors can be considered pro-environmental behaviors, we posited

that the promotion message would be more effective than the prevention message. This study argues that this is not the case.

This study intentionally moved away from traditional park messaging which often featured wildlife-centric messaging to encourage campers to store attractants. While the intent of this departure from traditional messaging was rooted in recent research demonstrating the effectiveness of audience-centric messaging (Abrams et al., 2020), one potential explanation for this finding that is not aligned with our hypothesis is that our stimuli may not have positioned storing wildlife attractants properly as a pro-environmental behavior. For instance, there is no mention of how this behavior would benefit wildlife or, likewise, keep wildlife from being harmed in some manner. Nor do our stimuli speak to storing attractants properly for the sake of reducing litter in parks.

5.4 Dynamic Norm Message versus Control Message (H2)

Given that highlighting how properly storing attractants may assist in achieving desired park experiences may not be enough to foster intentions if visible social norms are not yet aligned with desired behaviors (Chau et al., 2018; McKenzie-Mohr, 2011), we posited that dynamic norm messages may be effective here. Recent work (Sparkman & Walton, 2017, 2019) has demonstrated that novel dynamic norms may be effective influencing attitudes and intentions in such situations where descriptive norms would simply highlight noncompliance. Results showed no statistically significant difference between the dynamic norm frame and the control frame on antecedents or intentions.

One potential reason for this finding could be the presence of a ceiling effect wherein intentions to store attractants may have already been high in participants of the study. This is potentially evidenced in the high behavioral intention means observed in the one-way

MANCOVA analysis. If it is the case that intentions to store are already high, it could be that our dynamic norm messages were ineffective because prior research demonstrates that dynamic norm messages may be most effective in situations wherein the desired behavior is counternormative.

Another potential explanation for this finding may be connected to novel research examining the influence of message source on dynamic norm effectiveness (Boenke et al., 2022). This study found that source of a message did influence the effectiveness of dynamic norm messages on behavior; in particular, they found that dynamic norm messages emanating from researchers were more effective than dynamic norm messages coming from other sources. While we informed participants that we were university researchers, study stimuli contained the logo of the NPS in order to increase ecological validity. The perception of these stimuli coming from the NPS (i.e., the U.S. government) may have influenced participant responses. For instance, participants who perceived message stimuli coming from the NPS could potentially have also perceived that this was an enforcement message and felt obligated to respond a certain way. Further, these messages could have interacted in myriad ways with participants values and perceptions of government (Kao & Sapp, 2022).

However, our finding here is in line with a growing number of studies that have failed to find dynamic norm messages statistically significantly influencing intentions and behavior (Geber et al., 2022; Schuster et al., 2022). These studies, and our results, could indicate that dynamic norm influence on intentions is limited. Though, they could also indicate certain methodological limitations such as limited exposure to stimuli (Geber et al., 2022).

These recent studies also posit that for some behaviors, injunctive norms may prove to be more salient thus making dynamic norms less influential given what we know about individuals

conforming to whichever norm is salient (Cialdini et al., 1990; Geber et al., 2022). Our survey questions consistently used the phrase "…properly store wildlife attractants." The term "properly" could have inadvertently signaled to participants an injunctive norm – that they ought to store attractants in a certain way – which lessened the influence of our dynamic norm message frame.

Finally, these theoretical discussions may also apply to below sections in which dynamic norm messages were present.

5.5 Goal-Framed Messages Paired with Dynamic Norm Message versus Control Message (H3a)

We posited that goal-framed messages each paired with a dynamic norm message would be more effective at fostering behavioral antecedents and intentions than the control message due to prior research demonstrating the effectiveness of pairing goal-framed messages with normative information (Melnyk et al., 2013) and the notion that dynamic norm messages may communicate both descriptive and injunctive normative information may bolster the influence of goal-framed messages (Sparkman and Walton, 2017, 2019). Analysis demonstrated no statistically significant difference between the goal-framed messages paired with a dynamic norm and the control message on antecedents or intentions.

This result indicates the need for further examination of the relationship between goal-framed messages and normative information. Based on prior literature, we did not have a strong sense of how goal-framed messages might pair with dynamic norm messages; though, past research (Lindenberg & Stegg, 2013; Melnyk et al., 2013) led us to posit that these pairings would be effective given the effectiveness of goal-framed messages paired with descriptive and

injunctive norms on attitudes. Further, the theoretical discussions in the above sections regarding regulatory focus theory and dynamic norms would likely be applicable here as well.

5.6 Promotion Message Paired with Dynamic Norm Message versus Prevention Message Paired with Dynamic Norm Message (H3b)

Results for Hypothesis 3b show that there was no statistically significant difference on antecedents and intentions between a promotion message paired with a dynamic norm and a prevention message paired with a dynamic norm. This may indicate support for previous findings where in dynamic norms are actually communicating injunctive normative information (Sparkman & Walton, 2017, 2019). This would make sense as prior research (Melnyk et al., 2013) has demonstrated that descriptive norms paired with a promotion message increased attitudes towards sustainable products but both promotion and prevention messages paired with an injunctive norm increased attitudes as well. If the dynamic norm message in our study was conveying information more akin to the perceived importance being attributed to a behavior due to increasing adoption, participants may have perceived the dynamic norm message as an injunctive norm message; this may have been particularly possible in combination with the word "properly" used throughout the survey tool as mentioned earlier (Sparkman & Walton, 2017, 2019). Thus, the dynamic norm frame paired with both promotion and prevention messages may have both increased antecedents and intentions resulting in no significant difference being detected.

5.7 Exploratory Analysis

We ran a multiple linear regression to explore how variables measured throughout the study contributed to predicting behavioral intentions. Attitude, PBC (Know How), subjective norms, protecting others in their party while camping, and age were statistically significant in

predicting intention to store attractants in that when any of those independent variable values are higher, so is intent to store attractants. Conversely, planning to bring children on a future camping trip and planning to camp in a camper, recreational vehicle (RV), or vehicle each predict a decrease in intention to store attractants.

These findings potentially provide support for the theory of planned behavior which posits that attitudes, subjective norms, and PBC are direct influencers of behavioral intentions (Ajzen, 1991). While only one of our two PBC measures was found to predict intentions, this could be due to both operationalizations of PBC within our survey being perceived as more closely conveying information akin to knowing how to store attractants properly. Contrastingly, however, this finding would be aligned with pilot test reliability scores that did not indicate internal consistency between our two measures of PBC. It is possible that the procedural messages included on all stimuli lent to participants understanding how to store attractants properly but did not increase their sense that it was their choice to store attractants. Further, these findings may indicate the limited predictive value of dynamic norms when included in behavioral models (Geber et al., 2022; Schuster et al., 2022).

Results suggesting that protecting others while camping is an important motivator for storing attractants is aligned with previous research on risk communication and fear appeals. There has been much research done here examining risk communication and fear appeals in relation to encouraging park behaviors that might inform how to message to those whose primary motivations for properly storing attractants is to protect those camping with them (Decker et al., 2012; Hockett & Hall, 2007; Lu et al., 2016).

Though, interestingly, our study suggests that camping with children decreased intentions. This would seem potentially contradictory to protecting those around you while

camping. Further research here might elucidate reasons why this may be. The social marketing literature may point to there being some sort of barrier associated with bringing children camping that may outweigh the benefits of properly storing attractants (Kotler & Lee, 2008).

5.8 Theoretical Implications

Taken holistically, this study contributes to the literature by furthering understanding of the effectiveness of utilizing message frames informed by regulatory focus theory and novel dynamic norms. As highlighted in the above sections, there are growing bodies of literature that indicate theoretical or manipulation issues with both regulatory focus theory (Vriend et al., 2023) and dynamic norms (Geber et al., 2022; Schuster et al., 2022). The findings from this study seem to support the assertions made in this recent literature.

Regarding regulatory focus theory, this study is aligned with previous research that also found goal-framed messages' ineffectiveness in fostering intentions to properly store attractants (Young, 2018). While researchers there noted the possibility of a small sample size effecting significance, these results may be indicative of the limited effectiveness of goal-framed messages when looked at in conjunction with our study's findings. However, both studies utilized the chronic regulatory focus scale adapted from Haws et al. (2010) and findings from both studies could indicate methodological issues rather than theoretical ones (Vriend et al., 2023).

This study also suggests that dynamic norms may have limited influence on intentions, in line with multiple recent studies which found there to be no statistically significant difference between dynamic norms and descriptive or injunctive norms in fostering intentions (Geber et al, 2022; Schuster et al., 2022). Though, this could be highlighting the complexity of accurately measuring the different types of norms (Geber et al., 2022).

Finally, our findings suggest that there is no advantage to pairing a dynamic norm message with either a promotion or a prevention message. Rather than discounting previous research that found normative information paired with goal-framed messages to increase attitudes (Melnyk et al., 2013), this may, again, indicate the complex nature of dynamic norms and the type of information that they are actually communicating.

5.9 Practical Implications

While the statistically nonsignificant findings make it hard to provide practical recommendations to park managers on effective message framing strategies, findings from our exploratory analysis highlight some areas of utility. First, it is evident that camper demographics and motivations are key in understanding which messaging approaches might be effective at fostering intentions to store attractants. Managers should seek to understand these motivations better whenever possible, especially given recent increases in outdoor recreation since the COVD-19 pandemic (KOA, 2022). Further, this study found that attitudes, subjective norms, and PBC predicted intentions to properly store attractants which is in line with foundational theoretical models (Ajzen, 1991). It may be fruitful for park managers to craft messaging that speaks to these behavioral antecedents in order to foster intentions.

5.10 Limitations

Several limitations to this study exist. First, because we chose to conduct a controlled, online experiment, this study likely had lower external and ecological validity than one that may directly observe park campers at an actual national park. However, given limited funding for this project, an online experiment was the only feasible option.

Second, we recognize the limitations of employing a paid online sampling method. We compared Prime Panels to two other commonly used online sample recruiters – Amazon

Mechanical Turk (MTurk) and Prolific. Compared to Mturk, Prime Panels offers a significantly wider sample pool, a more diverse sample pool, and high-quality data (Chandler et al., 2019). Meanwhile, Prolific similarly offers high quality data while compensating participants equitably for their time; however, we did not have the funds to afford a Prolific panel (Prolific, 2021).

Third, the device in which participants completed the survey may have differed resulting in different experiences. For instance, those who took the survey on a desktop or laptop device may have been able to better view message stimuli on survey pages wherein the stimuli were presented as a reference in companion to a question due to larger screen resolutions allowing the stimuli to be viewed in full. In contrast, for those taking the survey on a mobile device, the stimuli may have been cut off – forcing participants to have to scroll to see the full stimuli. This could have affected the impact of repeated exposures to the stimuli.

Fourth, the sample size for this study was relatively small for the one-way MANCOVA procedure. With smaller sample sizes, it may be more difficult to detect statistically significant differences between groups. However, Laerd (2022c) indicates that, at a minimum, researchers need to have more participants in each group than the number of dependent variables analyzed. Our sample sizes in each group passed this threshold.

Fifth, as with all online surveys, lack of attention and processing of messages is a concern. We attempted to mitigate these concerns by incorporating attention check questions throughout the survey tool and removed responses who failed to successfully pass these checks. However, this does not guarantee that respondents were fully attentive during other portions of the survey. The median duration it took for respondents to complete the survey was 4.7 minutes. To be conservative, we ran an exploratory analysis removing data from cases that spent less than

2.5 minutes to fully complete the survey and key findings remained essentially unchanged, which is why we do not report those in the findings.

Sixth, our study stimuli presented three potential ways for participants to properly store their attractants while only having one measure for behavioral intentions. This may have affected study results given that social marketing literature consistently highlights the benefit of identifying and measuring discrete, end-state behaviors (Kotler and Lee, 2008).

Seventh, as mentioned in previous sections, our survey tool utilized the phrase (or a phrase akin to) "proper food storage." This may have inadvertently signaled to participants an injunctive norm that may have affected the salience of our dynamic norm message.

Finally, our control message may have contained potentially persuasive information. As opposed to a true control that may have nothing in relation to study messages, our control message contained procedural information on how to properly store attractants. This information could have assisted in raising PBC in participants – particularly the measured construct of PBC "Know How." Further, the use of the term "proper," as highlighted above, may have made salient a potentially persuasive injunctive norm.

5.11 Future Research

The findings from our study suggest multiple areas where future research would be fruitful. First, continued research into the accuracy of regulatory focus measurement tools and commonly used operationalizations could greatly influence the efficacy of using goal-framed messages to encourage desired intentions.

Second, determining if campers perceive proper storage behaviors as pro-environmental behaviors versus other types of behaviors (e.g., risk reducing behaviors) would assist in

understanding whether a promotion or prevention message might be more effective in fostering intentions to properly store.

Third, further examination of the type of information that dynamic norms are communicating is crucial in understanding the contexts in which they might be effective. Understanding when dynamic norms may be communicating more descriptive information versus injunctive information is particularly key. This line of research would also assist in understanding when it may be effective to pair dynamic norm messages with goal-framed messages.

Finally, the exploratory analysis of this study indicates the importance of understanding camper demographics and motivations. Research exploring these motivations would provide empirical evidence which would greatly aide in understanding which message frames might be effective in encouraging intentions to store attractants.

5.12 Conclusion

The purpose of this study was to understand the effectiveness of goal-framed and dynamic norm messages at fostering behavioral antecedents and intentions to properly store wildlife attractants in national parks. Regulatory focus theory and recent research on novel dynamic norms were used to inform message framing, and the theory of planned behavior was used to understand how these message frames might influence behavioral antecedents and intentions.

The results of this study found no statistically significant impact on antecedents or intentions from either goal-framed messages, dynamic norm messages, or goal-framed messages paired with dynamic norm messages. However, these statistically nonsignificant findings are aligned with a growing body of literature that have highlighted the complexities of accurately

measuring the effects of goal-framed messages and the potential limited effectiveness of dynamic norm messages. Future research should focus on exploring these complexities in order to better understand how goal-framed and dynamic norm messages might be useful tools to park managers in mitigating the effects of negative human-wildlife interactions.

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APPENDICES

Appendix A: Institutional Review Board Approval

COLORADO STATE UNIVERSITY

The protocol listed below has been approved by the CSU IRB Determinations Fort Collins on Friday, May 21st 2021.

PI: Abrams,Katherine

Submission Type and ID: Initial 1935

Title: Effects of Goal-Framed and Dynamic Norm Messages on National Park Campers' Intentions to Comply with Wildlife Attractant Storage Guidelines

Approval Date: Friday, May 21st 2021

Continuing Review Date: no date provided

Expiration Date: Wednesday, May 20th 2026

The CSU IRB (FWA0000647) has completed its review of protocol 1935 Effects of Goal-Framed and Dynamic Norm Messages on National Park Campers' Intentions to Comply with Wildlife Attractant Storage Guidelines. In accordance with federal and state requirements, and policies established by the CSU IRB, the committee has approved this protocol under Exempt review.

Appendix B: Pilot Test Survey Questions

Q1 Have you camped in a national park within the past three (3) years?

○ Yes (1)

○ No (2)

- -

Q2 Do you plan to camp in a national park within the next two (2) years?

○ Yes, definitely (3)

○ Yes, likely (4)

○ No (5)

Q4 **Please carefully read the following information about the study and your rights as a participant should you choose to participate.**

My name is Jordan Gorostiza, and I am a researcher from Colorado State University in the Journalism and Media Communication department. We are conducting a research study examining past and future national park campers' attitudes and intentions to properly store wildlife attractants. You will be shown a park poster about properly storing wildlife attractants while camping and asked to provide your opinions on it. We'll then ask you about your storage plans for your next camping trip. The Principal Investigator is Dr. Katie Abrams from the Department of Journalism and Media Communication, and I am the Co-Principal Investigator. We would like you to take an anonymous online survey. Participation will take approximately 5-10 minutes. Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participation at any time without penalty. We will not collect your name or personal identifiers. When we report and share the data to others, we will combine the data from all participants. We hope to gain more knowledge on how to encourage national park campers to properly store their wildlife attractants. Upon completion of the study, you will receive compensation in the amount you have agreed to with

96

the platform through which you entered this survey.

We do not anticipate that there will be any risks to you as a consequence of your decision to complete this study. It is not possible to identify all potential risks in research procedures, but the researcher(s) have taken reasonable safeguards to minimize any known and potential (but unknown) risks.

To indicate your consent to participate in this research and to continue on to the survey, please click "Yes" below.

If you have any questions about the research, please contact Jordan Gorostiza at jordan.gorostiza@colostate.edu or Dr. Katie Abrams at katie.abrams@colostate.edu. If you have any questions about your rights as a volunteer in this research, contact the CSU IRB at: RICRO_IRB@mail.colostate.edu; 970-491-1553.

Do you wish to participate in this survey?

○ Yes (1)

○ No (2)

CRFProm Great! First, we'd like to learn a little bit about you to understand how campers' personalities may differ. Your best, honest answers are appreciated! Please rate the extent to which you agree or disagree with the following statements.

	Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
I feel like I have made progress toward being successful in my life. (CRF-progress)	○	○	○	○	○
When I see an opportunity for something I like, I get excited right away. (CRF-opportunity)	○	○	○	○	○
I frequently imagine how I will achieve my hopes and aspirations. (CRF-hopes)	○	○	○	○	○
I see myself as someone who is primarily striving to reach my "ideal self" to fulfill my hopes, wishes, and aspirations. (CRF-ideal-self)	○	○	○	○	○

CRFPrev Please rate the extent to which you agree or disagree with the following statements.

	Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
I usually obeyed rules and regulations that were established by my parents. (CRF-obey)	○	○	○	○	○
I worry about making mistakes. (CRF-worry)	○	○	○	○	○
I frequently think about how I can prevent failures in my life. (CRF-prevent-failure)	○	○	○	○	○
I see myself as someone who is primarily striving to become the self I "ought" to be – fulfill my duties, responsibilities and obligations. (CRF-ought)	○	○	○	○	○

End of Block: Chronic Regulatory Focus (Controlled covariate)

Start of Block: Camping

Camp1 How did you most often camp or plan to camp in national parks?

○ In a tent in a designated campground (1)

○ In an RV or hard-sided camping vehicle in a designated campground (2)

○ In a pop-up, soft-sided camper in a designated campground (3)

○ Backcountry camping with a tent, tarp, hammock shelter, or other type of soft-sided shelter (4)

○ In a car, truck, or van (5)

Camp2 What are the top 2-3 reasons you go camping? Separate each reason with a comma or semi-colon.

_____

Camp3 Have you ever camped in a national park where you had to store your food, cookware, and other items that could attract wildlife in a wildlife-proof storage container or inside your vehicle?

○ Yes (1)

○ Unsure (2)

○ No (3)

Camp4 In the past 3 years or in the next 2 years, did you or do you plan to camp in a national park with children in your party?

○ Yes (1)

○ No (2)

End of Block: Camping

100

Motivations1 In general, when deciding whether to store your food and other items that could attract wildlife, what level of influence does protecting your friends/family with you have on that decision?

○ No influence (1)

○ Little influence (2)

○ Moderate influence (3)

○ Important influence (4)

○ Very important influence (5)

Feedback1-1 So far, have you felt unsure about how to answer any of the questions because of how they were asked or how the response options were given? *You can click the back button to double check.*

○ Yes (1)

○ No (2)

Feedback1-2 If yes, which question(s) do you recall being difficult to answer and why? Please describe as best as you can. Your response will be used to improve the survey.

_____

_____

_____

_____

_____

Transition Next, you're going to see a poster the national parks are considering using in campgrounds to encourage campers to follow their guidelines to prevent wildlife from getting into campers' food, trash, and other scented items. After seeing the message, you'll be asked a series of questions related to the poster, so please read it completely and carefully.

Promotion Frame Carefully examine and read the poster you'll be shown on the next page before moving on to the next questions. For your reference, this same poster will be included under each set of questions to follow.

Wildlife attractants refers to any items you would bring camping that can have a scent: food, non-water drinks, trash, cookware, servingware, and scented toiletries.

Page Break

102

Promotion Stimulus

Prevention Frame Carefully examine and read the poster you'll be shown on the next page before moving on to the next questions. For your reference, this same poster will be included under each set of questions to follow.

Wildlife attractants refers to any items you would bring camping that can have a scent: food, non-water drinks, trash, cookware, servingware, and scented toiletries.

Page Break

103

Prevention Stimulus

DN Frame Carefully examine and read the poster before moving on to the next question. For your reference, this same poster will be included under each set of questions to follow.

<u>Wildlife attractants</u> refers to any items you would bring camping that can have a scent: food, non-water drinks, trash, cookware, servingware, and scented toiletries.

DN Stimulus

Pro + DN Frame Carefully examine and read the poster before moving on to the next question. For your reference, this same poster will be included under each set of questions to follow.

Wildlife attractants refers to any items you would bring camping that can have a scent: food, non-water drinks, trash, cookware, servingware, and scented toiletries.

Page Break ———————————————

105

Pro + DN Stimulus

Prev + DN Frame Carefully examine and read the poster before moving on to the next question. For your reference, this same poster will be included under each set of questions to follow.

Wildlife attractants refers to any items you would bring camping that can have a scent: food, non-water drinks, trash, cookware, servingware, and scented toiletries.

Page Break

106

Prev + DN Stimulus

Control Frame Carefully examine and read the poster before moving on to the next question. For your reference, this same poster will be included under each set of questions to follow.

Wildlife attractants refers to any items you would bring camping that can have a scent: food, non-water drinks, trash, cookware, servingware, and scented toiletries.

Control Stimulus

Att1 Select your level of agreement or disagreement with each of the following statements. If needed, the poster from the previous page is below these questions for your reference.

Wildlife attractants refers to any items you would bring camping that can have a scent: food, non-water drinks, trash, cookware, servingware, and scented toiletries.

	Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
Properly storing my wildlife attractants seems fun. (Att-fun)	○	○	○	○	○
Properly storing my wildlife attractants seems easy. (Att-easy)	○	○	○	○	○
Properly storing my wildlife attractants seems good. (Att-good)	○	○	○	○	○
Properly storing my wildlife attractants seems valuable. (Att-valuable)	○	○	○	○	○
It seems necessary to store my wildlife attractants properly. (Att-necessary)	○	○	○	○	○

Att2 Select your level of agreement or disagreement with each of the following statements. <u>Wildlife attractants</u> refers to any items you would bring camping that can have a scent: food, non-water drinks, trash, cookware, servingware, and scented toiletries.

	Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
Storing my wildlife attractants properly seems effective at keeping wildlife from getting my attractants. (Att-effective)	○	○	○	○	○
It seems desirable to store my wildlife attractants properly. (Att-desirable)	○	○	○	○	○
It seems practical to store my wildlife attractants properly. (Att-practical)	○	○	○	○	○
It seems exciting to store my wildlife attractants properly. (Att-exciting)	○	○	○	○	○
It seems enjoyable to store my wildlife attractants properly. (Att-enjoyable)	○	○	○	○	○

Q58 ${e://Field/Case}

Subnorm1 How often do your friends and family properly store their wildlife attractants when camping? Wildlife attractants refers to any items you would bring camping that can have a scent: food, non-water drinks, trash, cookware, servingware, and scented toiletries.

○ Never (1)

○ Sometimes (2)

○ About half the time (3)

○ Most of the time (4)

○ Always (5)

Q31 ${e://Field/Case}

Feedback2-1 How about now? Any confusing questions?

○ Yes (1)

○ No (2)

Feedback2-2 If yes, which question(s) do you recall being difficult to answer? Please describe as best as you can. Your response will be used to improve the survey.

_____

Q43 ${e://Field/Case}

End of Block: Feedback

Start of Block: Dynamic Norms

Dynnorm Select your level of agreement or disagreement with this statement:

More and more campers are trying to follow park guidance for storing and monitoring their wildlife attractants.

○ Strongly disagree (1)

○ Disagree (2)

○ Neither agree nor disagree (3)

○ Agree (4)

○ Strongly agree (5)

Q33 ${e://Field/Case}

End of Block: Dynamic Norms

Start of Block: Perceived Behavioral Control

Percont1 I decide how to store my wildlife attractants.

○ Strongly disagree (1)

○ Disagree (2)

○ Neither agree nor disagree (3)

○ Agree (4)

○ Strongly agree (5)

Percont2 I know how to store my wildlife attractants properly.

○ Strongly disagree (1)

○ Disagree (2)

○ Neither agree nor disagree (3)

○ Agree (4)

○ Strongly agree (5)

Q34 ${e://Field/Case}

End of Block: Perceived Behavioral Control

Start of Block: Behavioral Intentions

114

Behint1 I will properly store my wildlife attractants on my next camping trip to a national park. As a reminder, <u>wildlife attractants</u> refers to any items you would bring camping that can have a scent: food, non-water drinks, trash, cookware, servingware, and scented toiletries.

○ Strongly disagree (1)

○ Disagree (2)

○ Neither agree nor disagree (3)

○ Agree (4)

○ Strongly agree (5)

Q35 ${e://Field/Case}

End of Block: Behavioral Intentions

Start of Block: Manipulation Checks 2.0

Q88 Next, we'd like to understand what you think the message is about on the poster you've seen throughout this survey. Review it one more time and then answer one question about it.

Q36 ${e://Field/Case}

Q57 Based on the information in the poster image above, choose the option that best describes what the message is about.

○ The message gives information about the increasing number of park campers who are making an effort to properly store their attractants. (1)

○ The message makes you focus on achieving a great camping experience as a result of properly storing your wildlife attractants. (2)

○ The message makes you focus on avoiding ruining your camping experience as a result of properly storing your wildlife attractants. (3)

○ The message gives information about the increasing number of park campers who are making an effort to properly store their attractants AND makes you focus on achieving a great camping experience as a result of properly storing your wildlife attractants. (4)

○ The message gives information about the increasing number of park campers who are making an effort to properly store their attractants AND makes you focus on avoiding ruining your camping experience as a result of properly storing your wildlife attractants. (5)

○ The message is only about how to properly store and monitor wildlife attractants. (6)

Attrib1 Which age range (in years) do you fall under?

○ 18-24 (1)

○ 25-34 (2)

○ 35-49 (3)

○ 50-64 (4)

○ 65+ (5)

○ Prefer not to say (6)

Attrib2 Which gender do you identify as?

    ◯ Male (1)

    ◯ Female (2)

    ◯ Non-binary or third gender (3)

    ◯ Prefer not to say (4)

Feedback3-1 Okay, last time, we promise: Were any of those questions confusing?

    ◯ Yes (1)

    ◯ No (2)

Feedback3-2 If yes, which question(s) do you recall being difficult to answer? Please describe as best as you can. Your response will be used to improve the survey.

    _____

    _____

    _____

    _____

    _____

Feedback3-3 Reflecting on the survey overall, do you have any suggestions to improve it or any other concerns you wish to share? Leave blank if none.

    _____

Appendix C: Final Survey

Q1 Have you camped in a national park within the past three (3) years?

◯ Yes (1)

◯ No (2)

Q2 Do you plan to camp in a national park within the next two (2) years?

◯ Yes, definitely (3)

◯ Yes, likely (4)

◯ No (5)

Q4 **Please carefully read the following information about the study and your rights as a participant should you choose to participate.**

My name is Jordan Gorostiza, and I am a researcher from Colorado State University in the Journalism and Media Communication department. We are conducting a research study examining past and future national park campers' attitudes and intentions to properly store wildlife attractants. You will be shown a park poster about properly storing wildlife attractants while camping and asked to provide your opinions on it. We'll then ask you about your storage plans for your next camping trip. The Principal Investigator is Dr. Katie Abrams from the Department of Journalism and Media Communication, and I am the Co-Principal Investigator. We would like you to take an anonymous online survey. Participation will take approximately 5-10 minutes. Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participation at any time without penalty. We will not collect your name or personal identifiers. When we report and share the data to others, we will combine the data from all participants. We hope to gain more knowledge on how to encourage national park campers to properly store their wildlife attractants. Upon completion of the study, you will receive compensation in the amount you have agreed to with

the platform through which you entered this survey.

We do not anticipate that there will be any risks to you as a consequence of your decision to complete this study. It is not possible to identify all potential risks in research procedures, but the researcher(s) have taken reasonable safeguards to minimize any known and potential (but unknown) risks.

To indicate your consent to participate in this research and to continue on to the survey, please click "Yes" below.

If you have any questions about the research, please contact Jordan Gorostiza at jordan.gorostiza@colostate.edu or Dr. Katie Abrams at katie.abrams@colostate.edu. If you have any questions about your rights as a volunteer in this research, contact the CSU IRB at: RICRO_IRB@mail.colostate.edu; 970-491-1553.

Do you wish to participate in this survey?

○ Yes (1)

○ No (2)

119

CRFProm Great! First, we'd like to learn a little bit about you to understand how campers' personalities may differ. Your best, honest answers are appreciated! Please rate the extent to which you agree or disagree with the following statements.

	Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
I feel like I have made progress toward being successful in my life. (CRF-progress)	○	○	○	○	○
When I see an opportunity for something I like, I get excited right away. (CRF-opportunity)	○	○	○	○	○
I frequently imagine how I will achieve my hopes and aspirations. (CRF-hopes)	○	○	○	○	○
I see myself as someone who is primarily striving to reach my "ideal self" to fulfill my hopes, wishes, and aspirations. (CRF-ideal-self)	○	○	○	○	○

CRFPrev Please rate the extent to which you agree or disagree with the following statements.

	Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
I usually obeyed rules and regulations that were established by my parents. (CRF-obey)	○	○	○	○	○
I worry about making mistakes. (CRF-worry)	○	○	○	○	○
I frequently think about how I can prevent failures in my life. (CRF-prevent-failure)	○	○	○	○	○
I see myself as someone who is primarily striving to become the self I "ought" to be – fulfill my duties, responsibilities and obligations. (CRF-ought)	○	○	○	○	○

End of Block: Chronic Regulatory Focus (Controlled covariate)

Start of Block: Camping

Camp1 How did you most often camp or plan to camp in national parks?

○ In a tent in a designated campground (1)

○ In an RV or hard-sided camping vehicle in a designated campground (2)

○ In a pop-up, soft-sided camper in a designated campground (3)

○ Backcountry camping with a tent, tarp, hammock shelter, or other type of soft-sided shelter (4)

○ In a car, truck, or van (5)

Camp2 What are the top 2-3 reasons you go camping? Separate each reason with a comma or semi-colon.

_____

Camp3 Have you ever camped in a national park where you had to store your food, cookware, and other items that could attract wildlife in a wildlife-proof storage container or inside your vehicle?

○ Yes (1)

○ Unsure (2)

○ No (3)

Camp4 In the past 3 years or in the next 2 years, did you or do you plan to camp in a national park with children in your party?

○ Yes (1)

○ No (2)

End of Block: Camping

122

Motivations1 In general, when deciding whether to store your food and other items that could attract wildlife, what level of influence does protecting your friends/family with you have on that decision?

○ No influence (1)

○ Little influence (2)

○ Moderate influence (3)

○ Important influence (4)

○ Very important influence (5)

Transition Next, you're going to see a poster the national parks are considering using in campgrounds to encourage campers to follow their guidelines to prevent wildlife from getting into campers' food, trash, and other scented items. Then, you'll be asked a series of questions related to it, so please read it completely and carefully.

Promotion Frame Carefully examine and read the poster you'll be shown on the next page before moving on to the next questions. For your reference, this same poster will be included under each set of questions to follow.

Wildlife attractants refers to any items you would bring camping that can have a scent: food, non-water drinks, trash, cookware, servingware, cleaners, soaps, bug spray, and other scented toiletries.

Promotion Stimulus

Prevention Frame Carefully examine and read the poster you'll be shown on the next page before moving on to the next questions. For your reference, this same poster will be included under each set of questions to follow.

Wildlife attractants refers to any items you would bring camping that can have a scent: food, non-water drinks, trash, cookware, servingware, cleaners, soaps, bug spray, and other scented toiletries.

Page Break

Prevention Stimulus

DN Frame Carefully examine and read the poster before moving on to the next question. For your reference, this same poster will be included under each set of questions to follow.

<u>Wildlife attractants</u> refers to any items you would bring camping that can have a scent: food, non-water drinks, trash, cookware, servingware, cleaners, soaps, bug spray, and other scented toiletries.

DN Stimulus

Pro + DN Frame Carefully examine and read the poster before moving on to the next question. For your reference, this same poster will be included under each set of questions to follow.

<u>Wildlife attractants</u> refers to any items you would bring camping that can have a scent: food, non-water drinks, trash, cookware, servingware, cleaners, soaps, bug spray, and other scented toiletries.

Page Break

126

Pro + DN Stimulus

Prev + DN Frame Carefully examine and read the poster before moving on to the next question. For your reference, this same poster will be included under each set of questions to follow.

<u>Wildlife attractants</u> refers to any items you would bring camping that can have a scent: food, non-water drinks, trash, cookware, servingware, cleaners, soaps, bug spray, and other scented toiletries.

Page Break

127

Prev + DN Stimulus

Control Frame Carefully examine and read the poster before moving on to the next question. For your reference, this same poster will be included under each set of questions to follow.

 Wildlife attractants refers to any items you would bring camping that can have a scent: food, non-water drinks, trash, cookware, servingware, cleaners, soaps, bug spray, and other scented toiletries.

Control Stimulus

Att1 Select your level of agreement or disagreement with each of the following statements. If needed, the poster from the previous page is below these questions for your reference.

Wildlife attractants refers to any items you would bring camping that can have a scent: food,

non-water drinks, trash, cookware, servingware, cleaners, soaps, bug spray, and other scented toiletries.

	Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
Properly storing my wildlife attractants seems fun. (Att-fun)	○	○	○	○	○
Properly storing my wildlife attractants seems easy. (Att-easy)	○	○	○	○	○
Properly storing my wildlife attractants seems good. (Att-good)	○	○	○	○	○
Properly storing my wildlife attractants seems valuable. (Att-valuable)	○	○	○	○	○
It seems necessary to store my wildlife attractants properly. (Att-necessary)	○	○	○	○	○

X→

130

Att2 Select your level of agreement or disagreement with each of the following statements.

Wildlife attractants refers to any items you would bring camping that can have a scent: food,

non-water drinks, trash, cookware, servingware, cleaners, soaps, bug spray, and other scented toiletries.

	Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
Storing my wildlife attractants properly seems effective at keeping wildlife from getting my attractants. (Att-effective)	○	○	○	○	○
It seems desirable to store my wildlife attractants properly. (Att-desirable)	○	○	○	○	○
It seems practical to store my wildlife attractants properly. (Att-practical)	○	○	○	○	○
It seems exciting to store my wildlife attractants properly. (Att-exciting)	○	○	○	○	○
It seems like I am reading this. Select the "neither" option to demonstrate you are. (Att-check)	○	○	○	○	○

It seems enjoyable to store my wildlife attractants properly. (Att-enjoyable)	○	○	○	○	○

End of Block: Behavioral Attitudes

Start of Block: Subjective Norms

Subnorm1 How often do your friends and family properly store their wildlife attractants when camping?

<u>Wildlife attractants</u> refers to any items you would bring camping that can have a scent: food, non-water drinks, trash, cookware, servingware, cleaners, soaps, bug spray, and other scented toiletries.

○ Never (1)

○ Sometimes (2)

○ About half the time (3)

○ Most of the time (4)

○ Always (5)

End of Block: Subjective Norms

Start of Block: Dynamic Norms

Dynnorm Select your level of agreement or disagreement with this statement:

More and more campers are trying to follow park guidance for storing and monitoring their wildlife attractants.

○ Strongly disagree (1)

○ Disagree (2)

○ Neither agree nor disagree (3)

○ Agree (4)

○ Strongly agree (5)

Q33 ${e://Field/Case}

End of Block: Dynamic Norms

Start of Block: Perceived Behavioral Control

Percont1 I decide how to store my wildlife attractants.

○ Strongly disagree (1)

○ Disagree (2)

○ Neither agree nor disagree (3)

○ Agree (4)

○ Strongly agree (5)

Percont2 I know how to store my wildlife attractants properly.

○ Strongly disagree (1)

○ Disagree (2)

○ Neither agree nor disagree (3)

○ Agree (4)

○ Strongly agree (5)

Q34 ${e://Field/Case}

Behint1 I will properly store my wildlife attractants on my next camping trip to a national park.

As a reminder, wildlife attractants refers to any items you would bring camping that can have a scent: food, non-water drinks, trash, cookware, servingware, cleaners, soaps, bug spray, and other scented toiletries.

○ Strongly disagree (1)

○ Disagree (2)

○ Neither agree nor disagree (3)

○ Agree (4)

○ Strongly agree (5)

Q35 ${e://Field/Case}

Q88 Next, we'd like to understand what you think the message is about on the poster you've seen throughout this survey. Review it one more time and then answer one question about it.

Q36 ${e://Field/Case}

Q57 Based on the information in the poster image above, choose the one option that best describes what the message is about.

○ The message gives information about the increasing number of park campers who are making an effort to properly store their attractants. (1)

○ The message makes you think about having a great camping experience as a result of properly storing your wildlife attractants. (2)

○ The message makes you think about avoiding ruining your camping experience as a result of properly storing your wildlife attractants. (3)

○ The message gives information about the increasing number of park campers who are making an effort to properly store their attractants AND makes you think about achieving a great camping experience as a result of properly storing your wildlife attractants. (4)

○ The message gives information about the increasing number of park campers who are making an effort to properly store their attractants AND makes you think about avoiding ruining your camping experience as a result of properly storing your wildlife attractants. (5)

○ The message is only about how to properly store and monitor wildlife attractants. (6)

Attrib1 Which age range do you fall under?

○ 18-24 years old (1)

○ 25-34 years old (2)

○ 35-49 years old (3)

○ 50-64 years old (4)

○ 65 years or older (5)

○ Prefer not to say (6)

Attrib2 Which gender do you identify as?

○ Male (1)

○ Female (2)

○ Non-binary or third gender (3)

○ Prefer not to say (4)

End of Block: Attribute Variable Questions