

The Bases of Bonding: The Psychological Functions of
Place Attachment in Comparison to Interpersonal Attachment

by

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B.A., University of British Columbia, 2003

M.Sc., University of Victoria, 2008

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ABSTRACT

This dissertation identified key parallels between the theories of place attachment and interpersonal attachment, a comparison that then informed three objectives of the research program: (1) to explore the *functions* of place attachment and describe which are shared with interpersonal attachment; (2) to examine how these functions differ according to stable individual differences in place and person attachment; and (3) to assess whether these functions differ according to the geographical scale at which the attachment rests. An additional methodological goal was to bring a new approach to the study of place attachment, drawing on experimental paradigms used in interpersonal attachment research. Research objectives were achieved through the completion of three separate studies.

Study 1 began the inquiry into the functions of place attachment with a content analysis of community members' open-ended descriptions about places to which they consider themselves attached. Thirteen categories of benefits were revealed: memories, belonging, relaxation, positive emotions, activity support, comfort--security, self-growth, freedom--control, entertainment, connection to nature, practical benefits, privacy, and aesthetics. These functions

were discussed with reference to the functions of interpersonal attachment previously identified in the literature.

The next two studies used experimental methodologies to further evaluate, and expand upon, the functions of place attachment identified in Study 1. Study 2 evaluated whether a *security* function exists for place attachment by assessing the impact of threat exposure on the mental accessibility of place attachment words. Specifically, threat exposure was operationalized by mistakes made on a lexical decision task, and place attachment proximity was represented by participants' subsequent reaction times to place attachment words in this task. Results showed that exposure to threats increased proximity-seeking to places of attachment, but not to other types of places.

Study 3 evaluated the ability of place attachment to provide belongingness, control, meaningfulness, self-esteem, and improved affect, and this was done within the context of a commonly-used ostracism paradigm. Place attachment was manipulated using a visualization exercise, and ostracism was manipulated using a bogus rejection paradigm. The dependent variables included participants' current moods and experienced levels of psychological need satisfaction (i.e., meaning, self-esteem, control, and belongingness). Although ostracism did not interact with the place attachment visualization, the latter was found to increase individuals' current levels of self-esteem, meaning, belongingness, control and negative affect, but only among participants without an avoidant place attachment style.

This comparison between interpersonal attachment and place attachment revealed some overlap between the two types of bonding, and most importantly, inspired new research questions and methodological approaches to advance the study of place attachment – a less mature theory, but one with much applied value and theoretical potential.

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CHAPTER 1

Literature Review

1.1 Introduction

Bonding is central to the human experience. We necessarily form meaningful connections with particular people, groups, objects, and places. These many ties situate and secure us in broader social and physical environments, connect us to the past, and influence future behaviours. Attachment theory, pioneered by John Bowlby (1969/1982) and Mary Salter Ainsworth (1967), has dominated much of the discussion on person-to-person bonding, especially that which occurs within the infant-caregiver dyad. It proposes that an innate behavioural system regulates proximity to an “attachment figure,” a specific person who provides an individual with security and comfort in the face of threats, and at the same time, facilitates their exploration and growth. Thus, attachment bonds are largely affective connections between an individual and attachment figure that provide security through maintained proximity. Although the bond is initiated in infancy, it continues throughout life, and in adulthood, romantic partners and close friends typically serve as additional attachment figures (e.g., Fraley, 2002).

Despite the concentration of research on interpersonal relationships, bonding does not occur solely on a person-to-person basis. As environmental psychologists and other researchers have shown, attachment extends beyond the interpersonal bond; most people also develop bonds with places (e.g., Altman & Low, 1992; Giuliani, 2003; Lewicka, 2011; McBain, 2010; Morgan, 2010), physical objects, certain characteristics of the self, or even ideas (Belk, 1988). Like interpersonal attachment, place attachment is a primarily affective connection maintained

through proximity, but the connection is to a significant place rather than a caregiver or significant other.

Traditional attachment theorists have paid little attention to these differing attachment figures and instead predominantly focus on child-parent or partner-partner bonds. As such, knowledge of place attachment has evolved somewhat separately from knowledge of interpersonal attachment. As Morgan (2010) noted, the “lack of dialogue between developmental psychology and environmental psychology’s place theory is apparent from the very limited referencing across these fields in scientific journals” (p. 13-14). Neglect for the physical environment is not uncommon within the discipline of psychology as a whole (Gifford, 2007). Rather, much research devoted to internal processes, from intra psychic tension in psychoanalysis to the more recent emphasis on cognitive models and their neurological correlates, has dominated the sphere of inquiry (Nairne, Lindsay, Paulhus, & Smith, 2004). Although social psychology has highlighted the social context, physical variables often achieve a lesser emphasis, and person-place processes that may be analogous to social processes are rarely investigated. The implication of this for the study of human bonding is that the overlap and discrepancies between interpersonal and place attachment have not yet been fully explicated.

A few scholars have begun to situate place and person attachment alongside each other, but these comparisons tend to be theoretical rather than empirical, and limited to select aspects of the bonds, such as development (Hay, 1998; Morgan, 2010), definitions (Giuliani, 2003; Steel, 2000), or loss (e.g., Fried, 2000). One exception is McBain’s (2010) recent dissertation which attempted to measure stable individual differences in place attachment by adapting scales of interpersonal attachment styles to suit person-place bonds. Despite these beginnings, much work remains if we are to develop a comprehensive comparison of the two theories. This comparison

is important for revealing potential gaps in the theory of place attachment and for generating opportunities to accelerate its development. In addition, this comparison may also contribute to the understanding of what attachment relationships (of any type) have in common. That is, it has the potential benefit of identifying the general nature of attachment, regardless of the object. Thus, a comparison between interpersonal and place attachment has a construct generalization goal.

This chapter provides an overview of the main principles and methodologies of attachment theory and compares them to those of place attachment. This is not to suggest that place attachment and person attachment relationships are interchangeable, because they undoubtedly have differences. However, we aim to identify which principles of attachment are common across people and places and, conversely, which differ. Drawing on the rich traditions of interpersonal attachment theory, this analysis should also inform place attachment, a less mature theory, by identifying appropriate areas for theory development and offering more sophisticated methodological strategies.

1.2 Theory Beginnings

1.2.1 Interpersonal Attachment

The major tenets of attachment theory stemmed from the work of John Bowlby (1969/1982) and Mary Salter Ainsworth (1967). Bowlby, who was working at the British Psychoanalytic Institute, rejected Freud's (1940) view that children's attachment to their caregiver(s) was based on the satisfaction of physical needs such as hunger. Rather, he reasoned that this bond fulfilled the psychological needs for comfort and safety. Bowlby (1969/1982) was also concerned about the effects of severed attachments. Observational work found that children

who were separated from their parents experienced several stages of severe distress (Robertson & Bowlby, 1952). Bowlby further speculated that such separation would produce long-lasting psychological problems.

Ainsworth (1967) advanced the knowledge of how attachment is expressed behaviourally, and provided early cross-cultural validation of the theory when similar behaviours were observed among infants and caregivers in England and Uganda. Her most influential work delineated individual differences in attachment, called “attachment styles.” Since the seminal works of Bowlby and Ainsworth, thousands of articles investigating the theory have been published. For example, a literature search on the PsycInfo database using the term “attachment theory” yielded approximately 3900 articles.

1.2.2 Place Attachment

Love for place is a prevalent part of human history and culture, as shown by the many references to locality devotion found throughout literature. However, it was not until the mid 1900s that scientists took interest and began to study person-place bonds more systematically. Fried’s (1963) study of Boston West Enders who were displaced from their homes was among the first to document the deep affective ties that form between people and places.

In the 1970s, while psychologists delved into the topic of person-person bonding, person-place bonding gained interest among humanistic geographers. Tuan’s (1974) philosophical approach to what he called “topophilia,” or love of place, and Relph’s (1976) phenomenological approach, emphasized subjective place experience, deep emotional ties, and individually constructed place meaning. Around this time, sociologists began to explore sense of community using quantitative methodologies (e.g., Kasarda & Janowitz, 1974). Environmental psychologists did not engage in the topic until the 1980s and 1990s, fuelled by emerging interests in person-

place relationships including territoriality (Altman, 1975) and place identity (Proshansky, 1978; Proshansky, Fabian, & Kaminoff, 1986).

Multidimensional definitions of the place attachment concept then began to be offered. For example, Shumaker and Taylor (1983) postulated physical, social, and affective components of person-place bonds. They also noted that perceived residential choice and the comparison level of alternative places would play a role in the valence of the bond. In 1992, Altman and Low published their well-cited volume on place attachment, which further explored and contributed to the understanding of place attachment as a multidimensional construct. Since then, place attachment research has proliferated. For example, a literature search on PsycInfo using the terms “place attachment” and “sense of place” published in psychology journals revealed an increase in place attachment research over the past 30 years (Figure 1.1).

We recently organized common definitions of place attachment into a tripartite framework, consisting of person, place, and process dimensions (Scannell & Gifford, 2010a). The person dimension describes the actors who are attached, and whether their attachment rests in individually based meanings (e.g., personal experience), collectively based meanings (e.g., cultural or religious significance) or a combination of both. The place dimension describes the social and physical qualities of the important place, given that place attachments can be rooted in social ties or can stem from aesthetic or landscape features. The process dimension details the psychological content of the attachment, including affective, cognitive, and behavioural components.

Although this, and related articles (e.g., Gustafson, 2001; Raymond, Brown, & Weber, 2010) refine definitional concerns, others test the predictive ability of place attachment, and have begun to establish its practical importance. In a recent special issue of the *Journal of*

Environmental Psychology, place attachment and place identity were highlighted as predictors of pro-environmental behaviour (Devine-Wright & Clayton, 2010). Others have noted the relevance of place attachment to issues of self-regulation (e.g., Korpela, Hartig, Kaiser, & Fuhrer, 2001), immigration (Ng, 1998), and war (Billig, 2006). As forecasted by Low and Altman (1992), place attachment appears to have moved from a stage of concept development in which the concept is examined and determined to be multidimensional, to the stage of application in which the concept is applied to practical issues. Despite this, however, the theory would still benefit from comparison and expansion, and one promising starting place is interpersonal attachment theory.

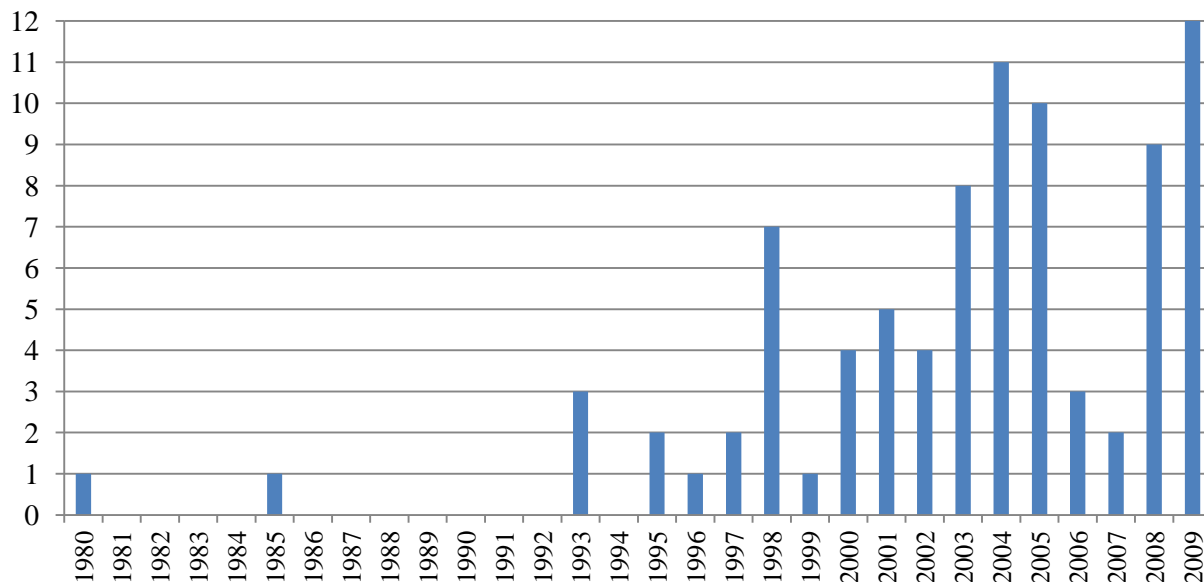


Figure 1.1. Number of articles found in psychology journals between 1980 and 2009 that included the terms “place attachment” or “sense of place.” Source: ISI Web of Science, 2010.

1.2.3 The Universality of Place Attachment

One question relevant to this investigation is whether place attachment is a universal process, or whether it is a phenomenon unique to the contemporary historico-cultural context.

Although testing the universality of place attachment is beyond the scope of this dissertation, it is

worth commenting on, given that it underlies some of my assumptions. In general, I view emotional bonding to place as a universal psychological principle. This follows from Bowlby (1969) and Ainsworth's (1967) interpersonal attachment tradition, which, as mentioned, is rooted in ethology and follows Darwin's principles of evolution. They claimed that attachment is a universal psychological process that evolved because it contributes to fitness. Young children are more likely to survive to the age of maturity when they have formed an attachment to their parent(s). In support of this claim of universality, Ainsworth et al. (1978) provided cross-cultural evidence of infant attachment styles, which has more recently been corroborated by larger-scale studies (Schmitt et al., 2004). Attachment researchers maintain that, like other evolved traits, attachment is universal, but it can be expressed somewhat differently depending on contextual factors. For example, the percentages of the various attachment styles (i.e., see section 1.5.1) are generally comparable across countries, except in some African countries (i.e., Ethiopia and Botswana), where avoidant attachment is slightly more prevalent, and some Asian countries (i.e., Indonesia and Taiwan) where anxious attachment is slightly more prevalent (Schmitt et al., 2004). Avoidant attachment is thought to increase when resources are scarce and mortality rates are high, and anxious attachment is thought to be more common in collectivist cultures where close relationships and opinions of others are emphasized.

Likewise, place attachment appears to be extremely common and is relevant to survival. In her comprehensive review of place attachment research, Lewicka (2011) describes the variety of places to which attachments form (including suboptimal ones), and concludes that place attachments are and have been important to humans across cultures, place types, and eras. However, the type and degree of place attachment can differ according to contextual factors (see also section 1.2.4).

Even researchers who have investigated cultural elements of place attachment do not reject the possibility that it is ubiquitous. Low (1992) described how culture can create place meaning through genealogical connections to the place, collective spiritual or mythological meanings, participation in celebratory events, storytelling, and place-naming. Culturally determined meanings can, in turn, influence the types of places to which individuals become attached. Despite these differences in the designation of sacred spaces, Low argues that place attachment is prevalent in many cultures. Similarly, an analysis of religion and place attachment finds connections to place across a variety of religious groups and throughout different historical periods (Mazumdar & Mazumdar, 2004). Descriptions of places of worship, sacred structures, burial sites, places in nature, or mythical sites abound in ancient and contemporary texts. Other scholars have detailed the importance of place evident in medieval and contemporary literary works (Lutwack, 1984).

From such works, place attachment appears important across cultures and historical periods. On the other hand, like other concepts in psychology (see Gergen, 1973), place attachment is susceptible to cultural and historical influences. In the last 10 years alone, we have seen a surge of interest in studying place attachment, which could be argued to have arisen from perceived threats to place attachment such as increased mobility, placelessness, climate change, or other unwanted global forces (Lewicka, 2011). Further, because place meanings and processes are socially constructed (e.g., Massey, 1994), the types of places to which attachments form, and the expressions of the attachment likely vary. Additional research in cross-cultural studies, anthropology, history, neuropsychology and other fields will be important to verify the universality of place attachment, although current work in environmental psychology appears to support this assumption.

1.2.4 Notions of “Place”

To fully investigate the functioning of place as an attachment figure, we must consider our usage of the term “place.” Unfortunately, definitions of place in environmental psychology have been underdeveloped. A full appreciation of the complexities of place therefore requires that environmental psychologists further expose ourselves to the richness of the place concept that has evolved in other disciplines, namely, in geography. The approaches are diverse, ranging from the ideographic approaches of regional and cultural geographers who describe the particularities of specific regions on Earth, to the generalizations of the person-place experience offered by humanistic geographers, to the more progressive approaches of social and cultural geographers (e.g., Cresswell, 2004). The following section introduces several of these approaches to place, with a particular emphasis on contributions from social and cultural geography, and uses them to inform our understanding of place attachment.

1.2.4.1 Contributions from Humanistic Geography. The limited consideration of the place concept in environmental psychology has mainly relied on ideas offered by humanistic geographers in the 1970s. Tuan’s (1974) definition of place as space invested with meaning is among the most common conceptions of place adopted by environmental psychologists. Also cited are Canter’s (1977) and Relph’s (1976) comparable definitions of place as comprised of three components: the attributes of the physical environment, the actions that are performed there, and the resulting meanings that arise from these interactions.

Ideas about place in humanistic geography have also influenced views of place attachment in environmental psychology. Thus, space becomes place when it is imbued with meaning, and place can become a place of attachment when individuals develop a strong emotional connection to those meanings (Milligan, 1998; Stedman, 2003; Tuan, 1974). The

connection to meaningful places has been recognized by thinkers in both disciplines as a basic human need (e.g., Kaiser & Fuhrer, 1997; Relph, 1976; Tuan, 1974). For example, Lippard (1997) suggested that, even under the pressures of increased globalization and mobility, the experience of place can never dissolve, given that place is “the geographical component of the psychological need to belong somewhere” (p. 7). Or, as Relph (1976) declared, “to be human is to live in a world that is filled with significant places: to be human is to have and to know your place” (p. 1). These views are congruent with the assumption underlying this dissertation, that place attachment is functional because it fosters the satisfaction of several important psychological needs. However, theories of place that offer alternate, and perhaps more elaborate understandings of the place construct will also be considered throughout the design and interpretation of this research.

1.2.4.2 Contributions from Phenomenology. More in-depth understandings of place can be found in related person-environment disciplines, such as phenomenology. A phenomenological approach probes the meaning and contexts of phenomena, emphasizing the intersubjectivity of meaning that is generated within a horizon of broader social contexts (e.g., see Graumann, 2002). Phenomenological approaches to place uncover the experiences and meanings of place beyond that of commonplace meanings. Thus, place becomes an extremely rich and personal phenomenon. Place phenomenologists influenced by Brentano (1874) and Husserl’s (1973) idea of “intentionality,” also recognize the importance of place to human existence (e.g., see Graumann, 2002). As Brentano postulated, consciousness depends upon having an object to be conscious of, and so all mental phenomena are necessarily directed toward objects. Furthermore, because all objects are situated in place, consciousness and place cannot be

disentangled (Relph, 1976). In this way, phenomenologists point to place-derived consciousness as the centre of human existence.

1.2.4.3 Contributions from Social and Cultural Geography. Social and cultural geographers have critiqued the humanistic perspective of place as oversimplified and exclusionary for assuming that the place experience is universal (e.g., Cresswell, 2004). For example, early humanistic geographers describe home as a prototype of place where individuals can attain belongingness and respite (e.g., Bachelard, 1994; Seamon, 1987), but not everyone experiences home in this way. For some, home can be a place of abuse or oppression, when patriarchal structures are reproduced to the further disempowerment of women (Ahrentzen, 1992; Rose, 1993). An alternate perspective raised by bell hooks (2009) is that the home can be an empowering place where black women can take back power in an otherwise white world (e.g., see Hubbard, Kitchin & Valentine, 2004).

Thus, these approaches reject the taken-for-grantedness of place, and underline the importance of differences in place experiences. In studying place attachment, researchers should not assume that absence of attachment to one type of place denotes the absence of all place attachments. One methodological improvement, therefore, would be to allow participants to select their own places of attachment, rather than assess levels of attachment to fixed places such as “home.”

Social and cultural geographers also recognize that the diversity of place meanings is a product of the broader socio-political structures within which place experiences occur. That is, place appearances, meanings, and uses are socially constructed by cultural, political, legal, classist, patriarchal, capitalist, and racialized systems (e.g., Cresswell, 2004; Harvey, 1996; Massey, 2005). Individuals who differ in their standing on demographic dimensions experience

the effects of these systems in uneven ways, which can enable or disable their agency within a place (Massey, 1994). Therefore, varied place meanings are constructed, partly, by the uneven distribution of power, such that agents in positions of power have greater control in defining place, which impacts those with lesser power (Cresswell, 2004).

In relation to place attachment, people with different sociodemographic characteristics likely differ in their *kind* of attachment to given place (i.e., which meanings they become attached to, or how they enact their attachment), although it is unclear how the restriction of place meanings, actions, and access impacts the *degree* of attachment. In a study of residents living in marginalized neighbourhoods, place attachment remained strong despite very poor conditions (Corcoran, 2002). Residents drew upon their memories of the place as it had existed in the past, along with their long time residential status, to remain connected, or to mobilize improvement efforts. Similarly, Fried (1963) reported very high levels of place attachment among immigrants living in a dilapidated Boston neighbourhood. However, other works portray stronger place attachment among homeowners, and individuals living in neighbourhoods of better aesthetic quality, and in places wherein control is greater (Pinet, 1988; Twigger-Ross & Uzzell, 1996; Uzzell, Pol, & Badenas, 2001). Others have shown that after a place has been destroyed or is no longer accessible, its resources, sacred meanings, and practices may be lost too, and this can cause lasting psychological and cultural damage (e.g., Windsor & McVey, 2005). Thus, the influence of social, physical, and other structural factors on the development of place attachment remains complex.

Despite the emphasis among social and cultural geographers that structural factors are important to place, conceptions of place are not uniform even within this sub-discipline. For example, David Harvey (1993) considers place as a form of fixity or permanence that is in

contrast to the mobility of global capital. To obtain a share of the mobile capital, places must compete by highlighting their uniqueness, whether it is through a tourist attraction, a unique agricultural profile, annual event, or other local feature. In this way, places are marketed and commodified, and gain essentialized identities that are enclosed by boundaries. Therefore, place is constructed through reaction to the uniformity of capitalism. Even seemingly more “authentic” places, such as communes or places that do not compete for mobile capital are sought out to resist capitalist ideals. Thus, Harvey’s concern is that reactionary processes are central to the social construction of place.

Others do not share Harvey’s conceptualization of place as essential, bounded, and introverted. Most notably, Doreen Massey (1993, 1994) rejects Harvey’s views and offers what she calls a “progressive sense of place.” Massey (1994) exposes place as layered with meanings that converge from diverse sources together into a unique local network. Although she agrees that global factors can have an impact on place, she disputes the claim that place is primarily exclusionary and reactionary. Rather, she describes how place is inclusive, gathering threads from a multiplicity of places, times, and social and political structures, taking in, rather than operating in reaction to those external forces:

Instead then, of thinking of places as areas with boundaries around, they can be imagined as articulated moments in networks of social relations and understandings, but where a larger proportion of those relations, experiences and understandings are constructed on a far larger scale than what we happen to define for that moment as the place itself, whether that be a street, or a region or even a continent. And this in turn allows a sense of place which is extroverted,

which includes a consciousness of its links with the wider world, which integrates in a positive way the global and the local (p. 155).

In this way, the local is always connected to the global, and through a particular combination of these links, place gains uniqueness.

An important part of Harvey, Massey and others' (e.g., Seamon, 1979) definitions is the notion that place is socially constructed through processes. Unlike some humanistic geographers (e.g., Tuan, 1974), who view place as a sort of "pause," social and cultural geographers understand place as continually changing. Place is produced and reproduced through the practices that occur there. In this sense, time and space cannot be separated, and neither can space and place.

Interpersonal attachment researchers have already begun to emphasize the *processes* inherent in close relationships and individuals (e.g., see Shaver & Mikulincer, 2001), but place attachment researchers have considered this less fully (e.g., Devine-Wright, 2014). To inform our definitions of place and place attachment, environmental psychologists would benefit by considering more dynamic theories of place. If place is not a static entity, as Massey suggests, then what is the "figure" to which individuals seek proximity? Massey's view of place-as-process may be helpful for place attachment researchers. If place is a process rather than a rooted thing, then attachment could be considered a sometimes-occurring part of that process. Indeed, place attachment theories have recently been critiqued as too structural and descriptive, and not dynamic or process-oriented (Devine-Wright, 2014). But, as some authors have shown, place attachment involves processes, such as the sequence of seeking security, receiving it, and then moving outward (e.g., Morgan, 2010). In this sense then, place attachment can be integrated into conceptualizations of place as dynamic. As Soja (1996) noted, conceptions of space should

include “third space,” which goes beyond the binaries of objective and subjective space and place, and towards lived space, where places are practiced and reproduced. This dissertation can situate place attachment within this practice by delineating that one element of a place performance can be place attachment, where individuals connect emotionally, cognitively, and behaviourally, to place. By identifying the functions of place attachment, this dissertation will further clarify the reasons for, and outcomes of, engaging in this place process.

In sum, environmental psychologists, and place attachment researchers in particular, can gain much from concepts of place offered in geography. Primarily, understandings of place should consider how broader structures, whether economic, political, or cultural, could exert influence on an individual’s experience of place attachment. However, this does not negate the claim that place attachment (like person attachment) is a tendency that evolved to serve a variety of psychological functions. Despite the existence of multiple place meanings, I contend that individuals, through the “need for place” may often gain an attachment to at least one place.

Nevertheless, it does bring awareness to the issue that place attachment is still nested in multi-contextual units of the environment. Indeed, some authors have called for the need to incorporate a more ecological approach into environmental psychology research (e.g., see Winkel, Saegert, & Evans, 2009). Without exceeding the scope of the current research tradition and aims, some structural influences on place attachment and its functioning will be taken into consideration. Demographic information will be included in analyses (e.g., Massey, 1993, identified class and gender as two important socially constructed influences of the place experience), and results from the three studies will be interpreted with the awareness of such structural influences in mind.

1.3 The Attachment Behavioural System

1.3.1 Interpersonal Attachment

Bowlby (1969) and Ainsworth (1967) defined *affectional bonds* as those interpersonal bonds that are long-lasting, directed toward particular individuals, expressed through proximity-seeking, and are emotionally significant. *Attachment bonds* belong to this larger category of affectional bonds, but have the additional function of providing security and comfort to the individual.

Attachment bonds have complex behavioural aspects. Indeed, attachment is considered to be one of five innate behavioural systems that evolved to increase the chances of survival and reproduction among humans and other species (Bowlby, 1969/1982). Along with attachment are the caregiving, exploration, reproduction, and affiliation systems. Behavioural systems operate when their respective goals are activated by internal or external cues. An organized host of behaviours are then performed, and the system is deactivated once the particular goal, or “predictable outcome” is attained.

Bowlby (1982) delineated four fundamental attachment behaviours: proximity, safe haven, secure base, and separation distress. The key goal of the attachment behavioural system is to maintain *proximity* to a primary caregiver, or “attachment figure,” who will in turn provide protection and comfort (Bowlby, 1969). The system contains behaviours that are fixed-action patterns, which elicit proximity without correction (e.g., crying), and those that are goal-corrected, which can be monitored and adjusted to maximize the chances of goal attainment. For example, a child whose attachment behavioural system is activated and who unsuccessfully calls to get the attention of the caregiver might then have to physically seek them out to attain adequate proximity.

Proximity has numerous benefits, such as obtaining food, interacting with others socially, and learning, but primarily, this system evolved because infants are extremely vulnerable to threats and environmental stressors (Bowlby, 1969/1982). In evolutionary history, infants able to maintain proximity to their caregivers were those most likely to survive. When an infant perceives threatening stimuli or experiences distressing internal states (e.g., pain), their attachment system enacts various proximity-maintaining behaviours that serve to adjust distance to their caregiver.

As early as one month after birth, infants employ “signalling” behaviours, such as crying, smiling, babbling, calling, and gesturing, all of which draw the caregiver closer to them. Infants also employ “approach” behaviours, such as clinging and sucking, to bring themselves closer to their caregiver. Around the age of nine months, when cognitive and motor skills are more developed, they will actively seek out their caregiver by following them, calling them, or using other strategies. Signalling and approach behaviours can vary in intensity, and caregivers can often distinguish among different intensities (e.g., different types of crying).

The attachment system is deactivated when proximity has been achieved. The child attains a sense of security, calm, and comfort, and in this way, the caregiver offers a *safe haven* for the child. As such, the caregiving behavioural system operates in concert with, and is complementary to, the attachment behavioural system. It aims to protect and comfort one’s child, and therefore has the same predictable outcome of the attachment system, namely, proximity. Once attained, proximity deactivates the attachment system.

The safe haven used for retreat is transformable into a *secure base* where the child’s exploration and affiliation systems can function. The secure base allows the child to venture out and interact with the surrounding social and physical environment, while remaining in range so

as to achieve fast proximity and protection as needed. Therefore, attachment is not only an important way that individuals cope with threats and stressors; it can also foster exploration and goal pursuit. A secure base has three defining characteristics (Feeney & Thrush, 2010). First, the attachment figure must be available and responsive in case they are needed. Second, the attachment figure should not interfere with exploration, but help should come when it is solicited. Third, the attachment figure can encourage exploration. In what Feeney (2007) calls the “dependency paradox,” individuals who view their attachment figure as a secure base are more autonomous. Feeling confident that you can approach your partner as needed reduces preoccupation with closeness and actually increases autonomy. For example, mothers who console their crying baby more quickly report less frequent crying. In other words, accepting dependency promotes independence.

Importantly, the attachment behavioural system reacts to prolonged periods of *separation*. Infants who are unable to attain proximity to their attachment figure experience separation distress (Bowlby, 1969). This distress manifests through several stages, beginning with protest, then despair, and eventually detachment, where the child resists forming close bonds with others.

More recent models have emphasized how attachment-related behaviours unfold in a sequential process. This occurs because our attachment schemas contain a type of procedural knowledge about what to do when faced with a threat. This sequence of actions is referred to as a secure-base script (Mikulincer, Shaver, Sapir-Lavid, & Avihou-Kanza, 2009). According to the integrative model (Shaver & Mikulincer, 2007), which combines information about the attachment-behavioural system with findings from the adult attachment literature, this script has three main elements. First, individuals monitor their environments for threats, and if one is

detected, the attachment system is activated. Second, individuals monitor the availability of their attachment figure, which in infants tends to be the primary caregiver, but in adults, tends to be close others, such as romantic partners or friends. If attachment figures are available and responsive, proximity is sought and security is achieved. Third, if the attachment figure is unavailable, individuals must resort to a secondary strategy: hyperactivation or deactivation. When *hyperactivating*, individuals demand the attention of the attachment figure by exaggerating threats or making pleas for help and attention. This strategy is more likely to emerge when attachment figures are inconsistent, providing help at times but being unresponsive at others. When *deactivating*, individuals deny the need for proximity, and instead they distance themselves from the relationship and become overly self-reliant. This strategy is more likely when attachment figures disapprove of emotional pleas for help or are consistently unresponsive.

Secondary strategies can also feed back and influence earlier parts of the system (Shaver & Mikulincer, 2007). Specifically, hyperactivators become overly vigilant to environmental threats, and overly reactive to signs that the caregiver is unavailable, whereas deactivators suppress proximity-seeking attempts. The chronic use of these strategies over time leads to individual differences in the functioning of the system called attachment styles (see section 1.5.1).

1.3.2 Place Attachment

Place attachment and interpersonal attachment are thought to share several defining features (Giuliani, 2003; Steel, 2000) that differ somewhat in terms of how they are expressed. One clear comparison made by these authors is that both types of bonds are long-lasting, particularly those bonds formed in childhood (i.e., with parents and with childhood homes). More obvious parallels are found with respect to Bowlby's four classes of attachment behaviour.

Chiefly, *proximity-seeking* is a hallmark attachment behaviour that is also exhibited toward places, and is included in most measures of place attachment as represented by Likert items such as “You wish to live in [this place] for the rest of your life” (Billig, Kohn, & Levav, 2006), or inversely, “It would be easy for me to move away from this area” (Twigger, 1992).

Proximity to place can be expressed through repeated visits or, for some types of places, electing to live there. Vacationers, for example, may revisit certain travel destinations (Aronsson, 2004), or even purchase second homes in these places (Kelly & Hosking, 2008). Pilgrimages satisfy proximity to sacred spaces (Mazumdar & Mazumdar, 2004). Some individuals who must live away from their primary residence part of the time (e.g., for work), maintain proximity to home by making weekly or bimonthly trips there (van der Klis & Karsten, 2009). When physical proximity is impossible, it can be done symbolically. For example, American Mormons living in Mexico maintain contact to their homeland by including familiar landscape elements in their settlements, such as wide streets, fields in town, and manicured lawns (Smith & White, 2004). Students living abroad connect to home by bringing familiar objects or visiting places with similar qualities to their homes (e.g., Ryan & Ogilvie, 2001). This is also seen when emigrants name places and design and use buildings in a way that reflects their heritage (Cresswell, 2004).

Unlike proximity-seeking in interpersonal attachment, proximity-seeking in place attachment has not been described in the context of a behavioural system, and so the antecedents of this type of place-related behaviour have not been identified. Whether proximity-seeking to place is causally activated by threatening stimuli is not clear. One similarity, however, is that alternative responses to suboptimal attachments appear to exist for both person and place attachment, but for place attachment this may occur by substituting one place of marginalization

with another place of belonging (e.g., Manzo, 2005), whereas coping with unsupportive caregivers occurs by employing secondary attachment strategies (Shaver & Mikulincer, 2007).

Places of attachment generally do offer a *safe haven* wherein one can retreat from threats, problem-solve, and gain emotional relief. This has been demonstrated among children, who retreat to their favourite places in part, to regulate their emotions, reduce stress, and gain mental clarity (Korpela, Kyttä, & Hartig, 2002). Other research has shown that individuals who are more attached to their neighbourhoods and homes tend to perceive them as safer than do those who are less attached (Billig, 2006; Brown, Perkins, & Brown, 2003; Dallago et al., 2009). Nevertheless, the experience of a given place as a safe haven may differ based on stage of life, gender, class, and other factors (Sixsmith, 1986). The safe-haven function may especially important for marginalized groups, or individuals who must cope with numerous stressors in their everyday lives (e.g., Fried, 2000; Manzo, 2003). However, neither interpersonal or place attachment bonds always have a positive valence. The emotions associated with a meaningful place can sometimes be negative or ambivalent (Manzo, 2005).

Thus, for both interpersonal and place bonds, proximity-seeking can provide safety and comfort. Like interpersonal attachment, therefore, place attachment enhances one's quality of life because a safe haven offers a reprieve from daily stressors (Shumaker & Taylor, 1983).

A place is also a *secure base* that promotes exploration. For example, travelers may prefer to check into their hotel before exploring the surrounding area, just as individuals moving to a new city are eager to locate and then personalize their new residences. The place provides the reference point and the anchor for wider expeditions. Once security is obtained, exploration, freedom, and confidence can flourish (Fried, 2000). Because the security of place can support exploration, some individuals experience place attachment and mobility as complementary;

home is a place to return to after being away (Gustafson, 2001). The notion of place as a secure base is more often equated to home than to other types of places (e.g., Dupuis & Thorns, 1996; Saunders, 1990; Sixsmith, 1986). When home is a secure base, it fosters stability, continuity, and a general sense of trust in the world (Dupuis & Thorns, 1986). Furthermore, owning a home can provide a more effective secure base than renting (Saunders, 1990). But home should not be taken-for-granted as the prototype of secure-base place attachment. When roles and expectations in the home support patriarchal systems, “home” can be a place of abuse or oppression (e.g., Rose, 1993). Further, a secure base may be found in other types of places. For example, Chawla (1992) found that some children used a tree house, green space, or some other location as a secure base from which they could explore the environment.

Finally, as with interpersonal attachment, *separation* distress occurs when person-place bonds are disrupted. Disruptions can include changes to a place that are perceived to be threatening (e.g., Devine-Wright, 2009), potential separation (e.g., Billig, 2006), and actual separation (e.g., Fullilove, 1996). In Fried’s (1963) study of displaced Boston residents, the predominant emotion was grief not unlike that which occurs when interpersonal bonds are broken. More recently, a sample of individuals who were displaced by Hurricane Katrina in 2005 experienced acute stress disorder, anxiety, and depression (Abramson, Stehling-Ariza, Garfield, & Redlener, 2008). Homesickness is another example of separation distress specific to places, and is reported by between 30% and 75% of participants in relevant studies (as cited in Scopelliti & Tiberio, 2010). One study showed that college students who moved farther from home reported more homesickness and made more return visits than did students whose homes were closer (Tognoli, 2003). These students also experienced a loss of self-esteem, identity, and efficacy, and decreased scholastic performance.

Place attachment bonds are especially salient for aboriginal peoples, and often form an important part of their cultural identities and well-being (e.g., West, 2003). Ties to place may contain sacred meanings, connections to ancestors, spirits, nature, food, medicines, customs, and ways of life (e.g., Windsor & McVey, 2005). These strong connections to place make place loss particularly devastating. Aboriginal peoples worldwide have faced disproportionate dislocation, such as from colonialism, and other actions by those in power. One example is the place loss of the Cheslatta T'En people, whose traditional lands were flooded to create the Kenny hydroelectric dam, which largely powers Alcan's smelter in Kitimat, BC (Windsor & McVey, 2005). The dislocation was forcible and sudden, and farms, communities, and cemeteries were destroyed. Following this, the Cheslatta T'En faced many social and spiritual losses; rates of alcoholism, suicide, health problems, and unemployment increased as a direct result of the loss of their place. Although their well-being has partly improved in recent years, Fischer (1999) has pointed out that few indigenous people fully recover from place disruption. Therefore, separation distress from place loss can have long-lasting consequences at the cultural level.

In sum, the interpersonal attachment concepts of proximity-seeking, safe haven, secure base, and separation distress are applicable to place attachment, suggesting that attachment has some parallel processes, despite differing attachment figures. In contrast to the interpersonal attachment literature, however, place attachment theorists have not yet specified the duration and modes of healing place-related grief.

1.4 The Development of Attachment Bonds

1.4.1 The Development of Interpersonal Attachment

In the course of their inquiry into how psychopathology might result from disrupted early attachment bonds, Bowlby (1969/82) and Ainsworth (1967) recognized that it was important to first document the normative development of attachment. This led to a detailed account of the formation of attachment bonds. The attachment behavioural system is present at birth, but its organization changes over the course of the lifespan. To engage caregivers, newborn babies are equipped with innate attachment behaviours such as crying.

Gradually, infants begin to display some differential patterns toward the primary caregivers, such as smiling at them and acting sociable. Around 6-9 months, the child enters a sensitive period where the attachment bond becomes more concrete (Bowlby, 1969; Marvin & Britner, 1999; Mercer, 2006). This period is facilitated by the emergence of more sophisticated locomotion skills that allow the infant to actively seek proximity, as well as communication skills that can now be used in a goal-corrected way. Cognitive development further supports bonding; internal working models gain clarity as infants can now generate internal images of their goals and caregivers. At this time, infants begin to understand person permanence – that the caregiver still exists even if he or she is not physically present. For the next 18 months, up to around age 2, several milestones of attachment occur. Notably, the child demonstrates clear preferences for the primary caregiver, anxiety upon separation, and wariness of strangers. He or she now uses the caregiver as a secure base for alternating exploration with retreat to safety. This sensitive period is not a critical period, however, because attachments can still form later on, albeit they may be less organized than those that emerge at this early phase of development (Marvin & Britner, 1999).

Among preschoolers (ages 2-5), independence widens, social circles expand, and children spend slightly more time away from their caregivers (Bowlby, 1969; Marvin & Britner, 1999). At this age, children may view brief separations from caregivers as more acceptable, but this is contingent upon the predictability and controllability of these separations. As a result, negotiations about separation become more frequent. For example, a four-year old may view a few hours spent with a babysitter as acceptable provided that the caregiver discussed this with the child beforehand. Such interactions lead to the development of what Bowlby called “goal-corrected partnership,” a relationship that involves shared goals, planning, and negotiation to achieve a common perspective. This partnership is made possible by the preschooler’s new cognitive skills, including the awareness that others possess their own unique perspectives, the ability to determine whether or not the two perspectives are congruent, and the ability to influence the caregiver’s actions in a goal-corrected manner.

Eventually, a greater need for autonomy arises in adolescence, but the attachment persists and adolescents usually continue to use their parents as a secure base and source of support (Marvin & Britner, 1999; Mercer, 2006). Another important change is that new attachments may begin to develop towards romantic partners, who can replace the parent as the primary attachment figure (Marvin & Britner, 1999). Like infant-caregiver bonds, adult pair bonds involve a strong emotional component and may serve some of the same functions; however, adult pair bonds instigate different behavioral systems (i.e., the reproductive system) and usually display different types of sociability and more equivalent power dynamics than exists within the child-caregiver bond (Bowlby, 1969; Marvin & Britner, 1999). Romantic and other new attachments formed in adolescence and adulthood can contribute to, or alter, the structure of

individuals' mental models of relationships. Thus, although parental attachments exert a strong influence, they do not preclude the development of new bonds.

1.4.2 The Development of Place Attachment

The question of how person-place bonds are initiated and consolidated has much applied value. Knowledge of how place attachment forms could be used to allow new residents to become better adjusted to unfamiliar places, to ease necessary place disengagement, such as when individuals must leave in the event of a natural disaster, to create programs that improve community involvement, or to stimulate place-protective behaviours. However, less is known about the development of place attachment than interpersonal attachment, and existing research is mainly limited to the formation of childhood-related place bonds, and it often focuses on home environments rather than a diversity of places.

One proposal is that place attachment in childhood develops through a widening of the child's secure base from the caregiver to their home and outward to the neighbourhood, and eventually to the larger community (Hay, 1998). These secure bases all provide refuge and a sense of security. Trust in these new secure bases develops with experience, familiarity, and symbolic connections to one's caregiver or group (e.g., Fried, 2000). For example, attachment to home could develop because home represents one's caregiver. In support of the notion that the secure base widens, Hay (1998) suggests that children's sense of place initially involves an area limited in its range, but eventually this area expands as children get older and are allowed to explore and play at greater distances.

One recent model proposes that the development of place attachment and interpersonal attachment are part of a synchronous, mutually reinforcing process (Morgan, 2010). As Bowlby (1969) described, the attachment system is interconnected with the other behavioural systems,

including the opposing exploratory system which fosters exploration and play. When the physical environment is rich with fascinating and exciting stimuli, it can activate the exploratory system. Children then move from their caregivers to explore and play in the environment, an interaction that generates positive affect. Should a child become fatigued, threatened, or too distant from the caregiver, the attachment system is activated, proximity is sought, and positive affect is restored. From this secure base, the exploration-proximity cycle can continue, and through repeated interactions over time, two internal working models develop: one of the child-caregiver dyad, and one of the child-place dyad.

Therefore, both interpersonal and place attachment develop through repeated processes of arousal, interaction, and pleasure, but the interpersonal attachment literature has placed more emphasis on the use of the bond to reduce distress. Another difference is that interpersonal attachment may develop at a younger age (1-3 years) than place attachment, which in Morgan's study, seemed to emerge between the ages of 8-13. However, because Morgan's study was a retrospective qualitative study, it could not capture whether place attachment was present at very young ages. An observational study or another type of methodology would be more appropriate to this task.

New place attachments develop differently in adults than they do in children. First, "rooting" occurs, whereby a suitable place is sought for work and/or raising children (Hay, 1998). Over time, attachment to this place develops and may be expressed by involvement in the community and a reluctance to leave. Apart from Hay's work, however, very few studies have considered the development of place attachment across the lifespan.

Rather than providing details about its ontology, most place attachment researchers have identified the key antecedents of the bond. For example, one important element appears to be

length of residence and place experience, indicating that place attachments develop over time, or through repeated visits (Hay, 1998; Kasarda & Janowitz, 1974; Kelly & Hosking, 2008; Knez, 2005; Kyle, Mowen, & Tarrant, 2004; Riger & Lavrakas, 1981; Sampson, 1988; Scannell & Gifford, 2010b). Along with familiarity, the place may become meaningful over time as the setting of many important memories (e.g., Manzo, 2005), and so place attachment can be especially strong among the elderly (e.g., McAuley, 1998; Rubinstein & Parmelee, 1992).

Another factor that influences the development of place attachment is residential status (Hay, 1998). Those with little or no attachment, such as tourists, are said to have a “superficial sense of place,” where positive feelings rest on aesthetic or cultural features of the place. Others, such as young children or seasonal visitors, have a developing, yet still weak bond called “partial sense of place” that includes positive feelings without a commitment to stay. Longer-term residents develop a more stable bond called “personal sense of place.” These residents typically possess more local knowledge, social networks, and community involvement. Stronger still, is “ancestral sense of place,” the bond that develops among residents who were raised in the place, and that persists even if the person should have to leave. Finally, among Hay’s New Zealand sample, the most intense bond was “cultural sense of place,” whereby the place is historically connected to one’s tribe or cultural group (e.g., Maoris).

1.5 Individual Differences in Attachment

1.5.1 Attachment Styles

Attachment-related affect, cognition, and behavior differ across individuals. Indeed, many studies have explored individual differences called attachment styles (Ainsworth, 1967; Ainsworth, Blehar, Waters, & Wall, 1978). Ainsworth’s studies, based on the strange situation

paradigm and coding the resulting observable behaviours, showed that the nature of the infant-caregiver bond can vary systematically depending on the responsiveness of the caregiver. For infants, three categories of attachment were proposed: secure, anxious-ambivalent, and avoidant.

Approximately 65-70% of infant-caregiver dyads were classified as *secure*. In these cases, infants would demonstrate initial interest in nearby toys, show marked distress when separated from their parent, and show joy upon reunion (Ainsworth et al., 1978). These caregivers were responsive to their infant's distress, and attentive to their activities. Infants with a secure bond are also more likely to seek proximity during distress, and are more successfully comforted by their caregivers. Interactions with caregivers who are warm, responsive, and available lead to more confident exploration, and improved social interactions with others.

A second category was *anxious-ambivalent* attachment, demonstrated by approximately 15-20% of the dyads. These infants display protest and distress when separated from their caregiver, and an angry response upon reunion, as if to rebuke them for leaving (Ainsworth et al., 1978). Initially, these infants are more reluctant to play or leave their caregiver's side, and they are also more fearful of strangers. Caregivers in this dyad can be responsive, but are inconsistently so – a partial reinforcement schedule that hyperactivates the attachment system (e.g., Shaver & Mikulincer, 2007).

The third category of attachment was *avoidant* attachment, also displayed by approximately 15-20% of the dyads. These infants show little reaction when separated from their caregivers, and ignore them upon their return (Ainsworth et al., 1978). Caregivers of this dyad are more often unresponsive, rejecting, or disapproving. In reaction to this, individuals learn to deactivate their attachment system (e.g., Shaver & Mikulincer, 2007).

Later research on attachment styles revealed a fourth, less frequent category called *disorganized* or *disoriented* attachment (Main & Solomon, 1990). This bond involves inconsistent, unpredictable responses on the part of the infant, oscillating between avoidance and anxiety.

Over time, repeated activation of the system along with relationship-specific memories, forge cognitive-affective mental representations. In general, mental representations are organized units of information that contain knowledge of objects, people, events, actions, and/or theories (Wyer, 2007). Attachment-related mental representations are termed “internal working models,” (Bowlby, 1969) and have two specific types of cognitions: those related to others, including cognitions about others’ accessibility and responsiveness, and those related to the self, including cognitions about one’s value and worth in relationships (Bartholomew & Horowitz, 1991; Shaver & Mikulincer, 2007). Internal working models are derived from representations about specific relationships (e.g., cognitions about one’s relationship with their parents), which are in turn derived from episodic memories (e.g., memories of specific events when caregivers attended to one’s needs or not). Because parents’ responsiveness to their children’s needs strongly influences attachment styles, parents’ attachment styles also play a role in the attachment styles of their children; this is known as the intergenerational transmission of attachment styles (George & Solomon, 1999; Hesse, 1999).

Internal working models are important because they influence recall of past experiences, shape perceptions, and guide expectations (Bowlby, 1969). As such, they serve as heuristics for interpreting relationship-relevant events. They can also shape personality development and the quality of relationships formed later in life (Shaver & Mikulincer, 2007). Interestingly, internal working models in adulthood manifest as attachment styles parallel to those observed in infancy

(Main & Goldwyn, 1994), including those that emerge in romantic relationships (Hazan & Shaver, 1987).

Elaborating on the idea of internal working models, Bartholomew and Horowitz (1991) suggested that secure working models consist of positive views of the self and others, avoidant working models consist of positive views of self and negative views of others, and anxious working models consist of negative views of the self and positive views of others.

The self-other model was later reconceptualised, and the current view maintains that attachment styles range along two key dimensions of anxiety and avoidance (Figure 1.2; Brennan, Clark, & Shaver, 1998). Securely attached individuals are low in both anxiety and avoidance. The other three attachment styles similarly map on to those identified by Ainsworth and colleagues (e.g., 1978), but the terminology has changed somewhat. Anxious attachment is referred to as *preoccupied* attachment, and includes worry about one's relationship, as well as increased accessibility of negative relationship-schema. Those high in avoidance are classified as *dismissive*, where the importance of relationships is diminished, and fewer emotionally-toned interactions are recalled. Finally, *fearful* attachment is evident among individuals who experience both anxiety and avoidance in relationships. Despite this classification, however, it is important to note that the two dimensions are continuous and therefore, individuals may differ in the degree to which they embody a given attachment style.

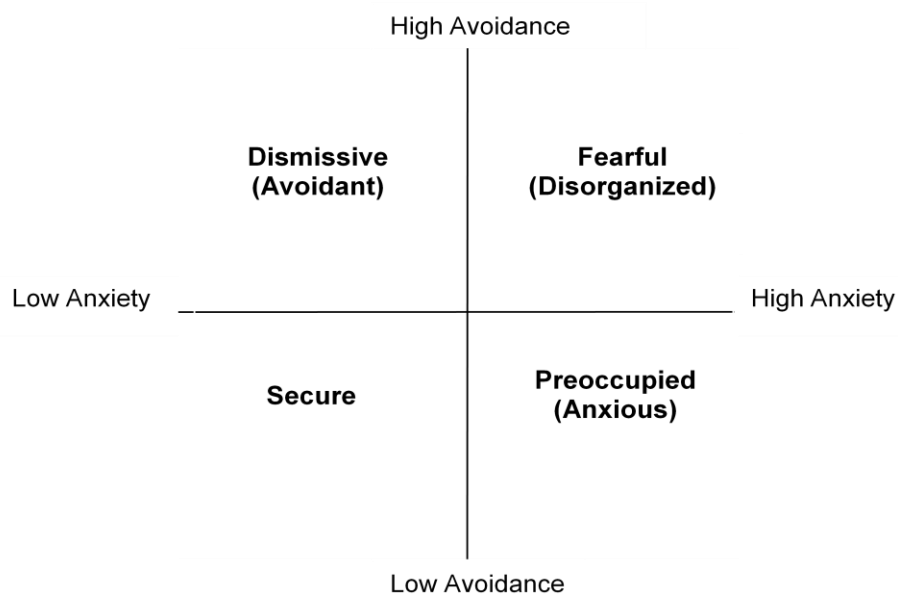


Figure 1.2. Attachment styles and their labels in the adult attachment literature (Brennan, Clark, & Shaver, 1998). Corresponding labels from the child attachment literature (e.g., Ainsworth et al., 1978; Main & Solomon, 1990) are in parentheses.

More recently, research has brought attention to the script-like nature of internal working models. As demonstrated in a series of eight studies, individuals high in attachment security have secure-base scripts that are more accessible, richer, and more elaborate than those low in attachment security (Mikulincer, Shaver, Sapir-Lavid, & Avihou-Kanza, 2009). In one of the studies, participants performed a story-completion task, where they wrote narratives about a character in distress. Avoidant individuals were less likely to include support-seeking in their stories, and anxious individuals were less likely to include distress relief in their stories. Both de-emphasized support availability. The authors also demonstrated that the secure base script operates at a preconscious level. Participants completed a daily diary, in which they reported their dreams for one month. Anxious individuals' dreams less often included themes of support

availability or distress relief, whereas avoidant individuals' dreams less often included themes of support-seeking.

1.5.2 Individual Differences in Place Attachment

In contrast to trends in the interpersonal attachment literature, the topic of stable individual differences in place attachment has received little attention. Within this topic, several research questions are pressing. One question is whether interpersonal attachment styles interact with the strength of attachment to place. In one study, residents with insecure interpersonal attachment styles showed lower levels of all three dimensions of sense of community, including place attachment, place-related needs fulfillment, and neighbourhood social bonds, although these correlations were modest (Tartaglia, 2006). In another, children with an anxious attachment style were much more likely to experience homesickness than their secure counterparts, who were more independent and willing to explore while away from home (Thurbar & Sigman, 1998). These studies suggest that interpersonal attachment styles are connected to place attachment constructs, but more research is needed to investigate this, particularly in terms of place attachments in adulthood.

A different question is whether place attachment has its own particular stable individual differences, and if so, whether they are comparable to interpersonal attachment styles. Interestingly, parallel attachment styles have been observed among attachments to figures other than one's primary caregiver, such as romantic partners (Hazan & Shaver, 1987). Another study showed that individuals' attachment styles are not limited to interpersonal situations, but can also occur at the group level (Smith, Murphy, & Coats, 1999). Specifically, individuals with an anxious group attachment style are more likely to fear group rejection, and those with an avoidant group attachment style are more likely to avoid group closeness. Attachment styles can

even describe religious individuals' relationships to their god(s) (Beck, 2006; Granqvist, Mikulincer, & Shaver, 2010). Those with an anxious attachment to God experience feelings of preoccupation, worry, resentment, and fears of abandonment, and those with an avoidant attachment to God avoid strong emotions and proximity-seeking.

Given that attachment styles can apply to alternate attachment figures, it seems plausible that similar attachment styles may also exist for place. Evidence from several qualitative studies provides some support for the notion of stable individual differences in place attachment. Such differences were revealed in a Swedish study on the relationship between place attachment and mobility (Gustafson, 2001). Two major themes emerged: a "roots" theme, where stability of place, home, and local ties were viewed as important; and a "routes" theme, where places were viewed as sources of movement, freedom, and personal development, and immobility was undesirable. For some participants, place attachment and mobility appeared contradictory, although others felt that both could be held in balance, and some saw the two as complementary.

These themes appear to possess some overlap with the styles of interpersonal attachment. The experience of place as stable and complementary to exploration mirrors the proximity-seeking/exploratory processes that are integral to the attachment behavioural system; as such, this view is closest to the description of secure attachment. The tendency to value place attachment and devalue exploration could be likened to an anxious attachment where clinging can hinder exploratory functions. Finally, an over-emphasis on exploration to the exclusion of place attachment is reminiscent of an avoidant attachment style, where self-reliance tends to trump commitment.

Another recent qualitative study described individual variation in the development of place attachment (Morgan, 2010). A few participants reported that they had not formed any

strong place bonds. This could, as Morgan surmised, reflect a lack of repeated interactions with one specific environment, and thus a lack of opportunity for place attachment to develop.

However, another possibility is that these individuals possessed an avoidant place attachment style.

The first study to develop a quantitative measure of stable individual differences in place attachment was McBain's (2010). She adapted the four-item Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991) into a measure of place attachment style with respect to the home environment (see sections 1.10.2 and 2.1.3 for more details about these measures). In general, place attachment styles positively correlated with their interpersonal attachment counterparts. For example, individuals high in secure interpersonal attachment were more likely to report feeling secure about their relationship to their current home, and less likely to report feeling insecure (i.e., avoidant or anxious). The construct validity and reliability of this measure is not yet established, but more research is likely to be fruitful especially if we are to explore a full range of places to which a person can be attached including those outside of the home.

1.6 Stability of Attachment

1.6.1 How Stable are Attachment Patterns Throughout the Lifespan?

One central question about attachment styles is the extent to which they are pervasive: do early attachment representations influence relationship security later in life? Fraley (2002) compared two alternate perspectives using a meta-analysis of longitudinal studies on interpersonal attachment styles. Proponents of the *revisionist perspective* assert that working models of attachment are flexible and continually updated to incorporate new experiences that may or may not resemble the original representation. Because of this adjustment, working

models are expected to change over time, and so the correlation between initial and later security eventually approaches zero. Proponents of the *prototype perspective*, however, suggest that a prototype of attachment is generated from an infant's early experiences with his or her caregiver, and that this early representation does not change much over the lifespan. Although people may construct additional representations for new relationships, the prototype retains its influence. When a new relationship begins, this prototype is activated and alters the nature of the interactions and the overall quality of the relationship.

Expectations about the self and others influence the way responses are elicited from others, through a self-fulfilling prophecy (Fraley, 2002). For example, someone who expects that others will be warm and responsive is more likely to approach others in a friendly way, and thereby elicit the expected response. The prototype perspective therefore predicts stability in attachment style over time, and a nonzero correlation between initial and later security. In a meta-analysis of 27 studies that measured attachment among infants at 12 months and again at least one later time (ranging from 13 months to 19 years), the prototype model provided the best fit of the data as compared to the revisionist model (Fraley, 2002). Specifically, the correlation between early and later attachment security was .39, which indicates a moderate degree of stability in attachment over time.

Early attachment experiences also influence interactions with strangers (Feeney, Cassidy, & Ramos-Marcuse, 2008). Grade 11 students were asked to discuss a personal problem with an unfamiliar peer and act in a support-seeking or support-giving role. Adolescents high in attachment security showed support-seeking for their own problems, more receptivity to others' problems, and were less self-focused. Those high in attachment anxiety also sought support from unfamiliar peers but showed more hostility toward peers who did not respond warmly to them.

They also offered support to others, but it did not differ depending on whether the person really needed support or not. Again, the proposed mechanism through which early attachment representations remain stable is a self-fulfilling prophecy. Secure individuals are more likely to seek and provide appropriate levels of responsiveness, which then facilitates the likelihood of positive future interactions.

Others have shown that attachment prototypes, or original bonds with parents, persist into adulthood, and continue to provide relief from psychological threats, such as existential terror (Cox et al., 2008). Participants who were primed with mortality salience and were then primed with positive memories of their parents showed less accessibility of death-related thoughts as assessed by a word stem completion task, and were less likely to rely on their worldview as a means of defence against these thoughts. Interestingly, anxiously attached individuals were more likely to rely on their parent following a death-related prime, and securely attached individuals were more likely to rely on their romantic partner. The authors surmise that anxiously attached individuals are less able to transfer their attachment functions later in life.

This finding of stable attachment styles also emerges in research on romantic attachment. In general, attachment security with romantic partners moderately correlates (r 's = .29-.30) with early attachment security (Feeney & Collins, 2001; Fraley & Shaver, 1999; Hazan & Shaver, 1987). Furthermore, security within romantic relationships appears to be somewhat stable over time (e.g., Baldwin & Fehr, 1995). This raises the question of the stability of place attachment and its styles.

1.6.2 Stability of Place Attachment

Like interpersonal attachment, place attachment is presumed to persist over time (e.g., Giuliani, 2003). However, longitudinal research on place attachment is limited to a few studies (Elder, King, & Conger, 1996; Korpela, Ylén, Tyrväinen, & Silvennoinen, 2009). In one, participants selected their favourite place type, described and rated their level of attachment to a specific favourite place (Korpela et al., 2009). Ten months later, the participants repeated this process. The results showed stability for both favourite type of place (64% of participants selected the same favourite place type at Time 2), and specific favourite place (44% mentioned the same place at Time 2). Place attachment remained high among those who had not switched place types. Furthermore, urban environments were the least stable favourite place types, and natural settings were re-selected the most often. The authors propose that the restorative qualities of the natural environments promote this continued attachment. That is, people will be more reluctant to give up places that offer such important psychological benefits.

Not surprisingly, attachment to a particular place can be less stable among adolescents and young adults, given that migration decisions after high school are common (Elder, King, & Conger, 1996). A two-phase longitudinal study of place attachment among 8th and 11th graders in rural Iowa showed declining place attachment among adolescents with higher academic achievement, fewer social ties, and fewer opportunities for local employment (Elder, King, & Conger, 1996). Place attachment remained stable among adolescents who had lower academic achievement, stronger identification with their parents, and stronger religiosity. Thus, place attachment may persist over time but stage of life may play an important role. Furthermore, a growing body of work indicates that economic, social, political, environmental, and other

external disruptions can reduce the stability of place attachments (e.g., Brown & Perkins, 1992; Fried, 2000; Devine-Wright, 2009).

In sum, the stability of interpersonal and place attachment has been investigated in different ways. Interpersonal attachment researchers have focused on the stability of attachment *styles*, and place attachment researchers have focused on the stability of specific or generic place *types*. Place attachment theory would clearly benefit from more longitudinal studies, consideration of different types of places, and the impacts of place during different stages in the lifespan. In addition, should styles of place bonding be established, an important next step would be to explore their stability over time.

1.7 Attachment Figure Characteristics

1.7.1 Diversity of Attachment Figures

An attachment figure, the object of one's affections, proximity-seeking, and security, can be found among a wide range of sources. Bowlby (1969/1982) and others assumed this person to be one's mother, who commonly attains the attachment figure role partly because she is often a primary caregiver, and partly because societal expectations may place her in this role (e.g., Trinke & Bartholomew, 1997). Fathers are also acknowledged as important attachment figures (Main & Weston, 1981), although fewer studies have involved them. Alternatively, caretakers, suitable adults, and grandparents can be attachment figures, especially when mothers and fathers are absent (Ainsworth, 1989). Attachment figures may be found among friends or siblings (Tancredy & Fraley, 2006; Trinke & Bartholomew, 1997). Studies on sibling attachment explain this tie as a function of genetic relatedness, shared activities, empathy felt for the sibling, and including the sibling into one's self concept (Tancredy & Fraley, 2006). Related to this, twins are

more likely than non-twins to view their sibling as an attachment figure (Tancredy & Fraley, 2006). Others suggest that attachment figures do not always have to be people, but can be non-human entities such as a god (e.g., Beck, 2006; Granqvist, Mikulincer, & Shaver, 2010; Kirkpatrick, 1999), or objects, such as possessions (Belk, 1988; Prelinger, 1959).

What determines the suitability of an actor or object as an attachment figure? One proposition is that attachment is a product of need satisfaction (La Guardia, Ryan, Couchman, & Deci, 2000). The level of attachment to a partner, parent, or friend seems to vary according to the extent to which competence, autonomy, and relatedness are satisfied by this person. Between-person variability in attachment security is similarly predicted by need satisfaction. Because a variety of people (and objects) can support this need satisfaction, the apparent diversity of attachment figures is not surprising. Now the question is which types of places can serve as attachment figures.

1.7.2 Place as an Attachment Figure

As has been established by environmental psychologists (but is not mentioned by traditional attachment theorists), places represent an important attachment “figure” for many people. Despite other parallels between the two theories, the attachment figures themselves are not as obviously comparable. Places vary in their scale, tangibility, and familiarity (Low & Altman, 1992), and in their physical and social attributes, temporal elements, and actors’ activities within these places (van der Klis & Karsten, 2009). Attachments have been observed at many different spatial and temporal levels and for a wide variety of place types, ranging from planets, continents, countries, islands, cities, neighbourhoods, streets, buildings, homes, specific rooms in a building, and other places (Droseltis & Vignoles, 2010). Some individuals may even

be attached to historical, spiritually significant, or imaginary places (e.g., Droseltis & Vignoles, 2010; Mazumdar, 2005).

Compared to interpersonal attachment research, place attachment research has devoted more attention to characteristics of the attachment figure. The physical and social characteristics of place are important predictors of person-place bonding because they initially attract individuals, and influence their decision to stay. In terms of the physical place, attachment is usually greater among places of good environmental quality (Kaltenborn & Bjerke, 2002; Uzzell, Pol, & Badenas, 2002). For example, attachment tends to be greater among residents who have access to green space, gardens, and other natural elements (e.g., Sime & Kimura, 1988), and who live in neighbourhoods with distinctive features, such as unique physical terrain or urban design (Uzzell et al., 2002). In addition, residents who live in single-family dwellings are more likely to be “rooted,” longer-term residents with plans to stay, as compared to those living in multi-unit places (Riger & Lavrakas, 1981). Other physical features such as climate, and proximity to the water, may facilitate attachment if they resemble features from places of one’s childhood (Knez, 2005), or birth country (Ryan & Ogilvie, 2001). Social features have also been identified as key predictors of place attachment; at the neighbourhood level, having many friends and participating in community activities are important (Fried, 1963; Kasarda & Janowitz, 1974; Kyle, Mowen, & Tarrant, 2004; Sampson, 1988; Shumaker & Taylor, 1983; Twigger, 1992; Uzzell et al., 2002). Because these studies are all correlational, however, whether attachment influences, or is influenced by, each physical feature is unclear.

1.7.3 The Importance of Scale

Along with the in-depth theories of place found within geography, place attachment researchers can also benefit from a more nuanced understanding of scale. This may help to differentiate among the types and functions of places of attachment.

However, scale is not as obvious a construct as it may seem, and it continues to be a topic of contestation among geographers (e.g., see Herod, 2010). Some theorists debate whether scales are grounded in material reality, or whether they are a mental device for organizing and making sense of the world. Others differ in stance on how scales are produced, and how they differently respond to the pressures of capitalism. The key types of scale, and their interrelations, are other issues of ongoing discussion. For the purposes of this dissertation, focusing on psychological interactions with place, the cognitive mapping literature can inform the operationalization of scale.

Cognitive mapping is relevant to both geography and psychology, because it explores how individuals construct mental maps of their space (Tolman, 1948). A cognitive map is a type of mental representation, or a set of cognitions that aids with the organization and retrieval of knowledge and memories (Kitchin & Freundschuh, 2000). This complex spatial knowledge is used to navigate through an environment, communicate about it to others, and perform other important spatial tasks.

One key principle is that scale plays a major role in determining the contents of a mental representation (Freundschuh, 2000); for example, mental representations of space differ for

small- and large-scale spaces. Small-scale spaces¹ are areas that can be viewed entirely from one vantage point, such as a room. Their associated mental representations contain constructs such as left/right, up/down, surface, objects, and so on. Large-scale spaces are learned more slowly, and through movement. Mental representations for these contain constructs such as near/far, through, across, path, and so on.

The crude distinction of small- or large-scale spaces has replaced by finer categorizations. Freundschuh and Egenhofer (1997) for example, categorized space according to its degree of manipulability (i.e., holding, turning, or moving objects), the level of locomotion required to experience the space, and the constraints of size upon the spatial experience. From this, they proposed six types of space. *Manipulable object space* is small space or objects that can be manipulated, and therefore does not require locomotion to experience. This could include a chair or a desk. *Non-manipulable object space* is larger space or objects that are not as easily manipulable, and that typically require some locomotion to fully experience. This type of space is larger than one's body but smaller than a house. For example, a room in a house, an office, or a coffee shop might be considered non-manipulable object space. *Environmental space* is larger, requiring locomotion and involving route knowledge. This could include the inside of a building, a neighbourhood, or a park. *Geographic spaces* are very large spaces that often cannot be fully perceived through locomotion. This would include large cities, regions or countries. *Panoramic space* is a space that can be viewed from a single vantage point. It can vary in size, but does not

¹ In contrast, cartographic scale refers to the relationship between the size of the features on the map and the features' actual size. For example, a "small scale map" could depict the earth, whereas a "large scale map" could depict a neighbourhood.

require locomotion. Finally, *map space* is a large space that has been downscaled and represented through symbols.

This taxonomy informs the current dissertation. As Lewicka (2011) noted, the majority of place attachment research has focused on neighbourhoods, few studies have examined attachment to other types of places, and fewer still have compared the effects of scale on place attachment. Those that have (e.g., Hidalgo & Hernandez, 2001; Lewicka, 2008), reveal differences in the strength of place attachment at different scales. Possibly, these differences may exist because of differing functions associated with each scale. Furthermore, those studies that do consider place attachments at varying scales often include arbitrary or crude categorizations of scale. Therefore, throughout this dissertation, participants' designated place of attachment will be coded according to Freundschuh and Egenhofer's (1997) six types of scale described above. From this, I will assess whether the functions of place attachment differ depending on the scale at which the place attachment rests.

1.8 Multiple Attachments

1.8.1 Multiple Interpersonal Attachments

A key limitation in the attachment literature is that most studies describe a single bond (e.g., between an individual and their caregiver), but rarely consider the existence of multiple bonds and their interactions. Nevertheless, that we form bonds to multiple attachment figures has been acknowledged (Cassidy, 1999; Shaver & Mikulincer, 2007; Trinke & Bartholomew, 1997). One study determined that young adults have between one and twelve attachment figures at a time, and the average number is five (Trinke & Bartholomew, 1997). However, not all attachment figures are equal; a hierarchy exists among them, such that one is preferred over the

others (Cassidy, 1999; Trinke & Bartholomew, 1997). In an infant-caregiver relationship, this preference is called “monotropy,” and ensures that one person takes responsibility for a child and provides a first response should the child seek proximity (Cassidy, 1999). Later in life, additional attachments develop towards other figures. Among young adults who are not in romantic relationships, mothers are ranked most highly as attachment figures, followed by fathers, siblings, and best friends (Trinke & Bartholomew, 1997). Those in romantic relationships rank their partner at the top of the hierarchy, but otherwise the ordering does not change.

1.8.2 Multiple Place Attachments

Just as attachments may form to more than one person, multiple place attachments are also possible, if not common (e.g., Feitelson, 1991; Giuliani, Ferrara, & Barabotti, 2003; Gustafson, 2001). In a study of air force officers and their wives, those who had moved only once in their lives were less likely to become attached to their new residence than those who had moved several times (Giuliani et al., 2003). Furthermore, 82% of respondents were attached to one or more previous places of residence (one commonly being a childhood home), and approximately 45% were attached to at least one past residence as well as their current residence, suggesting that it is possible to be attached to more than one place at one time. Of course, new bonds take time to form, but the existence of old bonds does not preclude the formation of new ones. Interestingly, this suggests that people who frequently migrate may learn to develop ties more quickly.

The formation of a new place bond is important to adjustment, well-being, and health (Hornsey & Gallois, 1998). For example, the reconciliation of old and new place bonds is related to homesickness in a new residential environment (Scopelliti & Tiberio, 2010). Students with more social ties in their hometowns, and a lack of affective attachment to their new community,

are more likely to be homesick. Nevertheless, the old place bond can be used to aid in this transition through interchangeability processes, whereby similarities between old and new environments are emphasized (Ryan & Ogilvie, 2001). Students living abroad preferred areas in their new environments that had home-like qualities. One participant felt attached to the beach because her hometown was located near the ocean. Students who brought familiar objects from their homes were better adjusted. It is as if one is not really displaced when surrounded by referents of home. In this way, multiple place attachments can coexist when organized through a central place attachment schema; in what has been called “settlement identity” (Feldman, 1990), or “generic place dependence” (Stokols & Shumaker, 1981), individuals become attached to types of places or place features rather than to specific places. Seeing elements of one’s former residence, town, or country enables stable attachments even among individuals who are mobile.

Although multiple place attachments exist, they are not always readily formed, or even desired. A study of Dutch commuter couples found that the partner who lived away from their primary residence part time had difficulty forming attachment to the commuter residence (van der Klis & Karsten, 2009). Although many of the respondents viewed it to be a familiar “place” that is more meaningful than a functional “space,” less than 5% of them viewed it to be an intimate, meaningful “home.” In part, this distancing served to protect the centrality of the primary home. Other pragmatic reasons, such as knowledge that the situation is temporary, and difficulties in establishing a social network, hindered the formation of deeper attachment. Place attachment was stronger for the primary residence. This persistence of attachment to one specific place has been called “geographic place dependence” (Stokols & Shumaker, 1981).

In sum, attachment research overemphasizes singular, child-parent bonds, but a much broader range of attachment figures is possible, including places. By considering place as

another common object of attachment, the interpersonal and place attachment theories can be more closely aligned, and their interrelationships can begin to emerge. Furthermore, attachments can be held simultaneously, and at least for places, multiple ties are more readily formed with “practice.”

1.9 The Functions of Place Attachment

Interpersonal attachment behaviours are thought to have been naturally selected because they increase the chances of survival among vulnerable infants (Bowlby, 1969/1982). Survival, however, is not the only outcome of attachment. Because it provides a strong foundation for emotional and social functioning, secure attachment is associated with a host of positive outcomes that contribute to well-being (La Guardia, Ryan, Couchman, & Deci, 2000; Shaver & Mikulincer, 2007). In contrast, the functions of place attachment have yet to be specified, although several can be inferred from an examination of relevant literature.

In this dissertation, the psychological functions of attachment are defined as the benefits afforded by the attachment bond. Attachment is functional when it provides a positive outcome for the individual, for example, by facilitating goal pursuit or need satisfaction. Thus, the functions of attachment can be different from the processes of attachment. Processes refer to the unfolding of the attachment system. For example, proximity-seeking is part of the attachment process, but it is not a function because proximity itself is not a benefit. Rather, safety is a likely benefit of proximity (e.g., Bowlby, 1969/1982). Processes and functions can also overlap. For example, “safe haven,” when individuals use their attachment figure to escape threats, is part of the attachment process that follows proximity-seeking and precedes further attachment-aided

exploration (e.g., Bowlby, 1982; Shaver & Mikulincer, 2007), but it is also a function, because it includes the beneficial outcome of safety.

Functions are also distinct from attachment styles. An attachment style refers to stable individual differences in how the attachment system operates (see literature review section 1.5.1). For example, an individual with an avoidant attachment style would be less likely to seek proximity to their caregiver during times of need, but one with an anxious style would be more likely to seek proximity. As Shaver and Mikulincer (2007) describe, attachment styles are “secondary strategies” that individuals employ to compensate for suboptimal attachment conditions (such as an unresponsive caregiver). Because of these stable differences in attachment system operations, the functions afforded by attachment may vary according to individuals’ attachment styles. The functions of place attachment that have been alluded to in the extant literature are described below, and are depicted in Figure 1.3.

1.9.1 Place Attachment for Survival and Security

According to Bowlby (1969), interpersonal attachment does not solely exist to ensure that physiological needs such as hunger are met (as Freud, 1940 suggested), but it also provides individuals with a sense of psychological safety and security. To support this claim, he cited ethological studies that demonstrated the formation of bonding in the absence of food. Particularly influential were studies showing that orphaned Rhesus monkeys preferred stuffed animals that were soft and could be clung to in the face of a threat over wire monkeys that provided milk and could not provide comfort (Harlow, 1961). From this and other examples, Bowlby concluded that similar, non-food related bonding occurs in humans too, and that its ultimate purpose is to provide security.



Figure 1.3. Nine possible psychological functions of place attachment previously identified in the literature.

This function may also be central to place attachment (e.g., Case, 1996; Low & Altman, 1992; Shumaker & Taylor, 1983; Sixsmith, 1986). If so, it explains our preferences for places that offer prospect and refuge (Appleton, 1975), and our need to retreat to favourite places when upset (Korpela, Hartig, Kaiser, & Fuhrer, 2001). Other theorists concur that spending time in a meaningful place generates the feelings of familiarity, safety, and security that distinguishes a place as a haven (Giuliani, Ferrara, & Barabotti, 2003). Although widespread, this function may be experienced somewhat differently depending on stage of life, gender, and class (e.g., Sixsmith, 1986). One view is that it is especially important for marginalized groups, or

individuals who must cope with numerous stressors in their everyday lives (e.g., Fried, 2000; Manzo, 2003).

As appears to be the case with interpersonal attachment, security from place attachment functions dialectically with exploration. Feeling protected and safe leaves one better able to explore the broader surroundings (Case, 1996; Manzo, 2003). Therefore, place attachment functions to support security as well as freedom and the need for autonomy (e.g., Kyle, Mowen, & Tarrant, 2004; Morgan, 2010).

1.9.2 Place Attachment for Goal Support

A related, but broader perspective, is that the function of place attachment is to facilitate goal attainment (e.g., Kyle, Mowen, & Tarrant, 2004; Proshansky, Fabian, & Kaminoff, 1983; Shumaker & Taylor, 1983). When the sociophysical features of the place match the individual's needs and goals, place attachment is more likely; some have termed this transaction "place dependence" (Moore & Graefe, 1994).

Other than person-environment fit, place attachment facilitates goal attainment because it promotes the self-regulatory processes that underlie goal pursuit (Korpela, 1989). Self-regulation involves an evaluation of the progress made towards a goal, and, if deviant, a correction of behaviour to be in line with the goal pursuit (Carver & Scheier, 2001). Because this requires self-control and the necessary cognitive resources to exercise it, self-regulation is more effective when exercised in a familiar, comfortable place. Here, cognitive resources can be conserved and restored, and problem-solving, self-control, and self-regulation can be enhanced (Korpela & Kinnunen, 2011).

1.9.3 Place Attachment for Identity Support

Another reason that individuals readily form emotional bonds to place may be because such bonds contribute to the formation and continuity of our identities (Fried, 2000; Giuliani, Ferrara, & Barabotti, 2003; Hauge, 2007; Knez, 2005; Low & Altman, 1992; Proshansky, Fabian, & Kaminoff, 1983; Vaske & Kobrin, 2001). Our activities and roles are shaped by the places we experience, which solidify into personal characteristics and identities as places are frequented (Proshansky, 1978).

Place identity can emerge when individuals perceive that elements of the social or physical environment match their personal values and temperaments (e.g., Kelley & Hosking, 2008; Twigger-Ross & Uzzell, 1996). Places can also provide temporal continuity by physically representing personal histories, mapping the series of events and phases of an individual's life (Manzo, 2003; Twigger-Ross & Uzzell, 1996). Theories that place attachments are formed and maintained because they contribute to identity processes are consistent with accounts of interpersonal attachment as “a cognitive merging of self with particular other people” (p. 504, Baumeister & Leary, 1995).

1.9.4 Place Attachment for Belongingness

Some authors have crowned the need to belong as the king of all psychological needs (Baumeister & Leary, 1995; Pittman & Zeiger, 2011) and interpersonal attachment is thought to facilitate that need (LaGuardia, Ryan, Couchman, & Deci, 2000). Humans have evolved sophisticated social systems because group co-ordination and cohesion brought adaptive advantages in our evolutionary past, including social capital, safety in numbers, division of labour and childrearing duties (Neuberg, Kenrick, & Shaller, 2010). Thus, psychologically, belongingness is extremely valued and ostracism is extremely aversive (Leary, 2010).

Belongingness is not restricted to the interpersonal domain, however, and can be felt through other means, including place attachment; “fitting in” to a place can evoke that sense of connectedness. In one study, participants reported loving their places, a feeling that appeared to be reciprocated by the nourishing qualities of place (Morgan, 2010). Some place attachments create belongingness by symbolically connecting individuals to their ancestors or cultures (e.g., Billig, 2006; Hay, 1998; Low, 1992; Mazumdar & Mazumdar, 2004), or reinforcing social ties and belongingness to the community (Fried, 1963; Hidalgo & Hernández, 2001; Kyle, Mowen, & Tarrant, 2004). In turn, belongingness to a place can strengthen social capital, resulting in group-wide benefits, such as more effective community action (e.g., Manzo & Perkins, 2006; Perkins & Long, 2002).

1.9.5 Place Attachment for Cognition

Another potential function of place attachment is that it aids several cognitive processes. For example, the familiarity and predictability inherent in places of attachment frees up cognitive resources that would otherwise be devoted to mapping and evaluating the space (e.g., Korpela, Hartig, Kaiser, & Fuhrer, 2001; Shumaker & Taylor, 1983). Furthermore, a place of attachment is likely a legible place, where routes are known and do not have to be navigated (e.g., Francaviglia, 1978). A well-established place schema also serves an interpretive function, because places of attachment can be used as standards against which other places can be compared (Hauge, 2007). Finally, places of attachment serve the important function of memory storage, organization, and retrieval (Cooper Marcus, 1992).

1.9.6 Place Attachment for Development

Play, mastery, exploration and other activities important to child development are supported by places of attachment (Morgan, 2010). As mentioned, security and exploration are

complementary functions, where adventure is made possible by an accessible secure base. Place attachments are relevant to developmental processes in adulthood too, such as providing a suitable location for raising a family and finding work (Hay, 1998), and later in life, places assist with self-reflection and connecting to the past (e.g., Twigger-Ross & Uzzell, 1996).

1.9.7 Place Attachment for Restoration and Relaxation

Favourite places can assist with restoration and escape from daily stressors (e.g., Hartig, Kaiser, & Bowler, 2001; Hartig, Mang, & Evans, 1991; Kaplan, 1995). For example, Korpela and colleagues (Korpela, Hartig, Kaiser, & Fuhrer, 2001; Korpela, Kytta, & Hartig, 2002) have demonstrated that children often use favourite places for stress reduction. Attachment to vacation places has been linked to the need to escape the city, find authenticity, and spend time in nature (Aronsson, 2004; Kelley & Hosking, 2008). In a qualitative study, the reasons underlying participants' park preferences was connected to the broader purpose of relaxation (Fishwick & Vining, 1992).

1.9.8 Other Functions and Dysfunctions

Another potential function of place attachment is hedonism. From a utilitarian perspective, place attachment may serve to maximize rewards and minimize costs; thus, attachments are retained on the condition that one's current place is more rewarding than alternative places (Shumaker & Taylor, 1983). Speaking more humanistically, place attachment can be a pleasurable experience, through the aesthetic and sensory elements present in a place (Droseltis & Vignoles, 2010; Morgan, 2010).

Another function of place attachment sometimes alluded to is that it assists with meaning-making. This echoes Tuan's (1974) understanding of place as a "centre of meaning or field of care." Others have shown that place attachment allows us to conceive of the world as

meaningful and coherent (Casakin & Kreitler, 2008; Droseltis & Vignoles, 2010). Additional functions of place attachment that have been suggested include self-esteem, control, and spirituality (Droseltis & Vignoles, 2010).

Although most research highlights the positive implications of place attachment to well-being, person-place bonds often involve ambivalent emotions and experiences (e.g., Manzo, 2003). For example, memories of home can be both joyful and painful. The negative components of place attachment, its “shadow side” (Chawla, 1992), were further elaborated upon by Manzo (2014) in the context of social housing and poverty. One of the key sources of harm was the stigma attached to living in social housing. Despite this, many residents reported a strong sense of community and general residential satisfaction.

Place attachment can also interfere with well-being when inhabitants lack control, such as when powerful others impose discordant meanings and policies on a place, or in extreme cases, when they destroy it (Windsor & McVey, 2005). Sometimes, however, place attachment is a way to express or reproduce broader conflicts. This is not necessarily dysfunctional, but can be symptomatic (DiMasso, Dixon, & Pol, 2011), or perhaps functional, if the attachment can be used for self-affirmation or community building in contrast to stigma (e.g., Manzo, 2014).

Another negative outcome of place attachment is “place bondage,” (Rubinstein, 1992) when individuals continue to cling to places that inflict harm or fail to meet a variety of other needs. An extreme example would be when residents refuse to leave their homes in the event of a disaster, such as those who refuse to evacuate despite warnings of an impending flood (e.g., Fried, 2000). Although not the focus of the present dissertation, the shadow side of place attachment is important. For every proposed benefit (such as belongingness), there may be an

opposing process (e.g., alienation). However, as a starting point of exploration, this dissertation begins by outlining the benefits.

In sum, the notion that place attachment fulfills several psychological functions is supported by the above literature. However, many of these functions were inferred from results, or merely speculated by authors. To my knowledge, studies have not explicitly sought to determine the reasons underlying individuals' place attachments. This dissertation will therefore discern whether previously speculated functions of place attachment again emerge in empirical research, and Study 1 will show which of these functions are most common in individuals' descriptions of place attachment.

1.10 Methodologies

Interpersonal attachment theory has become well-established through the use of diverse methodologies ranging from Bowlby's original observational studies to designs that employ physiological measures. As a result of this diversity, the concepts and principles of attachment theory boast adequate construct and internal validity. Studies on place attachment, however, are much less methodologically varied, relying primarily on self-reports and qualitative methods.

1.10.1 Observation

1.10.1.1 Observation and interpersonal attachment. Following the notion that observation is the starting point of scientific inquiry, John Bowlby (1969) built attachment theory upon naturalistic observations of young children between the ages of six months and six years who were living in residential hospitals because they had been separated from their caregivers during World War II. His goal was to determine typical patterns of behaviour following the loss of a caregiver, and to link such patterns to psychopathology.

Later studies relocated observation to the laboratory, and involved more standardized measurement and coding. In a paradigm known as the “strange situation test,” Mary Ainsworth and her colleagues observed the behaviours of 12-month old infants who were subjected to a series of separations and reunions with their mothers (Ainsworth, 1967; Ainsworth, Blehar, Waters, & Wall, 1978). The dyad would enter a room and the child was free to explore the environment and play. A stranger would then join them, and the parent would leave for a few minutes. Behaviours of interest included infants’ exploration and play, the extent of their distress when the caretaker left the room, their reactions to the stranger, and their responses to the parent upon return.

More recent attachment theory research still uses observational techniques, but often in conjunction with self reports of attachment style. In a study of couples’ airport separations, attachment-related behaviours were observed, and subsequently, those who had been observed completed a questionnaire on their attachment style (Fraley & Shaver, 1998). Avoidantly attached partners showed less frequent displays of proximity seeking, but anxiously attached partners showed more frequent displays of distress. Other studies have used videotapes to code interactions among romantic partners (e.g., Collins & Feeney, 2004) and strangers (e.g., Feeney, Cassidy, & Ramos-Marcuse, 2008).

1.10.1.2 Observation and place attachment. Naturalistic observation of place attachment is uncommon, likely because identifying or generating opportunities to observe place attachment behaviours is difficult. Those who have attempted to include objective measures of place attachment have tallied proximity-seeking efforts, such as the frequency of homesick students calling home (Tognoli, 2003). Field experiments in which place attachment behaviours are

observed in response to varying conditions would add much to the construct and internal validity of place attachment and its processes.

1.10.2 Self-Report

An important method of ascertaining individuals' feelings, thoughts, and habits is simply to ask them. Not all psychological constructs can be observed, and survey research offers a feasible way to gather information about one's inner processes. This is especially relevant to place and person attachments, which include important cognitive-emotional elements that are not easily observable.

1.10.2.1 Self-reported interpersonal attachment. Questionnaires have been commonly used to study interpersonal attachment, and especially, adults' attachment styles in romantic relationships. The first of these had participants read descriptions of Ainsworth's three attachment styles (secure, avoidant, anxious), and indicate which one best described them in their romantic relationship (Hazan & Shaver, 1987). Later questionnaires, such as the Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991) offered improved multi-item Likert scales that assessed individuals' self-ratings on each of four types of attachment (i.e., secure, fearful, preoccupied, and dismissive).

From these surveys evolved the widely used Experiences in Close Relationships scale (ECR; Brennan, Clark, & Shaver, 1998), which assesses the content of individuals' working models of attachment, including their expectations, behaviours, and experiences in close relationships. It was derived from a large factor analysis of previously developed attachment surveys, and situates an individual's attachment style along the two main dimensions of anxiety and avoidance. Individuals scoring low on both dimensions are considered secure. The ECR has been employed in a variety of studies (e.g., Beck, 2006; Feeney, Cassidy, & Ramos-Marcuse,

2008; Powers, Pietromonaco, Gunlicks, & Sayer, 2006), and has demonstrated good internal consistency.

Other attachment questionnaires do not assess attachment styles, but instead focus on the attachment figures (e.g., the WHOTO; (Fraley & Davis, 1997; Hazan & Zeifman, 1994). The WHOTO asks participants to list the most relevant person for each of the four classes of attachment behaviour (proximity maintenance, safe haven, secure base, and separation distress). Typically, adults list their romantic partner or close friend as most relevant for proximity maintenance and achieving a safe haven, but parents for separation distress and secure base behaviours. Trinke and Bartholomew (1997) later explored the hierarchy of attachment figures in their Attachment Network Questionnaire (ANQ).

1.10.2.2 Self-reported place attachment. The majority of place attachment research within environmental psychology operationalizes individuals' connections to place using self-reports. In comparison to the number of surveys developed for interpersonal attachment, many more have been developed for place attachment (e.g., Billig, Kohn, & Levav, 2006; Bonaiuto, Fornara, & Bonnes, 2006; Jorgensen & Stedman, 2001; Scopelliti & Tiberio, 2010; Twigger, 1992; Williams & Roggenbuck, 1989; and for a review, see Giuliani, 2003). In part, this variety reflects the plethora of place attachment definitions that have been proposed (e.g., Scannell & Gifford, 2010a).

The first measure to assess stable individual differences in place attachment was McBain's (2010) Home Attachment Scale, a four-item measure derived from Bartholomew and Horowitz' Relationship Questionnaire (1991). Participants are asked to indicate their agreement with four descriptions about ways they might relate to their current home. Each of these

statements was intended to reflect one of the four attachment styles (i.e., secure, preoccupied, dismissing, and fearful).

Unfortunately, some place attachment studies are weakened by questionable measures. Some lack survey development, standardization, or construct validity. One study that analyzed secondary data from 13 countries assessed place attachment with a single, five-point Likert item: “Do you think the area in which you live is a good place to live?” (Dallago et al., 2009). In my view, this problematic item may better cluster with constructs such as neighbourhood satisfaction or quality perception rather than place attachment. The Home Attachment Scale (McBain, 2010) may similarly suffer from poor face validity. For example, the fearful place attachment item reads, “I really want to feel at home but it is difficult to relax in this place. I don’t feel safe in this place and often think of moving.” Whether this is a reflection of a stable individual style in place attachment, or simply a negative evaluation of one’s current home, remains debatable. These examples underscore the importance of using multi-item, reliable measures with established reliability and validity when conducting quantitative studies about place attachment.

1.11.3 Semi-Structured Interviews

1.10.3.1 Interpersonal attachment through interviews. A qualitative approach is another methodology relevant to attachment constructs. For interpersonal attachment, the Adult Attachment Inventory is the most commonly used interview schedule (AAI; George, Kaplan, & Main, 1985; Main & Goldwyn, 1994; Main, Goldwyn, & Hesse, 2002). This is a 60-minute, semi-structured interview that assesses one’s current “state of mind” about attachment relationships with one’s parents. Adult participants are asked to recall their relationship with their primary caregiver throughout childhood, and give specific examples to illustrate the nature of that relationship. Independent coders then code this interview for attachment security, marked

by a sense of value for the relationship, as well as a feeling that it was influential but did not hamper their autonomy. Coders also note the extent of organization, consistency, and concreteness in responses. Accounts reveal how early experiences with one's caregiver have been organized mentally. From this, researchers derive four main AAI classifications (secure, preoccupied, dismissing, or unresolved), which are similar to attachment styles of the ECR. The AAI has been applied to a variety of research questions such as those that relate AAI classifications to the intergenerational transmission of attachment (George & Solomon, 1999), psychopathologies (e.g., Lyons-Ruth & Jacobvitz, 1999), and romantic relationships (e.g., Simpson, Rholes, Orina, & Grich, 2002).

Unlike the ECR, which involves conscious knowledge of one's own attachment style, the AAI may reveal the subconscious aspects of attachment, and the extent of "coherence" about past experiences with parents. However, proponents of self-reported attachment (e.g., Shaver & Mikulincer, 2002) maintain that the ECR can also tap implicit attachment processes. Specifically, the two dimensions of anxiety and avoidance reflect the underlying hyperactivating and deactivating strategies employed.

1.10.3.2 Place attachment through interviews. Some suggest that place attachments can involve rich subjective meanings that cannot always be captured by self-reports; for this reason, a qualitative approach may sometimes be suitable (Fishwick & Vining, 1992). Mazumdar (2005) argues that nonpositivistic research is the best type of methodology to investigate place meaning because it can better represent the depth and complexity of the bond. He views positivistic research as identifying and predicting phenomena within a sample that will generalize to a larger population, but nonpositivistic research as obtaining a deep understanding of phenomena, such as through case studies or ethnographies. Instead of generalizability, concepts have transferability;

that is, themes that emerge from data can be viewed more abstractly so that they can be transferred elsewhere.

Some environmental psychologists understand person-place concepts through semi-structured interviews and other qualitative methodologies. For example, Morgan (2010) conducted interviews to assess unconscious internal working models of person-place relationships. Individuals' descriptions of place memories and meanings were then coded into themes and used to evaluate the integrated model of the development of interpersonal and place attachment. In another study, the relation between place attachment and mobility was explored through qualitative interviews with 14 respondents (Gustafson, 2001). Other place attachment researchers have similarly found great value in this methodology (e.g., Ryan & Ogilvie, 2001; Steel, 2000; van der Klis & Karsten, 2009).

1.10.4 Priming

Priming refers to exposure to stimuli and events which temporarily activate related concepts or states of mind, thereby influencing emotions, behaviours, and cognitions (Reiss & Judd, 2000). This method has greatly improved the study of interpersonal attachment because it lends itself well to an experimental design. In some of these studies, participants are primed with their attachment figures via images, words, and visualizations (e.g., Cox et al., 2008). Another way to use priming to study attachment is to expose people to threat primes and measure subsequent attachment behaviour. One study used priming to support the claim that attachment figures provide a safe haven in the presence of threats (Mikulincer, Gillath, & Shaver, 2002). After being subliminally primed with threat-related words, individuals more quickly recognized their attachment figures than individuals who were primed with neutral words. In another study, individuals primed with death-related words chose to sit closer to strangers with traits similar to

their parents (Cox et al., 2008). Priming could readily be applied to the study of place attachment but (to my knowledge) it has not yet been attempted.

1.10.5 Physiological Measures of Attachment

1.10.5.1 Physiological measures of interpersonal attachment. A central tenet of attachment theory is that the attachment system serves to regulate affect in response to threats (e.g., Bowlby, 1969; Shaver & Mikulincer, 2007). Physiological measures of stress are one important way to lend credibility to this claim, especially because self-reported stress does not always correspond to physiological stress indicators (e.g., Powers, Pietromonaco, Gunlicks, & Sayer, 2006). Interestingly, such studies have shown that individuals without securely functioning attachment systems are more highly reactive to threats as assessed by faster heart rates, higher blood pressure, and increased skin conductance (e.g., Carpenter & Kirkpatrick, 1996; Fraley & Shaver, 1999).

Another study used salivary cortisol samples to demonstrate that attachment style predicts stress reactivity and recovery from relationship conflicts among heterosexual couples (Powers et al., 2006). Women high in attachment avoidance experienced greater stress prior to and during a heated discussion with their romantic partners (as compared to anxiously or securely attached women), but they were also able to recover more quickly following the conflict. However, men who were high on either the anxious *or* avoidant dimensions experienced high levels of stress during the conflict, and those who were anxious were slower to recover. Attachment style of the relationship partner was also important. Men with securely attached partners experienced the lowest levels of stress reactivity.

1.10.5.2 Physiological measure of place attachment. Physiological measures have been a useful tool for environmental psychologists, but most of this research falls within the domain of

restorative environments and has not yet infiltrated place attachment research. Given that place attachment is thought to provide restorative, stress-reducing benefits to individuals (e.g., Korpela, Hartig, Kaiser, & Fuhrer, 2001), research employing physiological measures will likely be important for further validation of these models. Such studies could benefit from measures of stress based on cortisol samples and blood pressure, measures of emotion, based on facial electromyography, or measures of brain activity, using *f*MRIs (e.g., Reiss & Judd, 2000).

1.11 Summary of Literature Review

Attachment extends beyond the primary infant-caregiver relationship to other family members, people in the community, romantic partners, objects, and places. Currently, the extension of interpersonal attachment theory to place attachment reveals similarities in the way we bond to people and places. Behaviourally, both types of attachment are maintained through proximity-seeking, and emotionally, they provide individuals with a sense of safety and comfort. In turn, these bonds can then fuel explorations of broader environments. Cognitively, bonds become mental representations that guide interpretations of events and expectations of the future.

Individuals appear to possess a proclivity for both interpersonal and place attachment, which are extremely common, if not universal. Most researchers agree that bonds form over time, although the developmental course of place attachment is less well-understood than that of interpersonal attachment. In both cases, bonding can occur toward multiple persons or places, but the hierarchy of places and their relation to interpersonal attachment figure hierarchies has not yet been investigated. Further, a large body of literature supports the view that individuals can be characterized as having a particular style of interpersonal attachment, but the existence and structure of place attachment styles has not been fully established. Most relevant to this

dissertation, both types of attachment appear to serve various psychological functions, but the types of functions provided by place attachment remain unconfirmed.

Interpersonal attachment theory has been investigated using a variety of innovative methodologies, but place attachment theory, in contrast, appears less methodologically sophisticated. Place attachment research would benefit from a greater diversity of operationalizations of key constructs, and a multi-method approach to investigating research questions. As a whole, environmental psychology demonstrates an over-reliance on self-reports (Winkel, Saegert, & Evans, 2009). This can introduce a “mono-method bias,” in which variance between two constructs may be shared simply because both use the same type of methodology. For example, self-reported place attachments and place-protective behaviours may be related because of a third variable, such as mood, which could influence responses on both measures. To reduce this mono-method bias and methodological stagnation, it is crucial that place attachment researchers adopt new operationalizations and research designs.

One may question whether or not bonds to place could possibly be as strong as bonds to people, for example, because interactions such as responsivity and communication either are non-existent when it comes to place, or are of a different kind. The differing nature of these attachment figures indeed limits the extent of comparison. Nevertheless, the parallels in the psychology of bonding to people and bonding to places are fascinating. Perhaps this reveals that because humans have evolved as social animals, we continue to relate socially to non-human entities. Therefore, social tendencies can be informative in studying the interactions between humans and the physical environment. Conversely, the shapes and forms of the physical environment cannot be ignored in investigations of social processes. The combined study of interpersonal and place attachment offers one connection between research in social and

environmental psychology; as this paper has argued, each should inform and further enrich the other, and ultimately, the experience of human bonding will be better understood.

1.12 Research Aims

The theories of place attachment and interpersonal attachment emerged from different research traditions, differ in their stages of theoretical development, and have been applied to dissimilar issues. Nevertheless, the overlap in the principles of these two theories, along with the methodological sophistication of the latter, suggests that interpersonal attachment research may offer a promising source of inspiration for future studies on place attachment.

Informed by this comparison, the remainder of the dissertation pursues three main goals. The first is to further identify parallels between the theories of place attachment and interpersonal attachment by exploring the *functions* of place attachment and describe which are shared with interpersonal attachment. This may help to explain why attachments form and how they facilitate related psychological processes, such as need satisfaction.

The second goal is to examine how such functions differ according to stable individual differences in attachment. Internal working models of the self and others (which form the basis of interpersonal attachment styles) have been found to shape a variety of perceptions, cognitions, and behaviours. However, the influence of these interpersonal attachment styles on place attachment functioning has received little attention. Because recent work has demonstrated that analogous styles exist for place attachment (McBain, 2010), a related question is whether place attachment styles will influence the use of place to fulfill various functions. Thus, I will explore the moderating effects of interpersonal attachment styles and place attachment styles across all three studies.

The third goal is to examine whether the functions of place attachment differ according to the geographical scale at which the attachment rests. This is important given the lack of attention to scale in the place attachment literature (e.g., see Lewicka, 2011). Therefore, I will analyze the functions of place attachment using classifications of scale from the cognitive mapping literature (Freundschuh & Egenhofer, 1997).

An additional, methodological goal (in the second and third parts of this research) is to bring a new methodological approach to the study of place attachment, drawing largely on experimental paradigms used in social psychology. This will encourage a departure from the descriptive and correlational approaches predominant in the place attachment literature to a multi-method approach that includes experiments to supply evidence about the causality of place attachment processes.

In sum, this dissertation explores the functions of place attachment, as well as the commonalities and links to interpersonal attachment, using a multi-method approach. Because this multi-method approach will provide data from three distinct, yet complimentary research designs, the validity of conclusions is strengthened.

CHAPTER 2

Study 1: A Content Analysis of the Functions of Place Attachment

Study 1 begins the inquiry into the functions of place attachment with a content analysis of individuals' open-ended descriptions about places to which they consider themselves attached. This research supports the first objective of the dissertation, which is to outline the functions of place attachment. In particular, I identified a variety of reasons why individuals' seek proximity to their important places, and which types of outcomes they experience once proximity is attained. Common functions were identified and examined according to participants' attachment styles, demographic characteristics, and the geographical scale of the place (i.e., Freundschuh & Egenhofer, 1997). Those functions applicable to both place and interpersonal attachment are discussed.

2.1 Methodology

In content analysis, quantitative coding schemes are applied to subjective material, such as personal accounts, media, or responses to interview questions; third-party coders analyze these documents for particular codes and themes (Smith, 2007). This methodology was selected as the starting point for my exploration of the common functions of place attachment because the detailed information derived from personal accounts is useful for exploratory research and theory development. Content analysis is also thought to be more reliable than are other types of qualitative analyses, given its use of a detailed coding scheme, as well as the opportunity for data to be coded by multiple raters, allowing for reliability to be assessed (Smith, 2007).

2.1.1 Recruitment

A diverse sample of Canadian residents was recruited through Mechanical Turk (MTurk), a website hosted by Amazon.com. This is a new recruitment alternative growing in use among behavioural researchers. Pitched as a “marketplace for work that requires human intelligence,” it allows individuals from any country to either post or complete tasks online for small amounts of money, ranging from approximately 1 cent to \$2 per task. In general, investigations of MTurk have concluded that it is a promising method of recruiting participants for behavioural research. Demographically, MTurk respondents have been found to be more representative than other types of online samples (Buhrmester, Kwang, & Gosling, 2011), student samples (Buhrmester et al., 2011; Goodman, Cryder, & Cheema, 2012), and convenience samples of adults recruited in public places (Goodman et al., 2012). Furthermore, characteristics of American MTurk respondents do not greatly deviate from those of the general US population, but they do tend to be slightly younger, more educated, and have a lower mean income, although the distribution of income is similar (Paolacci, Chandler, & Iperiotis, 2010). Further, the use of MTurk excludes those who do not have access to the Internet.

Thus, at least in US samples, MTurk respondents are not demographic outliers. A study on motivations for MTurk participation revealed that respondents view MTurk as a useful way to spend time, a source of entertainment, and a way to earn additional money, but not usually as a primary source of income (Paolacci et al., 2010).

The advantages for researchers are that MTurk data collection can be inexpensive, rapid, and can result in samples that are more representative and diverse than can be obtained by other recruitment methods. Using MTurk, some authors (i.e., Paolacci et al., 2010) have successfully replicated findings from classic studies on judgement and decision making (Tversky &

Kahneman, 1983). The quality of the data appears to be reliable and accurate, and compensation rates do not affect data quality (Buhrmester et al., 2011; Rand, 2011). Poor quality data appears to be less problematic than one might think, in part because an “approval” rating system can limit participants' eligibility for other MTurk tasks should they submit careless responses; this discourages participants from rushing through tasks.

Nevertheless, MTurk-recruited participants sometimes pay less attention to questions than do other samples as assessed by the inclusion of a difficult attention question (Goodman et al., 2012). Thus, a key recommendation is that surveys should include such a question, which can then be used to filter out participants with potentially lower quality data (Goodman et al., 2012). Another issue is that MTurk participants are more likely to look up the answers to factual questions on the Internet, and so MTurk may be inappropriate for knowledge tests or other measures involving “correct” answers. A third issue is that, compared to convenience samples, MTurk participants possess slightly different personality traits: they are less extraverted, less emotionally stable, and have lower self-esteem (Goodman et al., 2012). However, this difference may be related to the greater cultural diversity among MTurk participants.

In sum, MTurk appears to provide a useful opportunity for participant recruitment, although it is not without limitations. On the other hand, traditional methods of sending surveys to randomly selected postal routes, although admirable in principle, can be plagued with self-selection biases and dismal response rates.²

² Recruitment was initially done by mailing surveys to residences along randomly selected postal routes across British Columbia. However, the response rate of approximately 3% meant that data collection this way was not feasible, given cost limits and an intended sample size of 100 people.

In accordance with my research question and my university's ethical guidelines, I restricted my sample to 100 Canadians over the age of 18 (three of whom did not complete the survey). To prevent multiple submissions, I restricted the task to accept only one response per MTurk ID. Participants received \$1 for completing the 30-minute survey.

2.1.2 Participants

Participants were 97 residents (43 males, 49 females, 5 unspecified) from communities across Canada. Their ages ranged from 18 to 53 years, ($Mdn = 27$, $SD = 8.47$), and participants declared a variety of ethnic backgrounds (e.g., Caucasian, Asian, Indo Canadian, Hispanic, First Nations, Mixed, Croatian, Assyrian, etc.), occupations (e.g., janitor, architect, call centre worker, librarian, engineer, retail, government worker, etc.), and levels of education, ranging from high school diploma (24.2%) to PhD (3.3%). Some participants were students (19%) or unemployed (11%). Participants reported living in their current area from 4 months to 59 years ($Mdn = 10.00$, $SD = 11.27$); 49.5% rented their current residence, 35.0% owned, and 2.1% had other arrangements (i.e., lived with family). The majority of participants reported being in a romantic relationship (55.7%), and of those, 72.2% lived with their partner.

The proportion of participants identifying with each province of residence and gender generally reflected that of the general population (Statistics Canada, 2011). However, Newfoundland, Quebec, Saskatchewan, Manitoba and the territories were slightly underrepresented, and British Columbia was slightly overrepresented. The sample was younger and more highly educated than the general population, which is similar to other MTurk-derived samples (i.e., Paolacci, Chandler, & Iperiotis, 2010). Nevertheless, compared to student samples, this sample was more sociodemographically diverse (Henrich, Heine, & Norenzayan, 2010), thus

supporting the use of MTurk as a way of obtaining a diverse and representative sample. Key demographic variables are presented in Tables 2.1 and 2.2.

Table 2.1

Frequencies for Categorical Demographic Variables

Variable		<i>n</i>	Percent
Gender	Male	43	44.3
	Female	49	50.5
	Unspecified	5	5.15
Romantic Relationship Status	Single	34	35.1
	In a relationship	54	55.7
	Unspecified	9	9.3
Living with Partner	No	15	27.7
	Yes	39	72.2
Province	Ontario	39	42.4
	British Columbia	18	19.6
	Quebec	9	9.8
	Alberta	9	9.8
	Nova Scotia	4	4.3
	New Brunswick	3	3.3
	Saskatchewan	2	2.2
	Manitoba	1	1.1
PEI	1	1.1	

Table 2.1, Continued.

Variable		<i>n</i>	Percent
	Unspecified	6	6.5
Housing tenure	Rent	48	49.5
	Own	34	35.0
	Other	2	2.1
	Unspecified	13	13.4

Table 2.2

Descriptive Statistics for Continuous Demographic Variables

Variable	<i>n</i>	Min	Max	<i>M</i>	<i>SD</i>
Age	89	18	53	28.83	8.47
Length of Residence	92	.30	59	14.29	11.27
Number of housemates	90	0	12	1.98	1.73

2.1.3 Measures

2.1.3.1 Place attachment description. The survey began with a writing exercise in which participants described a place to which they were attached. First, they were provided with a brief definition of place attachment and then asked to list one place to which they consider themselves especially attached (if any). Specifically, they were told, “Broadly speaking, *place attachment* is feeling especially connected to a place that is meaningful to you. People become attached to all sorts of places, for different reasons.” This definition was included to help distinguish place attachment from other similar constructs, and to inform participants about the type of person-

place bond being investigated. However, the concept of “place” was not defined for participants. Rather, they were told that the place of attachment could be any place from any time. This avoided the problem inherent in some place attachment research in which “home” is the assumed place of attachment, and allowed for a broader selection of important places. Participants who did not have a place of attachment ($n = 3$) were asked to state this, and explain why.

The participants then wrote their responses to four open-ended questions: (1) Describe this place in detail. Where is it? What is it like? (2) Why do you feel attached to this place? Please provide one or two reasons. (3) When you are not at this place, what makes you want to go there? Please give one or two reasons. If you don't want to go there, please explain why. (4) What psychological and other benefits do you experience from being connected to this place? Please provide two or three benefits.

In their responses to these questions, participants were asked to give a specified number of reasons (or sentences) so a sufficient level of detail would be provided (see above). Finally, two 7-point, closed-ended questions assessed the extent of attachment to physical and social elements of the place (see Appendix A for survey instruments).

2.1.3.2 Experiences in Close Relationships-Revised (ECR-R; Fraley, Waller, & Brennan, 2000). This 36-item scale has been used in numerous studies (e.g., Kelley, Cash, Grant, Miles, & Santos, 2004; Wildschut, Sedikides, Routledge, Arndt, & Cordaro, 2010) to assess interpersonal attachment styles (i.e., secure, anxious, avoidant, and disorganized) in romantic or other close adult relationships. Participants respond to questions using a Likert scale ranging from 1 “strongly disagree” to 7 “strongly agree.” Scores are plotted along two dimensions of avoidance and anxiety, and thus an individual with “secure” attachment will score low on both of these dimensions. An example of an item related to avoidant attachment is, “*I prefer not to show*

a partner how I feel deep down.” An example of an item related to anxious attachment is, “*My desire to be very close sometimes scares people away.*” For Study 1, participants’ continuous attachment scores were first examined (i.e., through reliability analyses and descriptive statistics), and were then converted into one of the four attachment style categories using cluster analyses (see Section 2.2.4).

2.1.3.3 Place Attachment Style. Given the lack of an adequate published scale assessing individual differences in place attachment, along with the assertion that such styles exist (i.e., Fitch & Adams, 2010; McBain, 2010), a 37-item place attachment scale was constructed for the purposes of this dissertation. The items were written in parallel to those on the ECR-R, but were revised so that they could be applied to place. For example, “*I worry a lot about my relationships*” was rewritten as “*I worry a lot about my place,*” and “*It makes me mad that I don’t get the affection and support I need from my partner*” was rewritten as “*I don’t get the support I need from my place.*” Not every ECR-R item could be readily translated to a place attachment item; however, the ECR-R was used as a starting point for item generation. One additional item, “*I get upset when I hear other people criticizing my place,*” was added following initial revision of the items. As with the ECR-R, all items were responded to on a 7-point Likert scale ranging from “strongly disagree” to “strongly agree.”

2.1.3.4 Demographic information. Participants reported demographic information, including age, gender, occupation, current city/region of residence, length of residence, housing tenure (i.e., rent or own), number of others in residence, highest educational level attained, ethnicity, relationship status, and if applicable, whether they currently live in the same residence as their relationship partner. Finally, as suggested by the MTurk literature (i.e., Goodman et al.,

in press), a question assessing participants' attentiveness was also included (see Appendix A, p. 10).

2.1.4 Pretest

The questions were pretested for clarity using the cognitive interviewing method (Beatty & Willis, 2007; Forsyth & Lesser, 1991; Reiss & Judd, 2007), which aims to identify how each item is comprehended, and whether or not terms or wording cause any confusion among participants. Participant comments are then used to guide questionnaire revisions.

A small sample of five people participated in the pretest interviews. They were varied in their demographic characteristics (i.e., gender, age, occupation, and ethnic background), and described different types of places of attachment (i.e., a city, a farm house, a cabin on a lake, an apartment, and a house).

I employed a "think-aloud" procedure, in which participants were asked to freely describe what they were thinking about as they were answering questions, including what they interpreted the question to mean, whether they perceived any problems with it, and how they generated their responses. This was done for all sections of the questionnaire, except the scale assessing interpersonal attachment style (the ECR-R; Fraley, Waller, & Brennan, 2000), which I intended to retain without revision, given that it is a well-used, previously validated scale.

In addition to "think-aloud" comments, probes were used for the place attachment section of the questionnaire (Part 1), to gain a better understanding of the meanings that each participant conceptualized for this construct. Probing also assessed whether the questions would successfully provide information about place attachment functions. The probes were as follows: "What does place attachment mean to you?;" "What does attachment mean for the type of place you selected?;" "When we asked you to provide us with 'reasons' for your attachment, what did

you interpret this to mean?;” and “How did you interpret the term ‘benefits?’” An iterative approach was used, whereby the questionnaire was revised following each interview.

Along with revisions, responses were also used to explore preliminary themes. Several of the respondents described their places as repositories of memories, including memories of personal events, other people, and pets. Most of the participants also described the emotions associated with the place, which were usually positive, but sometimes negative. As one participant explained,

Because the status of this place is in question (i.e., it’s up for sale), the attachment has some anxiety and sadness associated with it, because the connection to it physically seems furtive and will disappear. It will still exist as a concept in my mind, but the sense of threat to the physical place may somehow strengthen my feelings of attachment to it.

Others valued their place for its provision of safety, privacy, familiarity, ownership, access to nature, and the opportunity for independence and freedom. Another common theme was that places of attachment appeared to provide a sense of belonging or connection. One participant noted: “Place attachment to this city means three things: (1) I always have a place to call home; (2) I have some connections that might help me get a job there when I decide to move back; (3) I feel like I’m part of a community.” The emergence of these themes supported the survey’s potential to tap into psychologically relevant (and other) benefits of place attachment.

2.1.5 Procedure

After signing up for the study via MTurk, participants read a Letter of Information for implied consent that outlined important details of participation based on the *Tri-Council Policy Statement on the Ethical Conduct for Research Involving Humans*. The participants were then

directed to the survey website, where they wrote about their place of attachment and completed the remaining questionnaires. Finally, participants were thanked for their participation and were compensated with \$1 via the MTurk system.

2.1.6 Content Analysis

Coding occurred in two rounds. The first involved an inductive approach (e.g., Thomas, 2003), where two research assistants coded the written responses for evident functions of place attachment using the QSR NVivo9[®] software for qualitative research. These individuals were two PhD students in psychology who were blind to the study's hypotheses and unfamiliar with the two attachment theories of interest, ensuring that the emergent functions would be guided by the data rather than by their pre-existing expectations. They were trained and provided with a coding manual (Appendix A) with instructions and examples of coding from three questionnaires. It also defined "psychological function" as "the psychological benefits afforded by the attachment bond. Attachment is functional when it provides a positive outcome for the individual, for example, by helping individuals satisfy certain psychological needs. These benefits could be emotional, cognitive, goal-related, identity-related, and so on."

Responses could be coded into more than one category if the coder viewed it as fulfilling more than one function. For example, a response such as "this place evokes memories of time spent with my family" could be coded into the categories of "place memories" and "connection to family." After familiarizing themselves with the coding manual, coders then independently coded three new responses, after which, we discussed their codes and explored disagreements. The coders then coded another round of three responses and we again discussed and planned the coding strategy.

Following this training session, data were then independently coded by each coder, who identified apparent psychological functions afforded to the participant by their place attachment bond. Coders reviewed codings after the first 10 and first 20 participants to discuss disagreements, and refine the emerging structure of categories. Smaller themes were merged into larger categories where appropriate. When the coding was complete, the lists from each coder were then compared and commonly listed functions were retained; coders agreed on a new label for each retained category.

A second round of coding was performed by two undergraduate research assistants, who were also familiar with psychology but unfamiliar with theories of place attachment and interpersonal attachment. After a training session to learn the coding scheme that had been previously created, they independently coded the data, determining whether each function was present or absent for each participant. They also coded each response to identify the geographical scale of each place of attachment, using Freundschuh and Egenhofer's (1997) classification system.

2.2 Results

2.2.1 Data Cleaning

The quantitative data were first examined for errors and outliers. An analysis of the frequencies demonstrated that values for all variables fell within the acceptable range of response options. Of the 97 participants, 93 provided both qualitative and quantitative responses, one provided quantitative but no qualitative data, and three provided qualitative but no quantitative data. These four were retained for the analyses relevant to the variables they had completed.

The missing data for each quantitative variable ranged from 1.1 to 8.5%. On a per-participant basis, 38 participants were missing no data, 26 were missing a response for one variable, and 26 were missing between 2.3 and 20.9% of the data. Four participants who were missing over 33% of the data were excluded from further quantitative analyses. Among the remaining 90 participants, the overall percentage of missing data was 2.49%.

Independent *t*-tests demonstrated that missing data did not differ by gender, relationship status (single or in a relationship), living with one's partner or not, age (above and below the median of 27), the number of housemates (above or below the median of 2), years of residence (above and below the median of 10), or housing tenure (renting or owning). Because of this, along with the low percentage of missing values overall, missing data was not of concern.

Eight participants (8.9%) incorrectly responded to the item assessing their attention. However, *t*-tests demonstrated that these participants did not differ in their responses on any of the other continuous variables, including the four attachment style variables, birth year, length of residence, or social and physical attachment. They also did not differ in the overall frequency of benefits listed, the amount of missing data, and were not multivariate outliers, as determined by

calculations of Mahalanobis' distance. Therefore, these participants were not excluded from the analyses.

2.2.2 Reliability

Negatively worded items were recoded, and then the reliabilities of the place and person attachment subscales (i.e., the ECR-R and the PAS) were assessed. Cronbach's alpha values on the ECR-R were excellent for both subscales: interpersonal attachment (IA) anxiety, $\alpha = .93$, and IA avoidance, $\alpha = .96$. All of the items possessed corrected item-total correlations above .4. Given this, as well as the intention to use the scale as previously published, these items were all included in the computation of composite scores.

For the PAS, alphas on each of the subscales were also acceptable: for place attachment (PA) anxiety, $\alpha = .87$, and for PA avoidance, $\alpha = .81$. However, because this was a new scale, items that did not correlate well (i.e., less than .3) with the scale's total score were removed.³ The resulting alphas were .88 for PA anxiety, and .83 for PA avoidance.

2.2.3 Descriptive Statistics

After the items with low inter-item correlations were removed, composites for each attachment subscale were calculated. To reduce missing data and to take into account the different numbers of items in each subscale, they were then averaged according to the number of items completed. Histograms and reports of skew and kurtosis revealed that both of the IA

³ Three items were removed from the place attachment anxiety subscale: "*I have a strong need to be close to my place*," "*I feel restored when I am in my favourite place*," and "*I don't worry about losing my place*" (reverse-coded). Three items were removed from the place attachment avoidance subscale: "*I often worry that I don't fit in well in places*," "*I prefer not to show how attached I am to places*," and "*It's not difficult for me to get close to my place*" (reversed).

subscales as well as the PA avoidance subscale were normally distributed; however, PA anxiety was positively skewed, Z skewness = 2.20, $p < .05$. In addition, five participants were found to be outliers on the various subscales (Z 's ranged from 2.05-3.35), although Mahalanobis' distance indicated that no multivariate outliers were present.

Table 2.3

Reliabilities and Descriptive Statistics for Continuous Variables

		α	Min	Max	M	SD
ECR-R	Anxiety	.93	1.00	6.11	3.38	1.24
	Avoidance	.96	1.00	6.20	3.09	1.33
PAS	Anxiety	.88	1.13	6.38	3.02	1.00
	Avoidance	.82	1.33	5.40	3.17	0.82
Type of PA	Social	-	1	7	5.68	1.94
	Physical	-	2	7	5.85	1.18
Total number of benefits	-	-	0	8	3.73	1.65

Note: The ECR-R subscales included 18 items each, PA Anxiety included 16 items, and PA Avoidance included 15 items. The "type of PA" variables were single items. All response options ranged from 1, "strongly disagree," to 7, "strongly agree."

Means were generally below the midpoint of the scale range (i.e., 3.5), indicating that attachment styles were more secure than anxious or avoidant. Levels of IA anxiety ($M = 3.38$, $SD = 1.26$) were the highest, followed by PA avoidance ($M = 3.17$, $SD = 0.82$), IA avoidance ($M = 3.09$, $SD = 1.33$), and PA anxiety ($M = 3.02$, $SD = 1.06$). Participants reported strong

attachment to social ($M = 5.68$, $SD = 1.94$) and physical features ($M = 5.85$, $SD = 1.18$) of the place, but the two latter variables were uncorrelated, and were unrelated to the attachment scores. These and other descriptive statistics are presented in Table 2.3.

Consistent with previous research (e.g., Fraley, 2012), the avoidant and anxious subscales of the ECR-R were strongly correlated ($r = .49$, $p < .001$). The two subscales of the PAS were moderately correlated ($r = .28$, $p < .01$). Correlations across the different types of subscales showed that PAS anxiety was associated with both ECR-R anxiety ($r = .49$, $p < .001$) and ECR-R avoidance ($r = .23$, $p < .001$). PAS avoidance correlated with ECR-R avoidance ($r = .28$, $p < .001$) but not with ECR-R anxiety ($r = .17$, $p = .11$).

2.2.4 Cluster Analyses

The ECR-R determines attachment style based on an individual's scores on the two dimensions of anxiety and avoidance, and thus, much attachment research uses these continuous scores rather than dichotomizing the variables to create the four attachment styles. When categorical variables are required, however, cluster analyses are typically used to determine each participant's attachment style (Brennan, Clark, & Shaver, 1998; Brydon, 2005; Dominique & Mollen, 2009).

Cluster analysis groups participants based on their similarity on particular variables. This is done by calculating the Euclidean distance (i.e., the squared sum of differences) between all cases, and then creating groups of clusters with the least distance among them. Following Brennan, Clark, and Shaver's (1998) approach, I conducted a cluster analysis of participants' ECR-R avoidance and anxiety scores first using Ward's method to obtain the initial cluster centres, followed by a k -means analysis. Ward's method is a hierarchical clustering procedure, in

which each case begins as one cluster, and clusters are then merged in a way that minimizes the increase in the sum of squared errors.

Table 2.4

Means from Attachment Style k-Means Cluster Analyses

		secure	anxious	avoidant	disorganized
ECR-R	Mean Anxiety	2.23	4.73	2.83	4.18
	Mean Avoidance	1.72	3.35	3.70	5.13
	Mean Distance of Cases from Cluster Center	.69	.88	.81	.77
	<i>N</i>	32	27	18	13
PAS	Mean Anxiety	1.90	3.13	2.94	4.50
	Mean Avoidance	2.49	2.58	3.82	3.56
	Mean Distance of Cases from Cluster Center	.63	.49	.53	.70
	<i>N</i>	23	19	30	18

k-means clustering is non-hierarchical, and appropriate for analyses needed to produce a specific number of clusters. Using the cluster means from Ward's method, the *k*-means procedure began by assigning each case to the cluster mean for which its distance is minimized. Cluster means were then re-computed, based on the scores of participants assigned to each cluster, and then all cases were re-classified. This iterative process continued to stabilize means, until a maximum of 10 iterations was reached. The results showed that the majority of participants' attachment styles were secure ($n = 32, 35.56\%$), followed by anxious ($n = 27,$

30.00%), avoidant ($n = 18, 20.0\%$), and disorganized ($n = 13, 14.44\%$)⁴. The means for each cluster are presented in Table 2.4.

The cluster analysis for the PAS followed the same procedure as above, using Ward's method to obtain cluster means, and then k -means to assign participants to clusters. The results showed that most participants were classified as avoidant ($n = 30, 33.33\%$), followed by secure ($n = 23, 25.56\%$), anxious ($n = 19, 21.1\%$), and disorganized ($n = 18, 20.0\%$). The means for each cluster are presented in Table 2.4.

2.2.5 Functions of Place Attachment

As mentioned earlier, participants' responses to five questions about their places of attachment were coded into themes, in two phases of coding. The initial coding was done independently by each rater, whose lists were merged into one. Because of training and discussion sessions, the lists were highly convergent. Specifically, 11 categories overlapped between raters and four were unique, resulting in a total of 15 categories: activities, aesthetics, belonging, comfort (psychological and physical), connection to nature, freedom, entertainment, memories, positive emotions, practical needs, privacy, relaxation, self-growth, stability, and value-expressive. A coding scheme was then prepared for the second phase of the coding; the 15 categories were described in detail and supplemented with examples.

⁴ These analyses (i.e., Ward's method and k -means) were re-ran without the eight participants who had incorrectly answered the attention question. The percentages of each type of attachment style changed very little, except there were slightly more secure (35.8%) and disorganized (17.3%) types, and slightly fewer anxious (29.6%) and avoidant (17.3%) types.

In the second phase of the coding, two new raters judged whether each of the 15 categories were present or absent in each participant's description of their place of attachment. Cohen's (1960) kappa was calculated to assess interrater reliability for codings of each category of place attachment benefits, and it revealed substantial agreement (i.e., ranging from $\kappa = .71-.96$) for all categories except "physical comfort," which showed lower, but still adequate, agreement, $\kappa = .49$ (Landis & Koch, 1977). All kappa values are listed in Table 2.6. Following this coding, raters added additional notes to the coding scheme. Then, considering these revisions, raters individually re-coded all variables that had been inconsistently coded. Remaining disagreements were resolved through discussion, except for a few ($n = 8$) which were left as missing data.

The frequencies for each category are presented in alphabetical order in Table 2.6. Only themes repeated a minimum of six times were retained (cf., Smith-Jackson & Hall, 2002); specifically, "value-expressive" and "stability" were coded too infrequently to retain them. Figure 2.1 displays the resulting 13 functions of place attachment, each of which are described in detail below. The number of benefits expressed per participant ranged from zero to eight ($M = 3.73$, $SD = 1.65$).



Figure 2.1. Thirteen functions of place attachment as revealed by a content analysis.

2.2.5.1 Memories. The most common function of place attachment, mentioned by 69% of participants, is that it serves a memory-supportive function. Many participants described their place of attachment as being able to connect them to the past, or evoke past memories, as was expressed in phrases such as, “I like the memories that come to my mind every time I go there.”

Another participant wrote:

Although I have not been to this place in a while, I went frequently as a kid. I can still picture all of it in my mind; the memories are very vivid. I made a lot of friends there, I also caught my first fish there.

With these memories sometimes came a sense of nostalgia, and longing to return to that place or time. As one participant wrote, “I feel like it really brings me to a happy place in my mind. It makes me nostalgic, makes me miss my friends.” Through memory, the place of attachment can also serve to symbolize past and present traditions, thereby helping to situate the individual in time. One person wrote:

I feel attached to this place because I have been going to the cottage several times a year, every year for as long as I can remember. I have many childhood memories, as well as more recent memories of events that happened at the cottage.

Memory can go further than the recent past, by representing one's lineage or ancestry. The place connects the person to the past through their family's history. One participant's attachment to a region in Northern Iraq demonstrated use of place to connect to the past cognitively (through nostalgia), historically (by situating his own story in a political event), and ancestrally:

It creates nostalgia for me personally because it is a place I grew up in. It is full of mountains and land which seem to go on forever. It was my home. This was before the Iraqi Christians were persecuted and had to immigrate elsewhere. All my ancestors had lived there and have history there. It makes me feel as though that's where I belong -everyone is very welcoming.

In this example, ancestral ties link the two benefits of belonging and memories. Although memories were mentioned by most participants, they were more commonly mentioned by those with an anxious IA style (i.e., 78%) and least commonly (but still often) mentioned by those with a secure IA style (i.e., 66%). Those with a secure PA style similarly mentioned memories less often (i.e., 57%) than did the other PA types.

2.2.5.2 Belonging. The second-most commonly mentioned benefit of place attachment was belonging, which was evident in 54% of responses. Participants were considered to experience this benefit when they expressed feelings of "at homeness," belonging, feeling loved, having roots in a place, fitting in, or connecting with others. This was evident in one participant's description of her aunt's house:

It always gives me a feeling of belonging, much more than my own home because I moved houses several times as a child. It helps me stay connected with my extended family, some I don't usually see except for several times a year at this place.

For this participant, the presence of family and the provision of stability offered by the place created the sense of belonging. Some participants described belongingness as a sense of origin, and family roots. Responses such as "it reminds me of my own roots," or "this is where my family is from," were sometimes cited as the source of the attachment. Belongingness was also associated with notions of feeling "at home," and having a "hometown." This was evident in one participant's explanation of her attachment to Windsor, Ontario: "I like having a place to call 'home.' This is why my town is special to me. It gives me belonging."

Sometimes, the connection to the physical place promoted belongingness, but at other times, the place provided belongingness because of its interpersonal dimension, as was evident in one participant's description of her attachment to the Pont Neuf in Paris:

My husband proposed on this bridge in 2008. It was a very romantic place for me and my husband and we have special memories of it. I am emotionally attached to this bridge in France as it provides me with a sense of love and belonging.

The belongingness function was common among both males (43%) and females (52%). Not surprisingly, belongingness was mentioned by a greater percentage (69%) of securely attached individuals than those with other IA styles. However, of the PA styles, belongingness was mentioned most often (84%) by those classified as avoidant.

2.2.5.3 Relaxation. The third-most commonly mentioned function of place attachment was stress relief and relaxation, mentioned by 49% of participants. One participant attached to Barkerville, BC, expressed feeling "relaxed and grounded in this place." For some place attachments, relaxation was the primary feature; one participant from Ottawa emphasizes this about his attachment to his two-storey house:

Every day after work I head home and relax. I feel very comfortable here. I feel most comfortable at home. This is where I always go to relax so I think of it as a relaxing place. I think this is why I always want to go back. Mainly I feel safe and content. I feel relaxed and my stress goes away. I could be in the worst mood but as soon as I get home it simmers and fades quickly.

In this case, relaxation included comfort and restoration from stress and negative emotions. Thus, the place-as-relaxation function encapsulates the ability of place to help individuals achieve restoration from depleted emotional, attentional, or psychophysiological

states. Another participant's relaxation appeared to be enhanced by the freedom afforded by the place of attachment:

I can walk into the house and feel myself relax. I can do the things I need to do at my own pace, and I don't have to worry about appearances, or meeting someone else's expectations.

In this way, some of the functions of place attachment appear complementary. Individual differences in the frequency of mentioning relaxation were few; however, it was mentioned least often by avoidant IA style (i.e., 44%) and disorganized PA (i.e., 33%) styles.

2.2.5.4 Positive emotions. Over a third of participants (i.e., 38%) specifically mentioned experiencing positive emotions as a benefit of being attached to their place, such as happiness, joy, hope, and pride. Coders also counted optimism and laughter as part of this category; although these may be considered cognitive and behavioural (respectively), they possess an emotional component (Bachorowski & Owren, 2001; Scheier, Carver, & Bridges, 2001).

Overall, expressions of happiness were most frequent (e.g., "When I'm in Courtenay I feel at ease, at peace, and happy. The world seems OK again when I'm there;" and "I feel joy and happiness as I escape to the place I love with the people I love"). Interestingly, a few participants noted negative or ambivalent emotions associated with their place of attachment, because of lost friends, or painful memories. While worth mentioning, these were not expressed in terms of psychological functions and so a separate category for negative emotions was not included. Positive emotions experienced from their place attachment bond were most commonly mentioned by those with a secure IA style (50%) and individuals with an avoidant PA style (90%).

2.2.5.5 Activity support. Place attachment can support the ability to engage in activities or work. This benefit was mentioned by 33% of participants. Unlike entertainment, which involves the presence of exciting activities in a place (see below), the “activities” category is more an interdependent person-place function, referring to the ability of a place to support one's hobbies, interests, work, or skills. One participant observed that “the benefit of being connected to this place psychologically is that it gives me the opportunity to write expressively in a comfortable place I feel safe in.” Another participant described his attachment to a comic book/record store in downtown Nashville: “I was able to get a lot of material related to my growing interest in art, animation, and comics starting in my early teens.” These examples highlight how place attachment can provide a goal-supportive function that is by virtue of a good fit between the individual's interests and the attributes of the place. Of the individual differences in attachment, activities were mentioned most often by those with an avoidant IA style (56%) and those with a secure PA style (44%).

2.2.5.6 Comfort. Another important function was comfort, mentioned by 31% of participants. Of those responses, one-third of them specifically referred to physical comfort, such as food, nourishment, temperature, and physical safety. Physical comfort was evident in one participant’s description of her attachment to Calgary:

The climate is mild in the summer and cold and snowy in the winter; it is not humid. It is a big city but it doesn't feel big and isn't crowded compared to similarly-sized cities. There are very few insects aside from mosquitoes, and there are lots of outdoor and indoor spaces to enjoy year-round, alone or surrounded by people.

However, two-thirds of the time, comfort was expressed in psychological terms, whereby the place provides a sense of security, allowing the individual to feel at ease. References to the place as “safe and secure,” “sanctuary,” and “safe haven,” were coded as part of this subcategory. This was evident in one participant’s description of his attachment to Singapore, where he experiences “inner security.” A few of the participants who referred to comfort (i.e., $n = 4$) did not provide enough information for coders to determine whether it was psychological or physical comfort (e.g., “it is my house that I [grew] up in and is the safest place on the earth”).

The frequency of referring to either type of comfort was more common among participants classified as IA disorganized (i.e., 42%), and PA anxious (24%) participants.

2.2.5.7 Self-growth. A number of participants (i.e., 22%) recognized that their places of attachment assisted their self-growth or self-improvement. In part, this occurred when places of attachment were used for introspection, resulting in insight or self-reflection. The introspection was also used for a self-regulatory function, whereby goal progress is assessed through a comparison of distance to the desired goal; this was evident for one participant, who explained that her place “helps me to see how close or far away I am from the path I want to be on in life.”

For others, self-growth was afforded by the activities performed in the place, as one participant described about his attachment to the gym: “When I am at the gym I typically feel like I am improving myself so I think psychologically that makes me proud of myself.” Self-growth was often expressed in terms of a sense of accomplishment, improved self-esteem, or an appreciation for things learned about oneself. Securely attached individuals were the least likely to mention this benefit (IA, 19%; PA, 17%), as were individuals with an avoidant PA style (16%). Self-growth was mentioned fairly often (i.e., by 22%-33%) among individuals with all other attachment styles.

2.2.5.8 Freedom. Places of attachment were cited as providing freedom and autonomy, by 19% of participants. When in the place, participants reported feeling a sense of doing as they pleased and making their own decisions. For some, the place represented the first step of adult independence: “It was the first time I lived in a place that was all my own. I was officially an adult living away from my parents.” Freedom was also expressed in terms of an escape from daily routine: “It offers me freedom from life around me. It basically takes me out of my general rut of things and lets me enjoy everything around me.” Freedom was enjoyed most often by those with secure IA (i.e., 25%) and PA (i.e., 39%) styles.

2.2.5.9 Entertainment. Another benefit of place attachment is the ability of the place to provide a pleasing level of stimulation and interest, which was termed “entertainment.” This refers to attributes inherent in the place that compellingly engage the individual in some way. Participants who experienced place attachment-based entertainment (i.e., 19%) lauded their place for providing novelty, curiosity, excitement, diversity, activities, exploration, exhilaration, or opportunities for learning. One participant described the Fergus Flea Market in Ontario:

[It] used to be in a very old building on the river in Fergus Ont. On weekends [it] would come alive with vendors that sold everything from clothes to food to any kind of hobby you could think of. We used to go on weekends when I was a little kid. It was so much fun as a child because they not only had many hobby shops that I was interested in but it was a maze for little kids to get lost in. They also had great food.

The appeal of this place was in the excitement and fun offered by the place, and the match between the activities of the place and the interests of the participant when he was a child.

Entertainment was reflected in another participant's attachment to the Flamingo Hilton Hotel in Vegas:

It's a bright, warm, and welcoming place that is loaded with fun activities, great people, and delicious food...The delicious food, the fun and entertainment, and the overall feeling of being in Las Vegas. It's a non-stop party filled with surprises. It's a comfortable and pleasant environment.

One participant describes her attachment to Parc Lafontaine in Montreal:

I like the idea that a lot of different kinds of people use and enjoy the park. [...] It's a nice place to relax and sit and people watch. A variety of people go there -- sometimes musicians are practicing or playing with their friends, sometimes circus performers are practicing their acts. Sometimes there's just a lot of people walking their dogs.

This category of benefits demonstrates that places of attachment are not solely functioning as familiar safe havens, but that they can provide novelty, activity, interest, or excitement. Of note, the types of places involving entertainment were more often vacation destinations, cities, commercial venues, parks, or countries, rather than residential environments.

Entertainment-related responses were more frequent among individuals classified as IA avoidant (39%) and PA secure (30%), and least often mentioned by those classified as IA disorganized (8%).

2.2.5.10 Connection to nature. Not surprisingly, some of the places of attachment featured nature or greenery, but beyond this as a physical description of their place, 11.5% of participants explicitly expressed that their place of attachment fulfilled their need to be connected to nature. For example, one person noted, "When I'm not there, I want to go back for

the wilderness - I like to go back to places I've hiked and remember things I've seen.” For some participants, wildlife encounters were especially important, as one man enthusiastically explained:

I had some friends there, but the most important reason I 'feel attached' to Pemberton was the close proximity to wilderness. I am quite a loner, and a 5 minute walk from my door and I was in old growth forest. I would see all kinds of animals – deer, moose, bear, eagles, cougars. You name it. I watched them as a child/teen. I [pet] a mother black bear and a new born cub (they were hibernating). I've been within 3 meters of a grizzly. He's on one side of a berry patch and I'm on the other. He's eating like crazy [and] I'm picking like crazy [and] we would both stick our head up to see where the other was. [...] Sorry, I could go on about the animals for hours.

Whether or not the above is hyperbolic, the idea of using the place to connect to nature is evident. Some participants who expressed benefits of being connected to nature simultaneously benefited from relaxation (e.g., “I want to go there and see the trees and the creek and feel that peaceful relaxing feeling I used to feel every time I'd go there”), while others linked nature to their identity (e.g., “I grew up in nature, and seeing this place every day makes me feel more like myself”). Some responses, however, focused on connection to nature without reference to other types of benefits, such as one participant who described her attachment to her uncle’s cottage in Ontario:

It is a full acre of [a] beautiful Canadian landscape. Streams, bridges, frogs, dragonflies. Everything you could ever need. A stream that runs right next to the

cottage where further upstream you may drink fresh water straight out of the ground. A most beautiful place to be. I wish I could live there.

The frequencies showed that connection to nature was most commonly mentioned by individuals classified as IA secure (19%) and PA avoidant (16%).

2.2.5.11 Practical benefits. Participants sometimes referred to the ability of their place to meet practical needs, such as obtaining food, services, or other resources. This benefit was specifically mentioned by 9% of participants, who provided responses such as “[my place] has many amenities and everything I need. It is easy to get around town from the location,” and “I grew up in Calgary and like all the amenities (a wide selection of stores and good public transit).” Analyses of attachment style differences revealed that this category of benefits was most commonly mentioned among IA avoidant individuals (22%), but not mentioned at all among those with IA anxiety.

2.2.5.12 Privacy. Places of attachment sometimes enabled individuals to obtain privacy, solitude, isolation, or “peace and quiet,” and this class of benefits was mentioned by 7% of participants. One participant described an office which was “kind of isolated from the rest of my home. I feel attached to this place because it is a quiet place (usually) where others in my family rarely disturb me.” An attachment to the Pilbara desert region in Western Australia was similarly valued because of the opportunity for privacy: “You feel very secluded, hidden, and solitary.” This function was mentioned more often by participants who were classified as IA disorganized (17%) than any of the other attachment styles.

2.2.5.13 Aesthetics. Many participants described their places as beautiful, but some individuals (i.e., 7%) more explicitly recognized the aesthetic value of their place as a key reason for the attachment. These people appreciated being privy to the beautiful view, scenery, or visual

character of their place. That places of attachment met an aesthetic need may partly be related to other functions, such as connection to nature, relaxation, comfort, or positive emotions.

However, the experience of visual beauty may serve its own intrinsic function. One participant “enjoy[s] the pleasing aesthetics and power imagery of the lion” monument in Toronto that he is attached to, and another participant similarly cited the aesthetic value of her attachment to Lynn Valley in North Vancouver: “It's beautiful. I've never seen anything like it.” This function was more often mentioned by securely attached (IA) individuals (16%), and anxiously IA attached individuals (7%).

2.2.5.14 No place attachment. Three participants indicated that they had no place to which they considered themselves attached. One of them expressed an intentional value for non-attachment:

I don't need to draw on people places and thing to receive a sence [sic] of comfort about myself. I guess i am comfortable werever [sic] i am. There was a time that i felt attachment to many things/places. I guess once i realised it was all related to my feeling insecure i eventually, over the course of many years, let them go.

The other two viewed attachment solely in interpersonal terms: “There's no place that is especially meaningful to me. People make places special, not the place,” and “when I think of attachment I think of people. I have no special places that I particular like to be or that I can think about that have any real meaning to me as places seem to come and go.”

2.2.6 Demographic Differences in Functions of Place Attachment

Frequencies of each benefit were examined by gender, relationship status, age, and housing tenure (renting or owning) (Table 2.6). Analyses of gender showed that females mentioned a greater number of benefits ($M = 4.29$, $SD = 1.47$) than did males, ($M = 3.38$, $SD =$

1.50), $t(85) = -2.85, p = .01$. However, chi-square tests determined that none of the benefits were more common among males or females except memories, which was mentioned significantly more often among females (i.e., 80.4%) than males (i.e., 59.5%), $\chi^2 = 4.61, p = .03$.

Relationship status did not predict the number of benefits mentioned. Although frequencies suggested that those in a romantic relationship were more likely to mention each of the benefits than single participants (except aesthetics and physical benefits), chi-square tests demonstrated that these differences were not significant.

Age also did not appear to play a role in the types (or total numbers) of place attachment benefits mentioned; mean ages were similar among those who mentioned (versus did not mention) each benefit. The greatest difference was observed for positive emotions, which appeared to be mentioned more often by younger participants, but this marginal difference was not significant, after controlling for the number of tests.

Renters and owners expressed similar numbers of benefits overall. Frequencies suggested that a higher proportion of owners cited belonging, freedom, entertainment, privacy, and relaxation as benefits of their place of attachment, and more renters mentioned activities, aesthetics, psychological comfort, connection to nature, positive emotions and practical benefits of their places. However, chi-square tests revealed that these benefits did not differ significantly according to homeownership.

2.2.7 Interrater Reliability for Coding of Geographical Scale

Two trained raters coded written responses according to Freundschuh and Egenhofer's (1997) taxonomy to assess the geographical scale of the place (see section 1.7.3). Specifically, the percent of overall agreement was 92.9%, and once adjusted for chance agreement, kappa indicated that the interrater reliability was excellent, $\kappa = .90$ (Cohen, 1960).

Agreement could not be reached for determining the place scale of four responses because the responses were lacking sufficient description, and so these participants were excluded from scale-related analyses, leaving 91 valid participants. The frequencies of each category are presented in Table 2.5. Overall, environmental space was the most common categorization (54.7%), and this included places such as a three-storey house, a church, a lakeside trail, a lagoon, a hotel, and a flea market. Geographic space was the second most frequent response (27.4%), and examples included countries (e.g., Canada, Great Britain) cities (e.g., Houston, Texas, Paris) and regions (e.g., Pilbara desert, Australia). Non-manipulable object space, mentioned by 11.6% of participants, included places such as a coffee shop, a small cottage, a statue, a front yard, a bedroom, and a home office. Finally, places classified as manipulable object space, such as a desk and a tent were much less common (2.1%). Because the sample size for this type of space was so small, it was not included in further analyses. This left a sample size of 89 participants for analyses involving scale.

Table 2.5

Frequencies for Geographical Scale (n = 95)

	Frequency	Percent
Manipulable object space	2	2.1
Non-manipulable object space	11	11.6
Environmental space	52	54.7
Geographic space	26	27.4
Undetermined scale	4	4.2

2.2.8 Geographic Scale Differences in Functions of Place Attachment

Because the majority of places were environmental spaces, the majority of functions were at this scale, too. Further, memories, belonging, and relaxation were the top three benefits within each scale (Table 2.7), although belonging was slightly more common for places of geographic scale (69%) than the other two types.

Beyond these top three, some scale differences were evident. For example, self-growth (46%), activities (46%), privacy (36%), and freedom (27%) were particularly common to places classified as non-manipulable. Not desiring proximity was also more common to places of this type of scale (18%) than it was to places of the other two scales of interest. Places classified as environmental space were more likely than the other two scale types to support positive emotions (48%), comfort (37%), entertainment (25%) and connectedness to nature (15%). Geographic spaces were more likely to offer aesthetics (11%) and physical comfort (12%) than were the other two scales.

Table 2.6

Place Attachment Functions by Gender, Relationship Status, Age and Tenure of Residence

Function	κ	n	%	% females	% males	% single	% in a relationship	% young adults	% adults	% renters	% owners
Activities	.71	32	33.33	36.4	31	30.3	35.2	34.9	33.3	39.6	26.5
Aesthetics	.71	7	7.29	13.6	2.4	9.1	7.5	9.3	6.8	8.3	6.1
Belonging	.81	52	54.17	52.3	42.9	48.5	57.4	48.8	57.8	50.0	61.8
Comfort	.84	30	31.25	28.3	38.1	24.2	37	27.9	37.8	33.3	35.3
Physical comfort	.49	10	10.42	4.3	16.7	12.1	7.4	7	13.3	8.3	11.8
Psychological comfort	.96	20	20.83	19.6	21.4	15.2	22.2	18.6	22.2	22.9	20.6
Connection to nature	.78	11	11.46	17.4	7.1	9.1	14.8	14.0	11.1	16.7	5.9
Freedom	.85	18	18.75	22.7	19	18.2	20.4	25.6	15.6	16.7	23.5
Entertainment	.83	18	18.75	23.9	14.3	18.2	20.4	14.0	24.4	14.6	23.5
Memories	.80	66	68.75	80.4	59.5	66.7	74.1	67.4	73.3	70.8	73.5
Positive emotions	.77	36	37.50	41.3	38.1	33.3	46.3	44.2	35.6	43.8	38.2
Practical (amenities)	.94	9	9.38	13	7.1	6.1	11.1	4.7	15.6	12.5	8.8
Privacy	.85	7	7.29	10.9	4.8	6.1	7.4	11.6	4.4	4.2	14.7
Relaxation	.79	47	48.96	58.7	47.6	42.4	59.3	51.2	55.6	45.8	64.7
Self-growth	.82	21	21.88	26.1	21.4	24.2	24.1	20.9	26.7	25.0	26.5
Other: No PA	1.00	3	3.13	0	2.4	0	1.1	0	2.2	2.1	0
Other: Does not want to go there	.84	8	8.33	8.7	9.5	12.1	7.4	9.3	8.9	10.4	8.8

Table 2.7

Place Attachment Functions by Individuals with Different IA and PA Styles

Function	% IA secure	% IA anxious	% IA avoidant	% IA disorganized	% PA secure	% PA anxious	% PA avoidant	% PA disorganized
Activities	31.3	29.6	55.6	25.0	43.5	31.0	26.3	38.9
Aesthetics	16.1	7.4	0.0	0.0	8.7	6.9	10.5	5.6
Belonging	68.8	37.0	61.1	41.7	56.5	31.0	84.2	55.6
Comfort	34.4	29.6	27.8	41.7	30.4	24.1	36.8	44.4
Physical comfort	12.5	3.7	11.1	16.7	13.0	3.4	10.5	16.7
Psychological comfort	18.8	22.2	11.1	33.3	17.4	17.2	21.1	27.8
Connection to nature	18.8	7.4	11.1	8.3	8.7	13.8	15.8	11.1
Freedom	25.0	20.2	16.7	16.7	39.1	10.3	15.8	16.7
Entertainment	18.8	11.1	38.9	8.3	30.4	17.2	10.5	22.2
Memories	65.6	77.8	72.2	66.7	56.5	69.0	89.5	72.2
Positive emotions	50.0	37.0	27.8	41.7	39.1	37.9	63.2	22.2
Practical benefits (amenities)	12.5	0.0	22.2	8.3	13.0	6.9	5.3	16.7
Privacy	6.3	11.1	0.0	16.7	4.3	13.8	5.3	5.6
Relaxation	62.5	48.1	44.4	50.0	65.2	48.3	63.2	33.3
Self-growth	18.8	22.2	27.8	33.3	17.4	27.6	15.8	33.3
Other: No Place Attachment	3.1	0.0	0.0	0.0	0.0	3.4	0.0	0.0
Other: Does not want to go there	0.0	14.8	16.7	8.3	4.3	20.7	0.0	5.6

Table 2.8

Percentages of Place Attachment Functions within each Geographical Scale of Place

Function	% Non-manipulable object space	% Environmental space	% Geographic space
Activities	45.5	30.8	34.6
Aesthetics	9.1	5.9	11.5
Belonging	45.5	55.8	69.2
Comfort	18.2	36.5	30.8
Physical comfort	9.1	9.6	11.5
Psychological comfort	18.2	25.0	15.4
Connection to nature	0	15.4	11.5
Freedom	27.3	17.3	15.4
Entertainment	0	25.0	23.1
Memories	72.7	73.1	73.1
Positive emotions	18.2	48.1	34.6
Practical benefits (amenities)	0	11.5	11.5
Privacy	36.4	5.8	0
Relaxation	45.5	53.8	50.0
Self-growth	45.5	21.2	15.4
Other: No Place Attachment	-	-	-
Other: Does not want to go there	18.2	9.6	3.8

2.3 Discussion

In this initial search for the psychological functions of place attachment, 13 categories were revealed: memories, belonging, relaxation, positive emotions, activity support, comfort, self-growth, freedom, entertainment, connection to nature, practical benefits, privacy, and aesthetics. A few participants mentioned not wanting to go to their place of attachment, or not having one at all. Some of these functions have been considered in previous place attachment research, but to my knowledge, no work has attempted to generate a comprehensive list.

Determining why person-place bonds exist, and how they serve us psychologically, is an important first step in theory integration and development. The overlap in the functions of interpersonal and place attachment reveal the generalities of bonding (regardless of the object to which one is attached), and the differences between them distinguish place attachment as a separate construct. Finally, individual differences in the endorsement of each function can partly be explained by interpersonal and place attachment styles, demographic characteristics, and the geographical scale of the place of attachment.

2.3.1 *Functions of Place Attachment*

The thirteen functions of place attachment, and their relation to previous place and interpersonal attachment literature, are discussed below in order of the frequency with which they were endorsed.

2.3.1.1 Memories. The most common benefit of place attachment is that it supports memories in a variety of ways. Place attachment goes beyond meaningful in-the-moment interactions with a place; it preserves aspects of those interactions to be recalled later, and it structures future interactions. An important place connects us to past events and people (e.g., Cooper Marcus, 1992; Twigger Ross & Uzzell, 1996), hosts recurring traditions (e.g., Low &

Altman, 1992), and provides a sense of self-continuity (e.g., Knez, 2005; Lewicka, 2011). Self-continuity refers to the need for the self to be organized through a coherent, temporally ordered “story” that links past and present behaviours (e.g., Hallowell, 1955). A place of attachment can therefore provide the organizing framework to connect the events in one’s story over time. Other than assisting with self-continuity, place attachment-related memories provide continuity at the group or cultural level. For example, culturally important places may be the sites of religious happenings, wars, disasters, discoveries, or other cultural milestones, and the places can organize and preserve the culture’s history (e.g., Mazumdar & Mazumdar, 2004) – that is, provided these place meanings are not usurped by the place meanings of more dominant cultures (e.g., Cresswell, 2009).

Therefore, place attachments partly serve to structure the unfolding of time, and foster recollection of that unfolding. The importance of time in the place attachment bond has received little attention in the environmental psychology literature, but because a key benefit of place attachment appears to be temporal, more research should consider this function.

Interpersonal attachment theorists typically have viewed memories as contributors to the internal working model (i.e., mental representations of self and other in relationship), but not often as beneficial *outcomes* of the bond. The exception is work on transactive memory, in which close relationships support memory processes (Wegner, Giuliano, & Hertel, 1985). For example, relationship partners perform better on shared memory tasks, such as recalling words or information, than do pairs of strangers. Knowing about one’s partner’s area of expertise allows one to ignore those details during encoding, as well as cue the partner about what s/he might remember during recall (Hollingshead, 2001). Long-term partners also likely provide continuity to each other by recalling events and change over time. This work suggests that memory support

is somewhat related to interpersonal attachment but, in general this function appears more central to place attachment relationships.

2.3.1.2 Belonging. Belonging is another important benefit with relevance to both interpersonal attachment (e.g., LaGuardia, Ryan, Couchman, & Deci, 2000) and place attachment (Billig, 2006; Fried, 1963; Hay, 1998; Hidalgo & Hernández, 2001; Kyle, Mowen, & Tarrant, 2004; Low, 1992; Mazumdar & Mazumdar, 2004; Morgan, 2010). Through repeated social interaction, place strengthens bonds with other people. In the present study, belongingness to place sometimes arose out of the interpersonal attachments associated with those places, which accounts for the high proportion of secure interpersonally attached individuals who mentioned this function. This supports the view that place and interpersonal attachments are mutually reinforcing and, to some extent overlapping.

Relationship and motivation theorists typically emphasize belongingness as a fundamental need that underlies many behaviours and motives. For example, core motives theory (Fiske, 2004) postulates that the social motives of understanding, control, self-enhancement and trust ultimately serve to promote belongingness. Possibly, place attachment is similarly motivated by a need for belongingness, and its related psychological benefits are simply positive consequences of fulfilling this need. Belongingness is most satisfied when a relationship involves frequent, positive interactions, and when it is perceived to be stable, long-lasting, and of mutual concern (Baumeister & Leary, 1995). Place attachment includes these elements, except mutual concern. For example, place attachments typically involve frequent visitations, are marked by positive emotions, and are notably enduring. Thus, individuals may be motivated to form attachments to places because of their ability to satisfy this need for belongingness.

Nevertheless, place-derived belongingness is not always explicitly linked to relationship partners or groups. Sometimes being connected to the place itself is enough to provide belongingness, such as when residences, regions or countries serve as symbols of one's place of origin. Knowing where one is from gives the sense of having a place, somewhere to belong. When belongingness extends to self-definition, place attachment can contribute to place identity (e.g., Proshansky, 1978).

2.3.1.3 Relaxation. Place attachment promotes psychophysiological relaxation and restoration. This function has been documented by place attachment and environmental restoration theorists (e.g., Aronsson, 2004; Kelley & Hosking, 2008; Korpela, Hartig, Kaiser, & Fuhrer, 2001; Korpela, Kytta, & Hartig, 2002), and it has also received interest by interpersonal attachment theorists who have found that (among secure individuals), proximity to attachment figures reduces physiological responses to stress following the completion of a demanding task (Feeney & Kirkpatrick, 1996). According to Bowlby (1969) and others (e.g., Shaver & Mikulincer, 2007), the attachment system is activated when one encounters a stressor, but is deactivated once proximity to the attachment figure has been attained. Thus, stress-relief results from the safe haven provided by the attachment figure.

However, place-based relaxation is not always discussed in the context of a threat; participants also sought proximity for general relaxation and restoration, which suggests a function separate from safe haven. Some authors have specifically connected theories of psychological restoration to place attachment; for example, Korpela and Hartig (1996) found that favourite places were more likely to possess restorative features central to attention restoration theory, including coherence, compatibility, being away, and fascination.

2.3.1.4 Positive emotions. Person-place bonds are largely emotional in content (Cuba & Hummon, 1993; Giuliani, 2003; Hidalgo & Hernandez, 2001; Mesch & Manor, 1998; Riley, 1992), and so it is not surprising that an emotional bond has implications for affective functioning. In an Icelandic study, children expressed that their places provided restoration and emotion regulation (Korpela, Kytta, & Hartig, 2002). Interpersonal attachment has similarly been shown to support emotion regulation when attachment figures bring mindful awareness to, and acceptance of, one's emotions (Izard & Kobak, 1991; Maté, 1999).

2.3.1.5 Activity support. Person-place bonds support preferred activities, goals, work, and creative expression. This function has been proposed by place attachment theorists who suggest that particular features of a place permit individuals to engage in their hobbies or activities (Harris, Brown, & Werner, 1996; Stokols & Shumaker, 1981), and a bond of this nature is known as "place dependence" (Moore & Graefe, 1994). Place attachment-related activities rely on the synergy between place attributes and the person, and are not (necessarily) based on a sense of security.

An interpersonal attachment figure, however, supports activities and goals by establishing a secure base which allows individuals to pursue non-attachment endeavours. Thus, interpersonal attachment functions to provide a secure base rather than to directly support the activities. Of course, close others sometimes are necessary for the execution of certain activities; for example, a tennis match is not easily played alone. Despite this, activity support is not central to interpersonal attachment theory, except perhaps indirectly, as seen in work that demonstrates the attachment figure roles of leaders and coaches (e.g., Davidovitz, Mikulincer, Shaver, Izak, & Popper, 2007; Davis, Jowett, & Lafrenière, 2013).

2.3.1.6 Comfort. Place attachment provides physical comfort when the physical features of the place meet the needs of the body, and psychological comfort, when the place offers security and acts as a veritable safe haven. This function has been emphasized by Bowlby and other interpersonal attachment researchers who argue that attachment evolved to enhance safety and therefore to increase an infant's chances of survival, but it is experienced primarily through psychological rather than physiological systems (e.g., Bowlby, 1969; Harlow, 1961). Threat-induced proximity-seeking "switches off" when proximity is attained, and this in turn produces a sense of security and comfort. The more stressful the problem, the more directly support will be sought (Collins & Feeney, 2000).

The present results show that place attachment bonds provide a similar psychological benefit. The security function of place attachment has been discussed by some (e.g., Brown & Perkins, 1992; Harris, Brown, & Werner, 1996) and is the focus of Study 2 of this dissertation.

2.3.1.7 Self-growth. Close relationships can promote personal growth processes (e.g., Deci & Ryan, 2000), and current results show that introspection, goal setting, and making personal improvements can also be supported by one's person-place bond. The place may directly promote self-growth, by providing new challenges and opportunities that fertilize the expansion of the self, or by providing resources that are necessary for goal pursuit (Stokols & Shumaker, 1981). For example, one might be attached to a snowy mountain town where they can improve their ability to ski. Alternatively, the place of attachment may support self-growth indirectly, by offering an atmosphere appropriate for contemplation and emotion regulation (Korpela, Hartig, Kaiser, & Fuhrer, 2001).

2.3.1.8 Freedom. Places of attachment can provide freedom in several ways. One is by offering an escape from one's daily routine, such as by visiting vacation places or other distant

(yet still meaningful) environments. Case (1996) explained that trips away can reinforce local bonds, but he did not discuss how destinations themselves can also serve important attachment roles, and support the need for escape.

Another way that places of attachment can supply freedom is when they allow individuals to exercise agency and control over their environment. Control is a key determinant of environmental satisfaction that relates to a variety of outcomes such as productivity, health and well-being (e.g., Gifford, 2007). Autonomy is also recognized as a central psychological need (e.g., Deci & Ryan, 2000), and one that can be provided by interpersonal attachment figures (e.g., by providing a rationale, choice, and empathy; Koestner, Ryan, Bernieri, & Holt, 1984). The present study shows that places of attachment can also support this key need.

Although freedom may benefit those with the opportunity to control the practices, meanings, and materiality of the place, this control can come at a cost to others (Cresswell, 2009). For example, apartment managers may be able to control the noise levels and use of green space surrounding their apartment complex, but this may restrict the children who wish to play freely in those spaces. Drawing on theories from critical geography, environmental psychologists should further study conflicts in control over places, and how this can impact the strength and meaning of the attachment.

2.3.1.9 Entertainment. As was evident with the self-growth and freedom functions, the benefits of places of attachment go beyond security and comfort – functions typically associated with the attachment behavioural system (Bowlby, 1969) – and also appear relevant to the complementary exploratory system that is activated after the need for security has been met. Important places also provide stimulation, novelty, and learning. This is somewhat congruent with Morgan's (2010) position on how place attachment develops; secure interpersonal

attachments promote exploration of, and repeated interaction with places, to which bonds eventually develop. However, present results differ by suggesting that entertainment itself is a function of the bond, rather than solely as a means to which a bond might develop.

Other than exploration, entertainment may reflect person-environment congruency in stimulation preferences, such that individuals are attached to places that support their desired level of stimulation. Entertainment may also offer slight increases in the typical stimulation one experiences, and such changes are thought to be enjoyable (Wohlwill, 1966). Along these lines, place attachment-related relaxation may reflect congruent or reduced levels of stimulation. Future research connecting place attachment and stimulation theories would be of interest.

2.3.1.10 Connection to nature. Some places of attachment can serve us by providing opportunities to be close to and connected with nature. Connection to nature is likely a psychological need, derived from a long history of evolution in natural environments (e.g., Ulrich, 1993). The degree of this need may vary across individuals, and is influenced by cultural meanings of nature, but much work has revealed its psychological impact. For example, nature deprivation has been linked to certain psychological disorders, such as attention deficit disorder (Taylor, Kuo, & Sullivan, 2002). Although connectedness to nature is evidently important for place attachment, possible links between interpersonal bonds and connectedness to nature have not been explored.

2.3.1.11 Practical benefits. Another function of place attachment, albeit less immediately psychological, is that it can provide individuals with access to needed services and amenities. Neighbourhood research has previously demonstrated the importance of amenities to neighbourhood satisfaction and other well-being-related outcomes (e.g., Field, Witten, Robinson, & Pledger, 2004). Ng, Kam, and Pong (2005) found that, of several environmental predictors of

quality of life among Hong Kong residents, amenities were most important. This function has been considered to be relevant to place attachment (e.g., Stokols & Shumaker, 1982), and some individuals may be attached to particular amenities such as coffee shops (Tumanan & Lansangan, 2012). It also relates to place dependence – which encompasses reliance on the physical features of a place (Moore & Graefe, 1994) – but is distinct from activity support and instead centres on basic needs of food, water, mobility, and services, along with commercial activities.

2.3.1.12 Privacy. Some participants benefited from the privacy offered by their place of attachment, and most of those who did used their place to obtain solitude and remove themselves from others. This reflects Altman's (1975) definition of privacy as the ability to exercise control over access to the self. The concept of privacy has, like place attachment in this dissertation, been described in functional terms, and according to Westin (1967) there are four key functions including communication, control/autonomy, identity, and emotional release.

Despite some overlap in functions, few studies have connected place attachment and privacy. One exception was Brown and Werner's (1985) neighbourhood and block attachment scale, which included two items assessing privacy. Another study of student families found that place attachment was greater for apartments that facilitated the regulation of privacy (Harris, Brown, & Werner, 1996). Other than these studies, privacy is not often mentioned in the place attachment literature except in passing (e.g., Kyle, Mowen, & Tarrant, 2004). To my knowledge, no research has specifically considered privacy as it relates to interpersonal attachment, suggesting that this function may be more relevant to place attachment. This is not surprising, given that place attachment and privacy are key person-environment interactions with some overlapping functions.

2.3.1.13 Aesthetics. Individuals benefit from places of attachment that provide them with aesthetic pleasure. The importance of aesthetics is thought to relate to an evolved preference for environments where survival is more likely (e.g., Dutton, 2003), although aesthetic appraisals vary among individuals (Gifford, 2007). Aesthetics also speaks to the intrinsic pleasure that can be derived from a place. Like connectedness to nature, aesthetics appear more relevant to place attachment than person attachment, except that physical attractiveness plays a role in initially establishing a romantic bond. Environmental psychologists have linked aesthetics to neighbourhood and residential satisfaction, as well as judgements of buildings and architecture (e.g., Gifford, 2007). Aesthetics are largely ignored in the place attachment literature, but one Taiwanese study found that “enjoying beautiful scenery” was a more common reason for returning to several national parks than was valuing nature (Hwang, Lee, & Chen, 2005). This interesting benefit deserves more attention in future works.

2.3.2 Attachment Style

Attachment styles, the internal working models of the self in relationship with others, have dominated much of the interpersonal attachment literature. The means on each of the ECR-R subscales obtained in the present study were similar to those established by a large online sample (Fraley, 2012). Despite this, the cluster analysis revealed a higher proportion of insecure types than is usually found (e.g., by Brennan, Clark, & Shaver, 1998; Brydon, 2005; Dominigue & Mollen, 2009), which may be because, although fairly diverse, MTurk participants tend to be less emotionally stable and have lower self-esteem than student or other samples (Goodman et al., 2012). If so, then the place attachment styles may be similarly disproportionate. Because PA styles have not previously been investigated, the functions common to each of them reveal more about their nature.

2.3.2.1 Secure interpersonal attachment. Secure attachment is thought to reflect optimal functioning in attachment and exploratory processes (e.g., Ainsworth, 1967), and is associated with positive interpersonal relationship outcomes (e.g., Kirkpatrick & Davis, 1994) and better emotion regulation (Cassidy, 1994). Therefore, that secure individuals mentioned belonging as a function of their place of attachment more often than did the other interpersonal attachment styles is not surprising. Similarly, secure individuals more often than the other styles reported positive emotions as benefits of their place. Whether this is because they are using place or person attachment figures to regulate emotions, or because they simply access positive emotions more frequently is unclear. Some of the functions mentioned by secure individuals may reflect an attachment system that easily balances proximity-seeking with exploration. Specifically, relaxation and psychological comfort were common benefits among secure types, as were freedom, aesthetics and connectedness to nature.

2.3.2.2 Anxious interpersonal attachment. Interpersonal attachment anxiety, characterized by chronic hyperactivation of the attachment system, appeared to play a role in which functions of place attachment were mentioned. In particular, memories were mentioned proportionally more often by this interpersonal attachment style than the other three. One possible explanation is that memories allow them to mentally connect to their attachment figures. Supporting this, anxiously attached individuals show a heightened mental accessibility of their attachment figures, whereas the other attachment styles do not (e.g., Cox et al., 2008; Mikulincer, Gillath, & Shaver, 2002).

2.3.2.3 Avoidant interpersonal attachment. Interpersonal attachment avoidance is characterized by excessive self-reliance and reluctance to be dependent on or emotionally vulnerable to another person. Compared to the other interpersonal attachment types, avoidant

individuals were more likely to mention activities, entertainment, and practical benefits as functions of their place attachment. Martin and Roles (2010) found that avoidant individuals are more likely to use exploration to maintain distance between themselves and their partners which may explain why these self-focused and exploratory activities are more common among them. Avoidant persons were also more likely to report not wanting to go to their place of attachment, perhaps reflecting this desire for distance.

2.3.2.4 Disorganized interpersonal attachment. Individuals with a disorganized attachment style are typically both highly anxious and avoidant, which results in inconsistent behaviours and reactions to stressors (e.g., Main & Solomon, 1990). A greater proportion of individuals in this study were classified as disorganized than is typical, but cluster means on both subscales were not extreme (around 4.2 and 5), suggesting that a disorganized pattern exists in the sample, but is possibly more mild. Functions more common to this attachment category were psychological comfort and privacy.

2.3.3 Place Attachment Style

2.3.3.1 Secure place attachment. The functions common to individuals with secure place attachment suggests that it involves place dependence. In particular, activities, entertainment, relaxation, and freedom were proportionally more common among these individuals. Somewhat surprisingly, two of these (i.e., entertainment, activities) were also common to individuals with interpersonal attachment avoidance. One possible commonality among place attachment security and interpersonal attachment avoidance is that both styles rely on place attachment figures perhaps more often than they rely on people. However, more research is needed to test the hypothesis that one type of attachment figure may be compensated for by another.

2.3.3.2 Place attachment anxiety. The pattern of benefits among those with place attachment anxiety did not appear distinct from the other three styles. The exception was that these individuals more often referred to their place as able to provide them with privacy. Interestingly, four of the functions that were least common to these individuals were also least common to individuals with interpersonal attachment anxiety, including comfort, freedom, and belonging. This suggests that an anxious attachment style may generalize across attachment figures.

2.3.3.3 Place attachment avoidance. Four of the functions that were proportionally more common to individuals with secure interpersonal attachment were also common to those with avoidant place attachment: belonging, positive emotions, aesthetics, and connection to nature. These comparable profiles of functions provide some insight into the nature of place attachment avoidance. One potential explanation is that place provides socially-relevant functions more often when interpersonal attachment needs are met, and furthermore, that individuals report low reliance on place because they recognize that their personal relationships are more important. Even nature and aesthetics – which seem place related – may reflect an ability to enjoy the environment once interpersonal needs are met. In addition, certain functions, such as privacy, amenities, entertainment, and activities, were less common to those with place attachment avoidance, suggesting a lack of dependence on a place in favor of functions that support personal relationships, or involve enjoyment of a place.

2.3.3.4 Disorganized place attachment. Having an inconsistent style of relating to place seemed to involve more comments about the place's practical benefits, as well as its ability to facilitate self-growth. Practical benefits, such as amenities, may be part of the dilemma of wanting to be close to a place and simultaneously not wanting to be overly dependent on it; for

example, one might be attached to a neighbourhood pub but also aware that this attachment is causing them problems. Or one might desire to be in a place because it offers them work, but at the same time not wish to become too dependent on this work. Such problematic attachments could facilitate self-growth if one became conscious of these dichotomies.

2.3.4 Demographic Differences

The functions of place attachment appeared to vary little by relationship status, age, and housing tenure. However, some gender differences emerged: women mentioned more benefits overall than did men, and they were significantly more likely to describe memories associated with their place of attachment. Several studies in the environmental psychology literature on place attachment have focused on gender, most notably Ahrentzen's (1992) chapter which considers how, given traditional gender roles, home may be a haven for men, but a workplace for women, thus altering the nature of their attachment to home. This does not explain why women experienced more place benefits in general, and place-related memories in particular. More fitting is Hidalgo and Hernandez' (2001) finding that women report stronger place attachment than do men at three spatial levels (i.e., home, neighbourhood, and city). Perhaps because women have traditionally been restricted in terms of their mobility, they put a greater emphasis and value on the places that they consider to be theirs (e.g., hooks, 2009).

Other authors have suggested that women's attachment is primarily social, whereas men's attachment is based in activities (Pretty, Chipuer, & Bramston, 2003). However, some studies have found no gender differences in place attachment (Lewicka, 2005). One possibility is that gender differences exist for some dimensions of place attachment but not others, and the present study suggests that memories are particularly relevant. Nevertheless, the relation

between gender and place attachment is complex, and requires further work to disentangle these discrepant findings.

2.3.5 Geographical Scale Differences

Freundschuh and Egenhofer's (1997) typology of geographic space contains six types of space, based on people's experiences. Three of these (non-manipulable object space, environmental space, and geographic space) were present in participants' descriptions of their important places. Manipulable object space was mostly absent, suggesting that place attachment forms to places larger than the body. This does not deny attachments to smaller objects (e.g., Belk, 1988), but indicates that people generally interpreted place to be larger, and non-manipulable. Also absent were panoramic spaces and map spaces, suggesting that place attachment requires some locomotion, or at least, must be more than a view or symbolized space.

The three remaining types showed some differences in their profiles of functions. As compared to the other two scales, non-manipulable object spaces were especially conducive to activities, privacy, and freedom (control). Some activities that are solitary, such as independent work, may benefit from small environments that shield an individual from distractions. Privacy may be more easily attained in small spaces, particularly when they have some enclosure that disables visual and acoustic invasions (e.g., Gifford, 2007). Similarly, smaller environments may be easier to control, change, and escape the influence of others.

Environmental spaces more often than the other two scales involved positive emotions, comfort, entertainment, and connectedness to nature. Parks, rivers, and smaller wilderness areas were often described at this scale, which explains the prevalence of the latter function. Entertainment is perhaps less available to smaller, non-manipulable spaces that are less dynamic than environmental spaces. However, the diversity of the types of places that fell within this

category makes it difficult to interpret the prevalence of positive emotions and comfort as functions common to this scale.

Geographic spaces most commonly provided belonging, which is not surprising given that place identity often develops at urban, regional and national scales (Lalli, 1992; Bonaiuto, Breakwell, & Cano, 1996). Furthermore, physical comfort was more common to this scale than the other two, and it often referred to weather, which Knez (2005) has linked to place attachment by way of place-congruent continuity. That is, people prefer places with weather similar to that experienced in places of childhood.

2.3.6 Limitations

Several limitations of Study 1 should be noted. One issue was the online nature of data collection, which limits the generalizability of results to those with internet access and interest in completing online questionnaires using Amazon Mechanical Turk. Further, individuals using Mechanical Turk have been shown to be slightly less emotionally stable (Goodman et al., 2012), which may have increased proportions of the insecure attachment styles. Nevertheless, this recruitment method yielded a more diverse sample than would be expected from a university subject pool, mail-out survey, or other type of online recruitment (Buhrmester, Kwang, & Gosling, 2011),

Related to the mode of data collection is a limit to the depth and richness of responses. As revealed in the pre-test, in-person interviews allowed for fuller stories of each person's experience of place attachment. Future research using in-depth interviews would be useful to better conceptualize and contextualize the meaning of the attachments, the experience of obtaining place attachment-related benefits, and the broader socio-political structures that may create and disrupt such attachments.

Conversely, asking individuals to reflect on the psychological benefits they derive from place is limited in that it requires them to be aware of such benefits. Arguably, one can benefit (or incur negative outcomes) from their place attachment bond without being able to express why. The proposed benefits of place attachment determined in this study, therefore, may under-represent or have missed some of these unconscious functions.

Finally, this study has delineated a host of broad psychological benefits (and sub-benefits), which synthesizes the scattered psychological benefits alluded to in previous literature, as well as provides a comprehensive description of these benefits. However, as is the nature of descriptive research, claims that place attachment causes these benefits cannot be made. The benefits can certainly be associated with place attachment, but whether they are antecedents, outcomes, or concomitants is unknown. Further research should contribute direction and cause to this framework. Studies 2 and 3 partly begin this process.

2.3.7 Future Directions

This exploratory study generates a variety of options for future research. Most importantly, the list of initial benefits is a useful starting point for experimental research on the processes and causal relationships of place attachment. Future work should also develop a quantitative measure of these 13 benefits, which could be factor analysed to evaluate whether they would be better represented by a fewer number of underlying factors. This survey could also be used to assess the relative contribution of each benefit as predictors of strength of place attachment, as well as other outcomes, such as well-being, community engagement, or coping with place loss.

Other work should investigate the psychological benefits of mobility in comparison to those identified for place attachment. Some authors have proposed that place attachment and

mobility are conflicting, such that some forms of mobility inhibit the strength and quality of person-place bonds (Gustafson, 2009), whereas others have argued that the two are complementary, such that being away can strengthen local ties (e.g., Case, 1996; Lewicka, 2011). An analysis of the common and unique benefits of each mode may help to clarify these dynamics.

2.3.8 Conclusion

With the steadily increasing interest in place attachment among environmental psychologists, it is somewhat surprising that the psychological benefits of the bond have not yet been articulated. This study is a first step in determining those benefits, and sets the stage for future inquiries. Through a two-phase content analysis, 13 benefits were identified. This provides insight into why place attachment bonds exist and how they interact with psychological functioning. This is not to say that place attachment is required for optimal psychological functioning, or that place attachment bonds all distribute positive effects; as Chawla (1992) explains, place attachment can also have a “shadow side.” But the themes identified in the present study portray the positive aspects of person-place functioning, which will be used to guide future studies in this dissertation and after.

CHAPTER 3

Study 2: Safe Haven Functions of Place Attachment

The term “haven” connotes safety, security, refuge, and escape from threats. Importantly, “haven” can also connote place, but research demonstrating the existence of safe haven as a central element of place attachment is sparse. Most of the quantitative literature on haven or psychological security as a function of an attachment bond remains exclusive to the interpersonal attachment domain; among these theorists, it is widely emphasized (e.g., Harlow, 1961; Shaver & Mikulincer, 2007). Ainsworth (1967) and Bowlby (1969) viewed security as the motivating force behind particular attachment behaviours such as proximity-seeking, and demonstrated that once close to one’s attachment figure, a sense of comfort can effectively be attained. The few place attachment studies that have alluded to safe haven (e.g., Brown & Perkins, 1992; Harris, Brown, & Werner, 1996; Fried, 2000; Korpela, Kytta, & Hartig, 2002; Shumaker & Taylor, 1983) are unlike interpersonal attachment research in that none of them are experimental. Thus, as part of my exploration of the relevance of traditional interpersonal attachment concepts to the realm of place attachment, the purpose of Study 2 is to use an experimental methodology to evaluate whether place attachment also supports the function of psychological security.

Study 2 was a within-subjects priming study that drew upon methods used in interpersonal attachment research (e.g., Cox et al., 2008; Biregard & Granqvist, 2004; Mikulincer, Gillath, & Shaver, 2002). To determine whether a safe haven function exists for place attachment, I assessed the impact of threat exposure on seeking place attachment proximity. Subliminal priming was used to operationalize threat exposure, and participants’

subsequent reaction times to place attachment words in a lexical decision task represented place attachment proximity.

3.1 Hypotheses

(1) Threats will influence place attachment accessibility:

- a. Places of attachment are expected to provide a cognitive “safe haven” in the face of threats. If so, a threat context should increase the mental accessibility of place attachment words. Specifically, participants will respond more quickly to names of places of attachment after being primed with threatening words than after being primed with neutral words.
- b. Threat primes are not expected to shorten reaction times to names of places that are not place attachment figures.

(2) Proximity-seeking responses will differ by interpersonal attachment style and place attachment style.

- a. Individuals who have stronger anxious attachment (for both interpersonal and place attachment) are expected to respond more quickly to names of places of attachment regardless of whether they have been primed with a threat or a neutral word.
- b. Previous research has found that interpersonal attachment avoidance does not suppress proximity seeking unless the threat is directly related to the attachment context, such as priming individuals with the word “separation” (e.g., Fraley, Garner, & Shaver, 2000; Fraley & Shaver, 1997; Mikulincer, Gillath, & Shaver, 2002). Because the selected prime was not related to the attachment context, I do

not expect that avoidance (for both interpersonal and place attachment) will influence reaction times.

3.2 Methodology

3.2.1 Participants

Participants were 66 undergraduate students (10 males, 55 females, one unspecified) from a mid-sized Canadian university, recruited via the psychology research participation pool. This sample size was selected in accordance with related research on priming and interpersonal attachment (Mikulincer, Gillath, & Shaver, 2002), along with an *a priori* power analysis for the sample size required to detect a medium to large effect size (e.g., $\eta^2 = .10$; Cohen, 1988⁵, using an alpha error probability of .05 and a beta error probability of .80 for a planned 2 x 4 within-subjects ANOVA (Faul, Erdfelder, Buchner, & Lang, 2009).

Because of the semantic nature of the subliminal priming task, participants were required to be native English speakers, and have normal or corrected vision. Ages ranged from 18 to 32 years (*Mdn* = 19), and participants represented a variety of ethnicities, including Caucasian (66.7%), Asian, (10.6%), unspecified Canadian (6.1%), Middle Eastern (4.5%), East Indian (4.5%), and other (6.1%). Approximately half of the participants reported being involved in a romantic relationship (48.5%), and of those, only 9% lived in the same residence as their partner. Overall, the number of housemates that each participant lived with varied from none to eight (*M* = 1.75, *SD* = 1.55). Participants also varied in their residential mobility, and reported having

⁵This effect size was expected based on interpersonal attachment studies on security priming (e.g., Mikulincer, Gillath, & Shaver, 2002).

moved to a new residence between 0 and 21 times ($M = 4.00$, $SD = 3.85$). These and other demographic variables are presented in Tables 3.1 and 3.2.

Table 3.1

Frequencies for Categorical Demographic Variables

Variable		<i>N</i>	Percent
Gender	Male	10	15.2
	Female	55	83.3
	Unspecified	1	1.5
Romantic Relationship Status	Single	34	51.5
	In a relationship	32	48.5
Living with Partner	No	29	43.9
	Yes	3	4.5
	Not applicable	34	51.5
Ethnicity	Caucasian	44	66.7
	Asian	7	10.6
	Other	4	6.1
	Unspecified Canadian	4	6.1
	East Indian	3	4.5
	Middle Eastern	3	4.5

Table 3.2

Descriptive Statistics for Continuous Demographic Variables

Variable	<i>n</i>	Min	Max	<i>M</i>	<i>SD</i>
Age	65	18	35	20.18	2.84
Times Moved	65	0	21	4.00	3.85
Number of housemates	65	0	8	1.75	1.55

3.2.2 Measures and Tasks

3.2.2.1 Place Attachment Figure Questionnaire. I adapted the six items on the interpersonal attachment WHOTO (Fraley & Davis, 1997; Hazan & Zeifman, 1994) into a measure that suits place attachment, named the “WHERETO.” The original WHOTO identifies an individual’s primary attachment figure(s), that is, *who* individuals rely on to attain proximity, achieve a safe haven, and use as a secure base from which the broader environment can be explored. My adaptation identifies attachment figures that are places, that is, *where* individuals go to attain proximity, achieve a safe haven, and use as a secure base. For example, one question in the original WHOTO asks, “*Who is the person you most like to spend time with?*” In the WHERETO, this has been changed to “*Where is the place you most like to spend time at?*” Participants are asked to provide the specific place name, as well as list what type of place it is (e.g., a city, specific building, etc.).

One benefit of this scale is that it allows participants to select places that are most important to them, without defining what “place” is, or assuming that the home or

neighbourhood can suffice as a prototype of place attachment. Four of these words were used in the participant's lexical decision task.⁶

3.2.2.2 Place familiarity task. This task generated two additional types of place words that were also used as stimuli in the lexical decision task: familiar and unfamiliar places that were not places to which the participant was attached. This was done to explore familiarity effects, and to evaluate whether place attachment words function differently than places that are familiar. Participants typed the names of six places with which they were familiar (e.g., a particular city, park, restaurant, etc.). They were instructed *not* to include place names mentioned in the previous task (i.e., the WHERE TO).

To generate a list of unfamiliar places, participants were presented with a list of 60 places and for each, indicated whether they (a) had never heard of the place; (b) had heard of the place, but were unfamiliar with it; or (c) were familiar with or had been to the place. Four familiar and four unfamiliar words were included in the word list created for each participant's lexical decision task.

3.2.2.3 Need for Cognition scale (Cacioppo, Petty, & Kao, 1984). This 18-item scale was included in the present study as an unrelated distracter scale to make the study purpose less apparent. It assesses individuals' tendencies to seek out and enjoy complex cognitive activities. Examples of items include, "*I would prefer complex to simple problems,*" and "*Thinking is not*

⁶ Words were selected as follows: First, the most frequently mentioned place names were included. For the remaining words, responses on items most relevant to the safe haven function (i.e., items #3, 4, and 6, respectively) were selected. Place names were repeated if participants listed few places.

my idea of fun” (reversed scored). Response options for each item range from 1 “strongly disagree,” to 7 “strongly agree.”

3.2.2.4 Climate Change Engagement scale (Scannell & Gifford, 2013). This 15-item scale was also included in the present study as an unrelated distracter scale to make the study purpose less apparent. It assesses individuals’ cognitive, affective, and behavioural responses to climate change. Examples of items include, “*How likely are you to seek out information about climate change?*” and “*How important is it to reduce your climate change impacts?*” The 7-point Likert scale ranges from 1 “not at all,” to 7 “very much so.”

3.2.2.5 Experiences in Close Relationships-Revised (ECR-R; Fraley, Waller, & Brennan, 2000). Interpersonal attachment styles (i.e., secure, anxious, avoidant, and disorganized) were assessed using the 36-item ECR (see Study 1 for description). Scores are typically plotted along two dimensions of avoidance and anxiety. An individual with “secure” attachment will score low on both of these dimensions.

3.2.2.6 Place Attachment Style. Stable individual differences in place attachment were assessed using the 37-item place attachment style questionnaire (see Study 1). Because this measure was created as an analog of the ECR-R, response options similarly ranged from 1-7. A subscale of 19 items assessed place attachment anxiety, and a subscale of 18 items assessed place attachment avoidance.

3.2.2.7 Lexical Decision Task. The experimental task was a lexical decision task (Meyer & Schvaneveldt, 1971) that included subliminal primes to manipulate the independent variable of “threat.” Participants were told that the aim of the task was to quickly classify presented words as either “nonsense words” or “real words” by using the “e” and “i” keys on the keyboard, but it was assumed that they were not aware of the priming aspect of the study. Reaction times to

place attachment words were recorded to assess proximity seeking to place attachment under the different priming conditions.

The design of the lexical decision task was guided by Mikulincer, Gillath, and Shaver's (2002) work; however, informed by other priming literature (e.g., Forster, Mohan, & Hector, 2003; Plant & Turner, 2009), some technical details differed. The task was run using Inquisit software by Millisecond (2011) on a LH530 Fujitsu laptop. However, participants viewed all stimuli on a colour CRT monitor, given that the display properties and lower refresh rates of LCD monitors make them unsuitable for priming procedures (Plant & Turner, 2009).

The qualities of the particular CRT used were assessed with an oscilloscope, an instrument that measures the voltage and frequency of signals presented on the display of a CRT monitor. This confirmed that the refresh rate was 85 Hz, and thus each frame was presented for approximately 11.76 ms. Furthermore, it demonstrated the monitor's ability to present subliminal stimuli for the desired amount of time (approximately 23.52 ms) and confirmed that the software's timing was synchronized with the monitor's scan cycle.

All stimuli were black letters presented in the centre of a white screen, and in three main types: (a) forward and backward masks, included so the afterimage of the word would not linger in participants' peripheral visual systems, (b) the prime word, and (c) the target word. Target words and masks were presented in uppercase lettering, and prime words were presented in lowercase (e.g., Forster, Mohan, & Hector, 2003); this difference in case is done to prevent the two stimuli from appearing as one, and to explore semantic priming (i.e., from related word meanings) rather than orthographic priming (i.e., from similar letters).

During each trial, participants were exposed to a subliminal prime either of a threatening (e.g., "failure") or neutral (e.g., "folders") word. These primes were presented for approximately

23.52 ms, and were embedded in the forward and backward masks, which were also presented for 23.52 ms each. This was followed by a pause of 23.52 ms, and finally the target word (Figure 3.1). Participants had 1000 ms to indicate whether this target was a real word or a nonsense word.

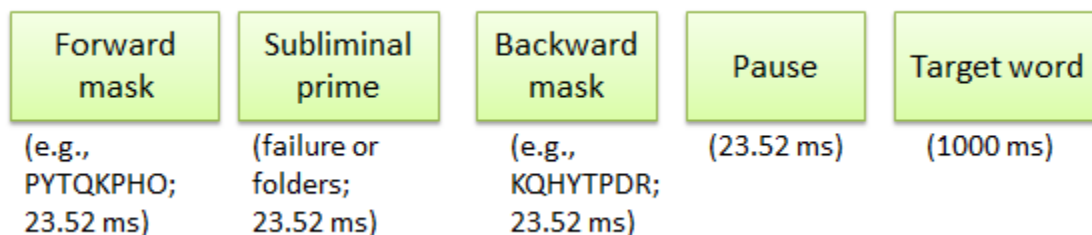


Figure 3.1. Sequence of stimuli presentation for lexical decision task.

Target word lists were individualized for each participant based on their responses in a pre-test; word lists contained four words from each of three categories: (1) names of place attachment figures derived from responses on the WHERETO (e.g., “HOME,” “VICTORIA,” “SLOCAN,” etc.); (2) names of familiar places that were not listed on the WHERETO (e.g., “CAMOSUN,” “DOUGLAS STREET,” “VANCOUVER,” etc.); (3) names of unfamiliar places (e.g., “FOSHAY TOWER,” “BALESTRINO” and “FORT CARLETON”). When participants listed fewer than four words, the words they had listed were repeated. Along with the 12 place words, were 12 nonsense words, derived from scrambled English words (e.g., “GALNE,” “LNNYO,” and “TTEIL”). The nonsense words were taken from previously published priming research (Kinoshita & Norris, 2009). The word list also contained four repetition targets, which are targets that are semantically and phonologically identical to the prime (i.e., “FAILURE” and “FOLDERS”; Pesciarelli et al., 2007). Because repetition priming (as opposed to semantic priming) has been shown to yield a large effect (Bentin & Feldman, 1990), such primes were included as a manipulation check.

Taken together, the word list contained 12 targets, 12 distractors, and four repetition targets. Each word was paired with each prime (neutral and threat), and were presented approximately five or six times each. Thus, the task consisted of 12 practice trials and 156 main trials. The practice trials included a separate set of words than the main trials, and included feedback (“correct” in green font, or “incorrect” in red font) so participants would better understand the task.

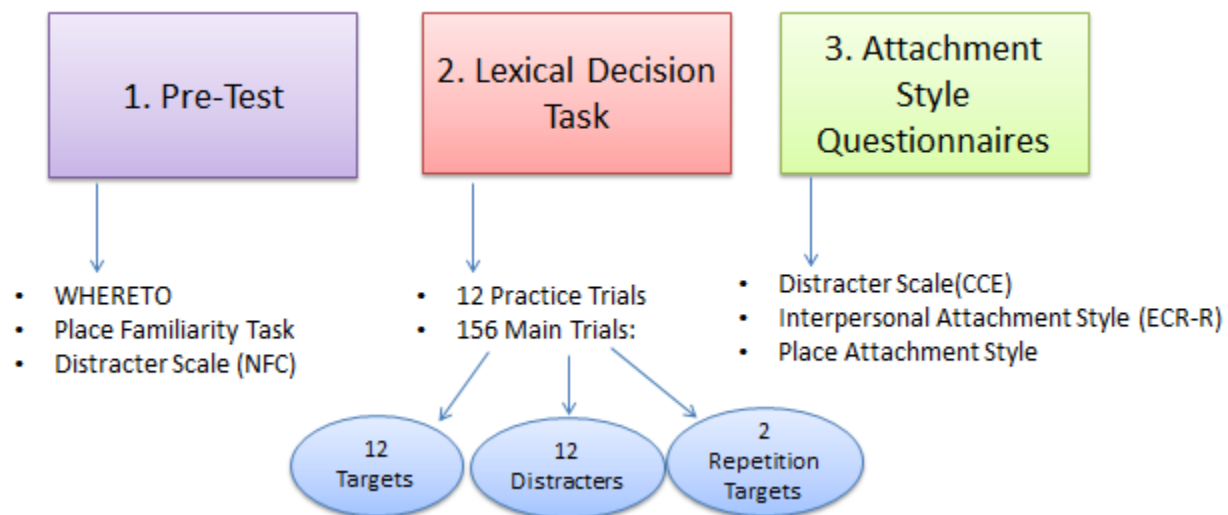


Figure 3.2. Outline of Study 2 procedure.

3.2.3 Procedure

The parts of the procedure are depicted in Figure 3.2. Part 1 occurred upon sign-up for the study which, to reduce demand characteristics, was vaguely described as a study of personality and life experiences. At this time, participants were emailed the survey URL containing the Letter of Information for implied consent (Appendix B; written in accordance with the *Tri-Council Policy Statement on the Ethical Conduct for Research Involving Humans*), and the first three study tasks (Appendix B): the WHERETO (adapted from Fraley & Davis,

1997), the place familiarity task, and an unrelated distracter scale (e.g., the Need for Cognition; Cacioppo, Petty, & Kao, 1984), included to make the study purpose less apparent. The first two tasks were used to generate stimuli (i.e., place attachment words, names of familiar places and names of unknown places) required for the lexical decision task.

One week later, participants arrived at the lab to complete the experiment. They were told that the first task was a lexical decision task to be performed on the computer. Using a laptop connected to an 85 Hz CRT monitor, participants indicated whether presented words were nonsense words or real words, by pressing the “e” or “i” keys as quickly as possible. Participants were told that, along with commonly used English words, names of people and places counted as “real” words. They began with 12 practice trials followed by 156 main trials, in three blocks of 52 trials each. Half of the trials included the threat prime (“failure”), and half included the neutral prime (“folders”), presented in random order. At the beginning of each trial, participants were told to focus on a fixation point in the centre of the screen (i.e., “X”) that was presented for 1000 ms.

The sequence of each trial was as follows: a forward mask, randomly determined as either “PYTQKPHO” or “KQHYTPDR” presented for two frames (23.52 ms); the prime word, randomly determined as either “failure” or “folders,” presented for two frames (23.52 ms); the backward mask, which was similar to the forward mask presented for two frames (23.52 ms); a pause of two frames (23.52 ms) and finally the target word, presented for a maximum of 1000 ms, within which time participants could indicate their response (Figure 3.1). Trials were separated by a pause of 1000 ms.

Next, as a distracter task, participants completed an unrelated scale about environmental issues (i.e., the climate change engagement scale). Finally, they completed two randomly ordered

scales: one assessing interpersonal attachment style (the ECR-R; Fraley et al., 2000), and the other assessing place attachment style.

To ensure that any negative effects from the word association task were removed, all participants were exposed to a short humorous video at the end of the experiment. Participants were compensated with bonus course credits, and received a debriefing form that outlined the study's objectives in greater detail.

3.3 Results

3.3.1 Place Attachment Figures

A first step was to explore which types of places were commonly listed as places of attachment. Responses on the WHERETO were coded using a simple inductive coding approach (e.g., Thomas, 2003), in which types of places mentioned were used to generate categories. This yielded 17 categories of places, the frequencies of which are presented in Tables 3.3 and 3.4. The diversity of the types of places that serve as place attachment figures is notable, including, for example, houses, restaurants, cities, natural areas, countries, schools, cemeteries, and so on.

Items 1 and 2 on the WHERETO reflect proximity-seeking. For item 1, (“*Where is the place you most like to spend time at?*”) neighbourhoods, towns, or cities were most commonly mentioned (30.8% of responses), followed by houses or apartments (24.6%) and green spaces or natural areas (23%). Similarly, for item 2 (“*Where is the place you don’t like to be away from?*”), neighbourhoods, towns, or cities were most commonly mentioned (32.3%) followed by houses or apartments (32.3%). Interestingly, 10.8% of participants listed “no place” for this item.

Items 3 and 4 capture places of attachment that provide a safe haven. Specifically, item 3 targeted emotion regulation (“*Where is the place you want to be when you are feeling upset or down?*”), and item 4 targets security (“*Where is the place you can always go when you feel threatened?*”). When feeling upset, participants frequently relied on houses or apartments (their own or another person’s; 29.2%), green spaces (23.1%), or a town, neighbourhood, or city (12.3%). When feeling threatened, participants most commonly sought refuge in houses and apartments (60%), towns, neighbourhoods, and cities (15.4%), or a room in a house such as a bedroom (9.2%).

Items 5 and 6 elicit names of places of attachment that provide a secure base. Item 5 (“*Where is the place you would go if you achieved something good?*”) again contained many references to houses or apartments (39.2%), and towns, neighbourhoods or cities (23%). City amenities such as restaurants, coffee shops, and retail outlets were also elected as celebratory venues (21.3%). Types of places listed for item 6 (“*Where is the place you can always count on?*”) were mainly dwellings (55.4%), as well as towns, cities, or neighbourhoods (30.8%).

Taken together, houses and apartments, neighbourhoods, towns, and cities, and green spaces were the most common candidates for places of attachment. Across all items and categories, “home” was explicitly mentioned by 86% of participants at least once. The total number of references to home was 150, 105 of which referred to residential environments including houses and apartments, and 35 of which referred to larger scale spaces such as neighbourhoods, towns, and cities. For the remaining 10 responses, “Home” also occasionally referred to regions or countries, or the place type for home was not specified. Other interesting, but less frequently mentioned places included recreation places, a cemetery, churches, small spaces (e.g., bed, chair), vehicles, and workplaces.

The WHERETO also revealed that although all participants were able to name at least one place of attachment, “no place” was mentioned 13 times by 6 respondents, supporting the idea that place attachment was not salient to all. The number of different places of attachment mentioned per person ranged from 1-6 ($M = 3.35$, $SD = 1.14$).

3.3.2 Familiar Places

The types of places listed as familiar (but not as attachment figures) were slightly different, and most commonly included city amenities (37.5%), green spaces (21.7%), towns,

neighbourhoods, or cities (19.4%), schools or universities (8%) and recreation centres (5.4%) (see Table 3.3).

Table 3.3

Types of Familiar Places Listed

Type of place	<i>n</i>	%
City amenity ^a	145	37.5
Natural area, green space	84	21.7
Town, city	75	19.4
University, school	31	8.0
Recreation centre, gym	21	5.4
Vacation place	6	1.6
Country, region, province	6	1.6
Workplace	5	1.3
House, apartment	4	1
Other	10	2.6

^a Note: Amenities included such places as restaurants, coffee shops, retail outlets, theatres, grocery stores, hair salons, and hotels.

3.3.3 Data Cleaning

Data cleaning began with the questionnaire data. Open-ended questions (i.e., gender, major, ethnicity etc.) were coded into numeric variables, and the ranges of these and other numeric variables, were examined for coding accuracy. The prevalence of missing values for each variable was quite low, ranging from 0% to 3%. On a per-participant basis, missing data were also very low. Seven participants were missing one ($n = 5$) or two ($n = 2$) data points, and one participant was missing 24. Because this was over 25% of the questionnaire, that participant was excluded from further analyses involving the ECR-R, PAS and demographic variables. After removing this participant, the overall percentage of missing data was 0.14%.

Independent *t*-tests demonstrated that missing data did not differ by gender, relationship status (single or in a relationship), years of university (above and below the median of 1 year), number of housemates (above or below the median of 1), or age (above and below the median of 19). These non-significant *t*-tests, as well as the very low percentage of missing data overall indicated that missing data were not problematic. Therefore, the six participants with missing data were retained in the analyses; to do so, composite variables were created by dividing total scores by the available number of responses.

3.3.4 Reliability

The internal consistency for the subscales of the ECR-R and PAS questionnaires was examined (see Table 3.6). As expected, subscales on the ECR-R were highly reliable: for interpersonal attachment anxiety, $\alpha = .91$, and for interpersonal attachment avoidance, $\alpha = .94$. One of the attachment anxiety items (i.e., “*My partner only seems to notice me when I’m angry*”) possessed a low corrected-item total correlation ($< .2$), but was nevertheless retained

given that I did not want to alter the previously published ECR-R, and that its internal consistency was high overall.

Reliabilities for the place attachment style questionnaire were somewhat lower, but still acceptable. For place attachment anxiety, alpha was .77. Inspection of corrected item-total correlations revealed three items that did not correlate well with the scale's total score.⁷ These items were removed and alpha improved to .80. For place attachment avoidance, the initial alpha was .84. Despite this high alpha, I opted to remove four items with poor corrected item-total correlations (< .2) to maximize construct validity of items.⁸ The new alpha was .87.

3.3.5 *Creating Composite Variables*

Scores on the ECR-R and PA style questionnaires were calculated, first, by recoding negatively worded items, and then by summing and averaging the items within each subscale. As mentioned, the missing data was addressed by creating composites based on the questions that had been answered (i.e., a within-person mean replacement for missing items). For the main analyses, attachment avoidance and anxiety were recoded as high or low based on the median.

⁷ Items removed from the place attachment anxiety score were as follows: *“I get upset when I hear people criticizing my place,”* and *“My place really supports me and my needs,”* and *“I feel restored when I am in my favourite place”* (reverse-coded).

⁸ The removed items from the place attachment avoidance subscale were as follows: *“I often worry that I don't fit in well in places;”* *“I prefer not to show how attached I am to places;”* *“It's not difficult for me to get close to my place”* (reversed); and *“I usually go to my place when I want to problem-solve”* (reversed).

Reaction time data were examined, and trials with reaction times (RT) faster than 300 milliseconds ($n_{trials} = 18$, ranging from 122 to 299 ms) were removed from the dataset to reduce the impact of outliers (Ratcliff, 1993). Responses on practice trials were also removed. Following this, the data set was restructured so average RTs to target words could be calculated, and so that a within-subjects analysis could be conducted. Consequentially, each participant was represented using only one row, which contained the RTs for each of the eight conditions. Descriptive statistics for composite RT variables are presented in Table 3.5.

3.3.6 Manipulation Check

To determine whether or not the subliminal prime had any impact on responses, I evaluated the effects of the repetition primes which, as mentioned, are primes that match target words (e.g., folders – FOLDERS). When target words match the presented prime, this should yield the fastest response, compared to a mismatch between primes and targets (e.g., folders – FAILURE; Bentin & Feldman, 1990; Pesciarelli et al., 2007). A dataset containing only repetition targets (i.e., FOLDERS and FAILURE, with the place-related target words removed) was created to assess this effect. Then, using prime type (failure or folders) and matching with target (yes or no) as the independent variables, a within-subjects ANOVA revealed that average RT did not change whether the prime matched the target or not, $F(1, 65) = .74, p = .39$. The effects of the prime itself, as well as the interaction between the independent variables were also not significant. Given the expected strength of repetition

priming, this non-significant effect rendered the subliminal prime unusable in the planned analyses.⁹

3.3.7 An Alternative Operationalization of Threat

Despite the lack of effect of the subliminal prime, the experience of failure (or not) was embedded in the task itself, albeit on a less subliminal level. For each trial, participants could either correctly or incorrectly sort the word into its appropriate category. During the practice portion of the task, feedback on performance for each trial was indicated as either “correct” or “incorrect.” During the main portion of the task, feedback was not provided, but several participants commented that their failure on one trial seemed to interfere with their performance on the next trial. This is a common experience within lexical decision tasks called “post-error slow” (Rabbitt, 1966; Rabbitt & Rodgers, 1977; Laming, 1968). Therefore, following the unsuccessful manipulation check, along with comments from participants indicating possible post-error slow, subsequent analyses were conducted using previous trial performance as a new way of operationalizing the independent measure of threat. Although this change was post hoc (i.e., it followed the manipulation check), it nevertheless occurred before the hypothesis testing. In addition, the actual experience of failure appears more externally valid than is subliminally priming the threat. Because the task already included this alternate operationalization of the construct of interest, and the manipulation check of the planned operationalized variable failed, I opted to use the second, more externally valid variable in my main model.

⁹ Indeed, when the subliminal prime was included as an independent variable in the planned model, it was not significant, $F(1, 62) = .17, p = .68$.

3.3.8 Descriptives

Means, standard deviations, and ranges were examined for all variables. The means for the four attachment styles assessed were below the scale midpoint (of 3.5), suggesting a trend towards more secure place and person attachment styles. Descriptive statistics for the attachment styles can be seen in Table 3.6. According to histograms and reports of skew and kurtosis, questionnaire variables were all normally distributed. Further, boxplots and z -scores revealed no outstanding outliers. Scores for IA anxiety and IA avoidance were moderately correlated ($r = .28, p = .03$), but PA anxiety and PA avoidance were not correlated. However, IA anxiety and PA anxiety were strongly correlated, ($r = .41, p = .001$), as were IA avoidance and PA avoidance ($r = .40, p = .001$).

For the lexical decision task, average RTs for each condition ranged from 334 ms to 993 ms; across all conditions the average was 586.64 ms. Therefore, outliers were not of concern, because all reaction times fell within the expected range. Table 3.5 displays the RTs for each condition. The RT variables were normally distributed, with the exception of reaction times in the threat condition to familiar words (Z skewness = 4.68, $p < .001$; Z kurtosis = 5.28, $p < .001$) which were positively skewed and leptokurtic.

Table 3.5

Descriptive Statistics for Reaction Time (ms) by Word Type and Threat Condition

Word Type	Threat Condition	N	Min	Max	<i>M</i>	<i>SD</i>
Nonsense	1	65	510.00	886.67	670.25	93.39
Nonsense	2	65	513.77	800.10	629.86	61.90
Unfamiliar	1	61	361.50	993.00	689.03	127.15
Unfamiliar	2	65	519.20	761.53	637.57	55.51
Familiar	1	53	393.00	935.00	538.58	111.32
Familiar	2	64	430.70	709.33	533.58	51.26
Place Attachment	1	62	334.00	743.50	485.81	91.82
Place Attachment	2	65	422.64	626.59	508.42	50.21

Note: 1= “Threat” (i.e., previous trial was incorrect) = 1; 2=“No threat” (i.e., previous trial was correct)

Table 3.6

Reliabilities and Descriptive Statistics for Attachment Styles

		α	Min	Max	<i>M</i>	<i>SD</i>
ECR-R	Anxiety	.91	1.22	5.89	2.98	1.03
	Avoidance	.94	1.00	5.94	3.19	1.17
PAS	Anxiety	.80	1.00	4.38	2.57	0.83
	Avoidance	.87	1.07	5.43	2.81	0.96

Note: The ECR-R subscales were based on 18 items each, the PA Anxiety subscale was based on 16 items, and the PA Avoidance subscale was based on 14 items; response options ranged from 1, “strongly disagree,” to 7, “strongly agree.”)

3.3.9 Hypothesis 1: Place Attachment as a Safe Haven

To test the hypothesis that places provide a safe haven in the face of threat, a 2x4 within-subjects ANOVA was conducted, using threat condition (failure on previous trial or not) and type of target stimuli (nonsense words, names of unfamiliar places, familiar places, and places of attachment) as the independent variables, and average reaction time scores as the dependent variable.

Mauchly's test demonstrated that the assumption of sphericity was not violated for either of the main effects, but it had been violated for the interaction term, $\chi^2(5) = 16.33, p < .05$. Therefore, a Greenhouse-Geisser estimate was used to correct the degrees of freedom ($\epsilon = .80$).

A significant main effect for target word type on reaction time was observed, $F(3, 135) = 90.52, p < .001$. Simple contrasts revealed that participants were faster at responding to place attachment words than names of unfamiliar places, $F(1, 45) = 184.90, p < .001$, nonsense words, $F(1, 45) = 153.88, p < .001$, and names of familiar places, $F(1, 45) = 17.95, p < .001$. Effect sizes for all contrasts were large: r 's = .89, .87, .53, respectively.

Second, a main effect was observed for the threat condition (i.e., whether the participant had correctly responded to the previous trial or not), $F(1, 45) = 8.03, p < .01$. An incorrect response on the previous trial significantly slowed participants' reaction times ($M = 592.25, SE = 9.60$) compared to a correct response on the previous trial ($M = 573.71, SE = 6.82$). A medium effect size was observed for this difference, $r = .39$.

A significant interaction was found between the type of target word and the threat condition, $F(2.40, 108.30) = 4.63, p < .01$. That is, reaction times for each type of target word differed depending on whether participants had failed or succeeded on the previous trial. The

estimated marginal means (Figure 3.3) demonstrate that failure on a previous trial reduced performance for all word types except place attachment words. For these words, the effect was reversed such that participants responded *more* quickly to place attachment words after they had experienced failure. To test the planned comparison, a paired-samples *t*-test demonstrated that mean reaction time to place attachment words significantly improved following failure on the previous trial, $t(60) = -2.30, p = .03$. These results are in support of hypotheses 1a and 1b.

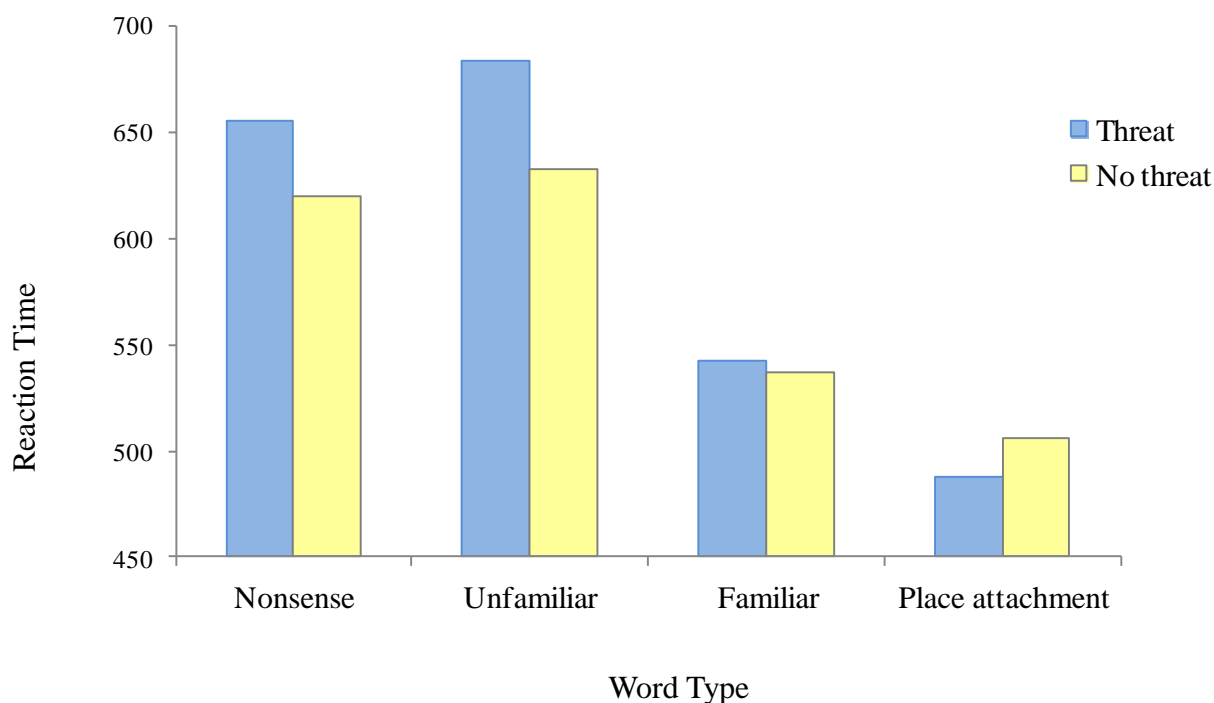


Figure 3.3 The interaction of target word type and threat condition on reaction time in a lexical decision task.

3.3.10 Hypothesis 2. The Role of Attachment Style

To assess the role of interpersonal attachment style in the use of place attachment figures as safe havens, a mixed-design ANOVA was conducted, using interpersonal

attachment anxiety (coded high or low based on the median), interpersonal attachment avoidance (high or low based on the median), type of target word (nonsense, unfamiliar place, familiar place, place of attachment), and threat condition (failure on previous trial or not) as the independent variables, and mean reaction time for target words as the dependent variable. As above, main effects were observed for type of target word and threat condition, and these variables significantly interacted with each other.

No main effects for the interpersonal attachment styles were observed; neither attachment anxiety, $F(1, 41) = .47, p = .50$, nor attachment avoidance $F(1, 41) = .48, p = .49$, significantly predicted reaction time. However, a significant three-way interaction emerged between type of target word, attachment anxiety, and attachment avoidance, $F(3, 123) = 2.89, p = .04$. Profile plots indicate that reaction times for place attachment words improve for individuals who are high in attachment anxiety, but low in avoidance. This interaction is illustrated in Figure 3.4. A difference contrast revealed that this pattern of responses differed marginally significantly between place attachment words and the mean of the other word types, $F(1,41) = 3.56, p = .07$. This result partially supports Hypothesis 2a that attachment anxiety predicts accessibility of place attachment words, but qualifies that avoidant attachment must also be low, which was not hypothesized.

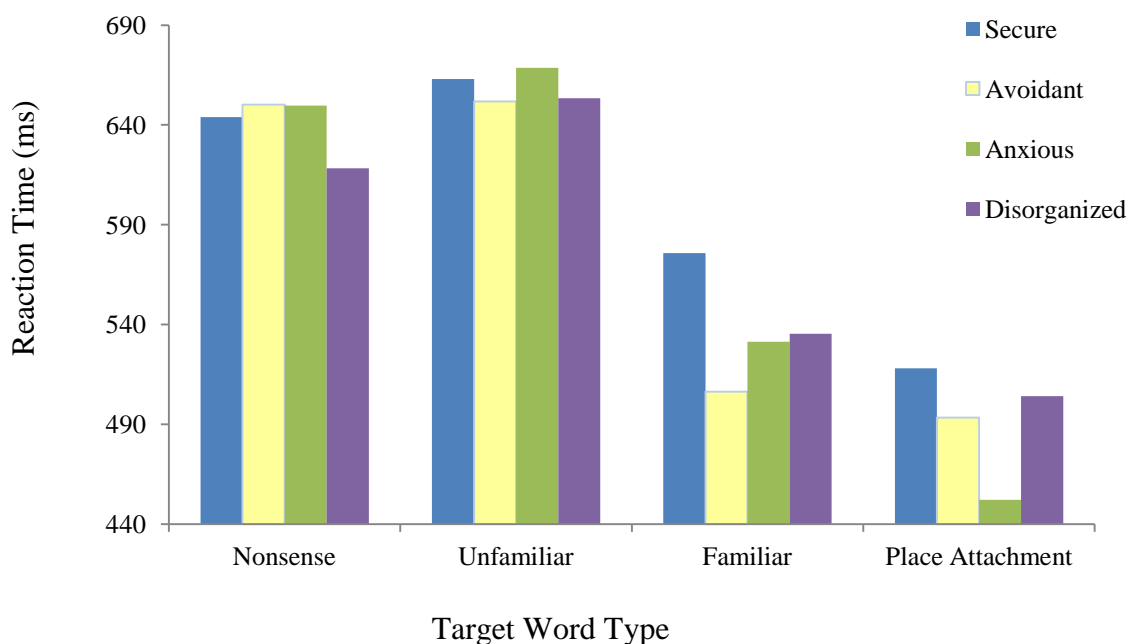


Figure 3.4. The interaction of interpersonal attachment style and type of target word on reaction time in a lexical decision task.

In partial support of Hypothesis 2b, that avoidant attachment would not suppress proximity-seeking to place, avoidant attachment did not interact with the threat condition, $F(1,41) = .61, p = .44$, or with both the threat condition and type of target word, $F(2, 123) = 2.60, p = .06$. However, because the latter was marginally significant, the possible influence of avoidant attachment should not be discounted.

A second mixed ANOVA was conducted using the same key variables as above, but replacing the two types of interpersonal attachment with the two types of place attachment style (i.e., place attachment anxiety and avoidance). Although the initial main effects and interaction (i.e., for target word type and threat condition) remained significant, no additional main effects or interactions involving place attachment styles emerged. Specifically, tests of between-subjects effects showed no influence of place attachment anxiety, $F(1, 41) = 2.98, p$

= .09, or place attachment avoidance $F(1, 41) = .62, p = .43$, on reaction time in the lexical decision task.

3.4 Discussion

This study on the safe haven function of place attachment contributes to the place attachment literature in four ways. First, the WHERETO proved an interesting alternate way of identifying individuals' places of attachment without pre-determining the scale or type of place that participants could consider. Second, despite problems with subliminal priming, this is the first study to demonstrate that place attachment-specific responses can be altered experimentally. Third, the results provide preliminary evidence that place attachment can serve as a safe haven in the face of threats. Finally, interpersonal attachment subtypes appear to moderate place attachment proximity-seeking.

3.4.1 WHERETO

The adaptation of the interpersonal attachment WHOTO (Fraley & Davis, 1997; Hazan & Zeifman, 1994) into the parallel WHERETO provides an avenue for more fully investigating the place characteristics of the attachment bond – a surprisingly understudied area (Lewicka, 2011). WHERETO results underline the claim that most individuals have at least one, and many have multiple, places of attachment (e.g., Giuliani, Ferrara, & Barabotti, 2003; Gustafson, 2009a). This supports the notion that place attachment is relevant, real, and nearly ubiquitous.

The existence of multiple place attachments also suggests that old bonds are not replaced by new attachments, but seem to accumulate over time. Others have found that multiple attachments may even reinforce each other. A study of Swedish residents with

different levels of mobility found that frequent travelers had stronger place attachment to places of larger scale (e.g., other countries and continents), but they also seemed to have stronger local involvement (i.e., social networks and involvement in local associations) than non-travelers (Gustafson, 2009a). The WHERETO could be of use in additional research on multiple person-place bonds (see Future Research Section 2.3.7).

The WHERETO also provided information about the number of place attachment figures, which average being three, slightly fewer than the number observed for interpersonal attachment figures (i.e., five; Trinke & Bartholomew, 1997), although this may result from the use of different questionnaires,¹⁰ or the presence of multiple interpersonal attachments (i.e., to both parents) in one place.

The results of this study corroborate Droseltis and Vignoles' (2010) finding that places of attachment are diverse in scale, distance from the individual, specificity, materiality, social features and other dimensions. The present study identified 17 categories of places of attachment, including rooms, houses, natural areas, schools, cities, countries, recreation centres, restaurants, and vehicles. By having participants list their key places of attachment rather than consider pre-selected place types, researchers can avoid the restrictive practice of assuming that place attachment is solely linked to residential environments.

Nevertheless, the residential environment remains an important place of bonding, given that houses and apartments were the most frequently mentioned type of place on the

¹⁰ Using the "Attachment Network Questionnaire" (ANQ; Trinke & Bartholomew, 1997), participants listed all of the individuals in their life to whom they felt a significant tie, regardless of the valence of this tie.

WHERE TO. Attachment to dwellings may reflect ownership, regulation of privacy, control, personalization, or particular social and physical affordances that make the place suitable for bonding (e.g., Gifford, 2007). Others have suggested that home is psychologically important as a central point from which we can order the rest of our existence (e.g., Tuan, 1974), often serving as the centre of one's mental map (e.g., Golledge & Stimson, 1997). On the other hand, meanings ascribed to houses, through cultural, economic, and political structures, may also contribute to the notion that one's house should be a key locale of attachment (e.g., Cresswell, 2004; Harvey, 1996; Massey, 2005).

Interestingly, "home" was not restricted to the dwelling level; neighbourhoods, cities, regions, and countries were also designated as such, but rooms, green spaces, schools, or other types of places were not. Although this is not surprising, the results do raise questions about the meaning of home. One element may be that home includes a diurnal component, being where one conducts (or once conducted) day-to-day life. That is, home (regardless of scale), in what Seamon (1979) calls a "place ballet," is the stage for routine activities, such as where one usually sleeps, wakes-up, and eats breakfast. Others have suggested that the scale of home varies according to control, ownership, power, and investment (Terkenli, 1995), and still others define home in abstract or metaphorical terms (e.g., a sense of comfort), a way of being in the world (Heidegger, 1971; Seamon, 1979), or in social terms not explicitly connected to a physical dwelling, such as where one's family lives (e.g., Saegert, 1985).

A few participants did not select a place for one or more of the items on the WHERE TO, although all were able to come up with at least one. "No place" arose more often when participants were asked which place they do not like to be away from, suggesting a lack of dependency on place. However, because these participants were able to list one or more

places on the other items, lacking place dependency did not imply that other attachments were absent.

Of interest, the frequency of place types mentioned differed somewhat among the items on the WHERETO. Towns and cities were most often chosen for proximity-seeking, followed by houses and apartments which reflects Hidalgo and Hernandez's (2001) finding that place attachment is strongest for home and city environments.

Houses and apartments were frequently used as safe havens, and green spaces were frequently used for emotion regulation, thus supporting work on the emotion-regulation functions of nature (e.g., Korpela, Hartig, Kaiser, & Fuhrer, 2001). Although results were not coded for scale (as they were in Studies 1 and 3), smaller scale spaces (e.g., rooms, vehicles, beds) were more commonly mentioned for safe haven functions than they were for any of the other functions. Possibly, these smaller spaces offer more privacy, respite, and refuge, thus allowing escape from stressors, a chance for problem-solving, or opportunities for relaxation and restoration.

3.4.2 Types of Familiar Places

Many of participants' familiar places resemble what Augé (1995) referred to as “non-places” (e.g., cloned franchises), but few of their places of attachment fit this category, suggesting that “authentic” places remain important for bonding. As others have shown, the prevalence of place attachment has persisted despite increases in mobility, globalization, and capitalism (e.g., Casey, 1997; Lewicka, 2011). Furthermore, these results suggest that place attachment bonds are more likely to form with unique non-commercial places, although, a few participants did list coffee shops, malls, or other city amenities in the WHERETO. The existence and strength of attachment to commercial places may vary according to different

population segments, although research on such bonds is sparse (but see Tumanan & Lansangan, 2012's work on attachment to coffee shops).

3.4.3 Main Effects of Word Type and Threat Condition

The results included a main effect for word type: participants' reaction time was slower for unfamiliar words, followed by nonsense words, familiar words, and finally, place attachment words. This familiarity effect is congruent with that observed by Mikulincer, Gillath, and Shaver (2002) and others who have used lexical decision tasks with targets of varying familiarity. For example, Forster and Chambers (1973) found that real words are recognized more quickly than nonwords, and high-frequency words are recognized more quickly than low-frequency words. Gernsbacher (1984) further emphasized the importance of experiential familiarity, and not merely printed frequency, of words in processing speed. The general idea is that more familiar words are accessed more quickly in the mental lexicon than are less familiar words.

The second main effect of slower reaction times following error on a previous trial is consistent with a body of literature demonstrating post-error slowing (e.g., Laming, 1968; Rabbitt, 1966; Rabbitt & Rodgers, 1977). The most commonly accepted explanation for this phenomenon is that errors are thought to produce an "increased response caution," whereby a mistake leads the person to slow down and seek more information before acting on the next decision (Dutilh et al., 2012). By increasing speed following a correct response, and slowing down after an incorrect response, individuals can maximally regulate their speed and accuracy.

3.4.4 Hypothesis 1

In contrast to the post-error slowing described above, participants responded *more* quickly to place attachment words following failure on a previous trial. This supports Hypothesis 1 that threat contexts activate cognitive representations of place attachment figures, thus providing evidence that place attachment partly functions to provide a safe haven in the face of threats.

The notion that the attachment system evolved to protect individuals from physical and psychological threats is central to interpersonal attachment theory (e.g., Bowlby, 1982). Indeed, much evidence for threat-induced proximity-seeking to a human attachment figure exists (e.g., Ainsworth et al., 1978; Mikulincer, Birnbaum, Woddis, & Nachmias, 2000; Mikulincer, Gillath, & Shaver, 2002). Mikulincer and colleagues demonstrated this experimentally by showing that threat primes activate proximity-related concepts such as “love” and “closeness” (e.g., Mikulincer et al., 2000), as well as mental representations of attachment figures (e.g., Mikulincer et al., 2002). My results are congruent with these works and extend them by showing that threat exposure increases mental accessibility of place attachment figures.

Accessibility refers to the ease with which mental representations can be activated (Forster & Liberman, 2007). When concepts become more accessible, a state of perceptual readiness emerges in which stimuli or semantic associations are more easily processed. Thoughts can affect performance on cognitive tasks even without awareness of them, and this is presumed to represent activation and accessibility (e.g., Bargh, Chen, & Burrows, 1996). Therefore, the faster reaction time to place attachment words following failure supports the notion that threats and place attachment are associated.

The human cognitive system has been described by some as an associative network, where concepts are like nodes connected by pathways, which strengthen with repeated use (Wyer, 2007). Activation of concepts may occur in parallel, when the activation of one concept spreads to related concepts or, it may occur sequentially, when nodes are activated one at a time. In this way, activation of a threat may simultaneously or sequentially activate place attachment, allowing individuals to be poised to escape or recover from such a threat by relying on their place of attachment.

As in Mikulincer et al.'s (2002) study, "failure" constituted the threat in my study, but I used task-inherent failure rather than subliminally primed failure. Because this operationalization was post hoc, replication of findings is important. Nevertheless, present results support the principle that attachment figures provide a safe haven, but broaden it beyond interpersonal relationships to include person-place relationships. This common function empirically links the two theories in a way that has not been done before.

3.4.5 Hypothesis 2: The Role of Attachment Styles

Analyses show that stable individual differences in attachment style moderate the flight to a place attachment figure following exposure to a threat. As hypothesized, having an anxious interpersonal attachment style decreased reaction times for place attachment words, but only among participants who were not interpersonally avoidant. This style did not improve performance on any of the other word types, suggesting that interpersonal attachment anxiety includes a heightened accessibility not only for person attachment (as Mikulincer, Gillath, & Shaver, 2002, found), but also for place attachment figures.

Interpersonal attachment anxiety involves a hyperactivation of the attachment system, where proximity is continuously monitored, and deviations from it are met with exaggerated

levels of protest (e.g., Shaver & Mikulincer, 2007). Interestingly, this hyperactivation appears to extend to places. Whether this is because places also include important people, or because places are another type of attachment figure that the proximity-style has generalized to, is unclear but a worthwhile avenue of future study. The non-significant effect of place attachment anxiety may indicate that place attachment anxiety either does not involve hyperactivation of proximity-seeking to place, or that the construct should be operationalized in a different way.

In partial support of Hypothesis 2b, interpersonally avoidant participants did *not* respond significantly more slowly to place attachment words following a threat. This result is congruent with Mikulincer et al.'s (2002) finding that avoidant individuals continue to see cognitive proximity in threat contexts, as long as the threats are unrelated to attachment themes (e.g., separation). However, because results were marginally significant, it remains possible that avoidant attachment does play a role in place attachment related proximity seeking. Replication with a larger sample size will be important to more fully address this issue.

3.4.5 Limitations

Some possible limitations should be noted. Despite instructions to list familiar places that held no special meaning or attachment, some of these places may have nonetheless been peripherally related to the places of attachment. For example, one participant selected Calgary as her primary place of attachment, and then listed amenities or parks within Calgary as her familiar places. These familiar places, which are semantically connected to Calgary could have attenuated the expected post-error slow for familiar place words. Although familiar places listed were generally of a different type (e.g., amenities) than places of attachment,

future research should also assess the strength of attachment to the places listed on the WHERETO and the familiar place task to better assess this possibility.

Another limitation is that the sample in this study consisted of university students, which may have limited the types of places that emerged on the WHERETO; community members of more diverse backgrounds may have provided more varied sources of attachment. Further, the overrepresentation of females, although typical in undergraduate subject pools, limits the generalizability of responses to both genders. Nevertheless, the use of student samples for investigating basic attachment processes in a priming context is commonplace (e.g., Mikulincer et al., 2000; 2002). The assumption is that proximity seeking to attachment figures following threat is a fundamental phenomenon that should emerge in most samples.

Contrary to Mikulincer et al.'s (2002) work, a subliminal failure prime did not affect reaction times to any of the four word types. Although the current experiment was not identical to that of Mikulincer et al.'s, many of the current differences (i.e., examining place attachment instead of interpersonal attachment, having four word categories instead of five, having 156 trials instead of 192) can be ruled out as possible contaminants, because the repetition priming should nevertheless have had an effect under these different conditions. Furthermore, the oscilloscope showed that the primes were indeed presented on the screen for the intended period of time.

One potentially important difference is that Mikulincer et al. (2002) employed a different masking procedure, using only a backward mask rather than both forward and backward masks. I included forward masks to reduce lingering effects of previous targets, and backward masks to limit the amount of time the prime could exert its effects. As others have shown, including two masks obscures the prime more than using one mask (Klauer, Eder,

Greenwald, & Abrams, 2007). If so, a lengthier prime may be required before an effect is observed; 20-67 ms is the typical range of prime duration (Forster, Mohan, & Hector, 2003). Therefore, a future study should extend the prime to the upper end of this range.

Another solution would be to use a different priming paradigm altogether, such as Forster and Davis' (1984) classic three-field forward-masking approach, in which the forward mask is presented for 500 ms, followed by a 50-60-ms prime, immediately followed by a 500-ms target. This would avoid the prime-weakening effects of backward masking, and it would also reduce the stimulus onset asynchrony, given no time between the prime and the target.

3.4.6 Future Research

As mentioned, the WHERETO creates new options for future research on multiple place attachment bonds. For example, it could be used in a longitudinal study to assess whether the place of attachment remain stable over time. It might also be used cross-sectionally, to uncover any differences in the types or numbers of place attachment figures across the lifespan.

The WHERETO might also be an interesting tool for exploring the nature of place attachment figures among individuals with less mainstream, and potentially more ambivalent, relationships to place, such as person-place bonds among homeless individuals, those living in prisons, refugees, military families, or children living in foster homes. This could begin to illuminate how individuals navigate person-place bonds despite a lack of place ownership or place stability.

Finally, uncommon responses on the WHERETO could be used to inspire research on types of place attachment figures that have not previously been investigated. For example, one participant listed a cemetery as his place of attachment, which place attachment researchers

have generally overlooked. Some have used preference for burial in a place as an indicator of attachment (e.g., Casal, Aragonés, & Moser, 2010), but attachment to the cemetery itself has only been alluded to (e.g., Ponzetti, 2002). Attachment to cemeteries raises interesting notions about the use of place to continue bonds with others even after they are no longer living.

Future research on the safe haven function of place attachment would also be of interest. This could begin with more impactful manipulations of threat (e.g., reading threatening scenarios, receiving false feedback, or watching threatening videos), and then asking participants to indicate their desire to visit a place of attachment. Alternatively, questionnaires could retrospectively assess where people have gone immediately following threatening experiences, and could explore whether different places are more frequently sought for certain types of threats. A third study could use an experience-sampling approach in which participants report where they go, and their level of attachment to such places, following daily hassles and more serious stressors. This would occur over the course of a month, thus documenting behavioural, and not just cognitive aspects of proximity-seeking.

The use of place as a safe haven relates to prospect-refuge theory (i.e., Appleton, 1975), which has demonstrated that individuals prefer places that offer views of their surroundings, while at the same time, providing cover from predators, weather, or other dangers. Such place preferences are thought to be a product of natural selection. Showing that important places provide a sense of security suggests links between theories of prospect and refuge theory and place attachment. Future studies could further investigate these links, for example, by evaluating whether places of attachment are likely to have features of prospect and refuge.

3.4.7 Conclusion

As part of this investigation of the functions of place attachment, the present study offers evidence that like interpersonal attachment, place attachment may also provide a safe haven in the face of threats. Following task-related failure, participants demonstrated activation of place attachment concepts, indicated by their faster reaction times on a lexical decision task. Thus, a safe haven appears to be automatically activated in one's cognitive system following a threat. In this way, the present study brings quantitative evidence supporting common notions that safe havens do exist, and interestingly, that they have become incorporated in our cognitive systems.

CHAPTER 4

Study 3: Need-Satisfying Functions of Place Attachment

The content analysis conducted in Study 1 revealed a number of psychological benefits associated with place attachment. Study 2 began to explore one of these functions (security) using an experimental approach. Study 3 continues to apply an experimental approach to evaluate place attachment's ability to support several additional psychological needs: control, meaning, self-esteem, belongingness, and affect regulation. Drawing from the results of Study 1, as well as the existing literature, belongingness, freedom/control and improved affect were expected psychological benefits of place attachment; the experimental design of Study 3 served to further investigate the ability of place attachment to enhance these outcomes.

Meaning and self-esteem were not among the central benefits of place attachment identified by participants in Study 1, nor have they received much emphasis in the place attachment literature. However, because these constructs have been central to other work on need satisfaction (e.g., Deci & Ryan, 2000) and ostracism (e.g., Williams, 2009), and have been identified as relevant to interpersonal attachment (e.g., Brennan & Morns, 1997; LaGuardia, Ryan, Couchman, & Deci, 2000; Mikulincer & Shaver, 2013), they were included to determine whether place attachment satisfies a broader range of benefits than that which emerged in Study 1.

Following such research on need satisfaction and ostracism (e.g., Williams, Cheung, & Choi, 2000; Williams & Jarvis, 2006), as well as work on environment-fostered restoration of negative affective states (e.g., Kaplan, 1995), need satisfaction was investigated following a need-depletion state; if place attachment is thought to assist with need satisfaction, then

creating a situation where needs are not already fully satisfied, or are currently threatened may be important. Therefore, Study 3 employed an ostracism paradigm along with a place visualization task to assess whether place attachment can help individuals recover from the negative psychological impacts of being ostracised.

Additionally, Study 3 evaluated whether a place visualization exercise is an effective way of priming the feelings and functions associated with place attachment. Techniques such as visualizing the faces of attachment figures have effectively primed interpersonal attachment security, which can in turn, reduce out-group-induced threats to self-esteem and cultural worldviews (Mikulincer & Shaver, 2001); however, to my knowledge, neither visualization nor any other method of manipulation has been employed in place attachment research. If successful, this technique will allow research questions about place attachment to be assessed using experimental designs, which is important for establishing causality.

The design was a 2 x 2 experiment with place attachment, manipulated using a visualization exercise, and ostracism, manipulated using a bogus rejection paradigm (e.g., Williams, Cheung, & Choi, 2000) as the independent variables. The dependent variables were participants' current levels of satisfaction of four psychological needs (i.e., belongingness, self-esteem, control, and meaning) as well as their current levels of positive and negative affect.

4.1 Hypotheses

(1) As has been observed in previous research (e.g., Jamieson, Harkins, & Williams, 2010; Williams, 2009), social ostracism (i.e., during a virtual ball tossing game) is expected to decrease need satisfaction and mood, relative to social inclusion.

(2) Visualizing a place of attachment is expected to improve mood and need satisfaction, compared to visualizing a neutral place.

(3) Place attachment is expected to exert its need-satisfying influence after individuals have experienced a need-threat situation. That is, it can help an individual recover from need-threats. Therefore, the positive influence of place attachment on need satisfaction and mood is expected to be observed following the ostracism condition more so than following the inclusion condition.

(4) Using place attachment to regulate affect and facilitate need satisfaction may differ by interpersonal attachment and place attachment styles. As compared to individuals who are greater in secure and anxious attachment (for both interpersonal and place attachment), individuals high in attachment avoidance are expected to experience less need satisfaction and affect relief following the place attachment visualization.¹¹

(5) As an exploratory hypothesis, the effects of the place visualization may differ by the geographical scale of place visualized by the participant. I will investigate whether scale moderates the influence of the place visualization, or ostracism, on need satisfaction and affect.

¹¹ Attachment avoidance involves minimizing the importance of close relationships, and excessive self-reliance (e.g., Shaver & Mikulincer, 2002). Therefore, those who are high in avoidance may not rely on their place for affect relief and need satisfaction. The visualization is expected to be effective only among those without PA or IA avoidance.

4.2 Methodology

4.2.1 Participants

The participants were 133 undergraduate students from a mid-sized Canadian university, recruited from the psychology research participation pool. This number of participants was selected based on an *a priori* power analysis for the sample size required to detect a medium-to-large effect size (e.g., $\eta^2 = .08$; Cohen, 1988)¹², using an alpha error probability of .05 and a beta error probability of .80 for a planned 2 x 2 ANCOVA (Faul, Erdfelder, Buchner, & Lang, 2009).

Age in the sample ranged from 19 to 34 years ($Mdn = 20.00$, $SD = 2.34$), and, as is typical of this sample, more participants were female ($n = 91$) than male ($n = 28$), although some gender data were missing ($n = 14$; see section 4.3.1). The participants' self-reported ethnicities included: Caucasian (67.8%), Asian (15.3%), East Indian (3.4%), Middle Eastern (2.5%), unspecified Canadian (5.1%), and other (5.9%), which generally reflects the proportion of these ethnicities in the subject pool at this University. Participants varied in their residential mobility, reporting having moved to a new residence between 0 and 27 times ($Mdn = 3.00$, $SD = 4.01$). Approximately 40% were in a romantic relationship, and of those, 23.4% lived in the same residence as their partner. These and other demographic variables are presented in Tables 4.1 and 4.2.

¹² This effect size was expected based on interpersonal attachment studies on security priming (e.g., Mikulincer & Shaver, 2001; Study 2 & Study 3).

Table 4.1

Frequencies for Categorical Demographic Variables

Variable		<i>N</i>	Percent
Gender	Male	28	21.1
	Female	91	68.4
	Unspecified	14	10.5
Romantic Relationship Status	Single	72	54.1
	In a relationship	47	35.3
	Unspecified	14	10.5
Living with Partner	No	36	27.1
	Yes	11	8.3
	Unspecified or N/A	86	64.7
Ethnicity	Caucasian	80	60.2
	Asian	18	13.5
	Other	7	5.2
	Unspecified Canadian	6	4.5
	East Indian	4	3.0
	Middle Eastern	3	2.2
	Unspecified	15	11.3

Table 4.2

Descriptive Statistics for Continuous Demographic Variables

Variable	<i>n</i>	Min	Max	<i>M</i>	<i>SD</i>
Age	119	19	34	20.44	2.34
Times Moved	105	0	27	4.27	4.01

4.2.2 Measures and Tasks

4.2.2.1 Climate Change Engagement Scale (Scannell & Gifford, 2013). This 15-item scale was included as an unrelated distracter task to make the study purpose less apparent. It assesses individuals' cognitive, affective, and behavioural responses to climate change.

4.2.2.2 Mindfulness Attention Awareness Scale (MAAS; Brown & Ryan, 2003). The MAAS was another unrelated scale used to obscure the study's purpose. This 15-item scale assesses the tendency to attend to, and be aware of, one's current experiences.

4.2.2.3 Experiences in Close Relationships-Revised (ECR-R; Fraley, Waller, & Brennan, 2000). Interpersonal attachment styles (i.e., secure, anxious, avoidant, and disorganized) were assessed with this widely used 36-item measure (see Studies 1 and 2). Participants responded to items along a 1, "strongly disagree," to 7, "strongly agree" Likert scale. Scores were calculated for each of the two dimensions of avoidance and anxiety, and thus an individual with a "secure" attachment style scored low on both of these dimensions.

4.2.2.4 Place Attachment Style. Stable individual differences in place attachment were assessed using the 37-item place attachment style questionnaire (see Study 1). Because this measure was created as an analog of the ECR-R, response options similarly ranged from 1-7, and subscales (i.e., anxiety and avoidance) were scored similarly.

4.2.2.5 *Cyberball* (Williams, Cheung, & Choi, 2000; Williams & Jarvis, 2006). This commonly used ostracism manipulation is a ball-tossing game played on the computer in which participants pass a ball amongst three other players. Although participants are told that the players are other students also participating in the research study, they are in fact virtual players whose actions are pre-programmed to be either inclusive (by passing the ball to everyone approximately equally), or exclusive (by refraining from passing the ball to the participant). This task increases negative emotions and decreases need satisfaction after a few minutes of being excluded (Jamieson, Harkins, & Williams, 2010; Williams, 2009), even when participants are made aware that the other players are not real people (Zadro, Williams, & Richardson, 2004), and even when participants are paid for being excluded (van Beest & Williams, 2006). In the present study, players were represented by cartoon faces, and each game involved two male and two female players (one of whom represented the participant).

4.2.2.6 *Place Visualization*. The place visualization activity involved a guided visualization of a familiar place. A research assistant guided participants to imagine, in as much detail as possible, a place that was familiar to them. Those in the place attachment condition were asked to think of a place to which they felt especially attached and those in the neutral place condition were asked to think of a regular place toward which they did not have strong (negative or positive) feelings. As in Studies 1 and 2, participants were free to select whichever type of place that they wished. The experimenter asked them to visualize various sensory aspects of the place, including visual, smell, and auditory aspects (See Appendix C for script). After this, the participants had five minutes to write a short description of the place, and explain why it was important to them.

4.2.2.7 *Place Attachment Strength* (Billig, Kohn, & Levav, 2006; Brown & Perkins, 1992; Jorgensen & Stedman, 2001; Scannell & Gifford, 2013). This scale was included to assess *strength* of attachment to place (as opposed to place attachment *style*). Items from this scale were drawn from three previously published measures of place attachment. Twelve items came from Jorgensen and Stedman's (2001) sense-of-place scale, including four items related to place identity (e.g., "*This place is part of who I am*"), four related to affective attachment (e.g., "*I feel happiest when I'm in this place*"), and four related to place dependence (e.g., "*For doing the things that I enjoy most, no other place can compare to here*"). Six items representing different facets of place attachment that were not covered in Jorgensen and Stedman's scale were added from Billig, Kohn, and Levav's (2006) work. These items encompass a spiritual connection to place (e.g., "*The spiritual nature of this place ties me to it*"), a sense of "at homeness" (e.g., "*I feel that this place is my home*"), an intention to stay ("*I intend to continue going to, or staying in this place for the next 3 years*"), and other relevant aspects of the person-place bond. Finally, two items capturing participants' feelings of pride and attachment toward place were added from Brown and Perkins' scale (1992). All items were answered using 7-point Likert response scales that ranged from 1 "strongly disagree," to 7 "strongly agree." The resulting 20-item scale demonstrated excellent reliability in a previous study (Scannell & Gifford, 2013; Cronbach's $\alpha = .94$). One additional item was embedded in the above scale as quality check (i.e., "*Please indicate your ongoing participation in this study by typing an 'X' below number 3*").

4.2.2.8 *Positive and Negative Affect Schedule* (PANAS; Watson, Clark, & Tellegen, 1988). The PANAS is a commonly used measure of self-reported affect, and it has demonstrated good reliability in previous research on exclusion (e.g., positive affect, $\alpha = .83$;

negative affect, $\alpha = .78$; Garris, Ohbuchi, Oikawa, & Harris, 2000). Participants rated the degree to which they were *currently* experiencing 20 different emotions (ten positive and ten negative), such as “excited,” “inspired,” “upset,” and “nervous.” Each item was rated on a 5-point scale ranging from 1 “very slightly or not at all,” to 5 “extremely.”

4.2.2.9 *Need-Threat Scale* (Jamieson, Harkins, & Williams, 2010; Williams, 2009).

This 20-item scale assesses current satisfaction levels of four central needs: belongingness, self-esteem, meaningfulness, and control, using 5-point scales (1 = “not at all,” 5 = “extremely”). It has acceptable reliability (Cronbach’s $\alpha = .78$; Jamieson et al., 2010).

Participants were asked to answer the questions according to how they currently felt based on the activity they had just experienced. Four items were slightly re-written so that they could be applicable to both the Cyberball and place visualization activities. For example, the item “*I felt I belonged to the group*” was changed to “*I felt a sense of belonging.*”

4.2.3 *Procedure*

As a cover story, participants were told that the general purpose of the research was to assess the links between personality traits and mental visualization, but they were not initially made aware of the rejection or place aspects of the study. Participants signed up for the study a week in advance of the experiment, at which time they were sent an email containing the Letter of Information for Implied Consent (Appendix C), along with a link to the four pre-test questionnaires, to be completed using an online survey hosted by LimeSurvey. They were also assigned a participant number that was used to connect responses from the online and laboratory portions of the study. The questionnaires of interest included the ECR-R (Fraley et al., 2000) to assess interpersonal attachment styles, and the PAS, to assess place attachment styles, which were counterbalanced to control for order effects. Two additional unrelated

scales (e.g., the climate change engagement scale, Scannell & Gifford, 2013; the Trait Mindfulness Scale, Brown & Ryan, 2003) were included to conceal the purpose of the study. All measures can be viewed in Appendix C.

The following week, participants arrived at the laboratory to complete the experiment. Sessions were run with either two participants at a time ($n = 52$ sessions) or, in the case of no-shows, one ($n = 15$ sessions).¹³ They were seated at a laptop computer and told that the first part of the experiment involved playing a ball-tossing game called Cyberball (e.g., Williams, Cheung, & Choi, 2000) with other “students” online (who were actually pre-programmed players). They were further told that the purpose of the game was to mentally visualize what it would be like if they were really tossing the ball around in a room with the other players. The researcher led participants to believe that the two other players were completing the experiment in a different room; this cover story was facilitated by a pre-planned text message indicating when those other “players” were ready to begin the game.

Once the game began, the ball was “tossed” around amongst the players. When the participant received the ball, he or she passed it to another player of their choice by clicking on that player’s cartoon face. The first nine tosses allowed an equal probability of each player receiving the ball. Following this, the remaining 33 tosses were distributed according to the participant’s condition. In the exclusion condition, participants received no more tosses. In the inclusion condition, participants were tossed the ball approximately one-quarter of the time.

¹³ *t*-tests revealed that the number of participants in attendance did not influence any of the dependent variables, p 's > .05.

Participants then reported their current levels of need satisfaction using the Need Threat Scale (Jamieson, Harkins, & Williams, 2010; Williams, 2009) and their current moods using the Positive and Negative Affect Schedule (the PANAS; Watson, Clark, & Tellegen, 1988).

Next was the place visualization activity, in which participants were guided to envision a place in as much detail as possible for approximately five minutes, and then write about it for five additional minutes. Half the participants visualized a place to which they were attached and half visualized a neutral place (see Appendix C for visualization scripts). Afterwards, participants reported the strength of their attachment to the place they just described using the place attachment scale (Jorgensen & Stedman, 2001, revised), and then again indicated their levels of need satisfaction and current moods. Finally, they provided some demographic information (e.g., age, gender, ethnicity, residential mobility, etc.). Upon completion of the experiment, participants were thoroughly debriefed and compensated for their time with course credits.

4.3 Results

4.3.1 Data Cleaning

Data cleaning commenced by merging data from the online surveys into one file with data from the main experiment; 110 participants had completed both the online and lab portions of the study, nine had completed only the lab portion of the study, and 14 had completed only the online portion but did not attend the main experiment. Written responses for open-ended demographic variables (e.g., ethnicity) were coded into numeric categories. Several written comments revealed that one demographic variable, “number of housemates”

had been unclear (i.e., participants were not sure whether to count themselves). Therefore, this variable was removed from analyses.

4.3.1.1 Missing data. Missing data were assessed on a per-variable basis, then a per-case basis, which included tests to determine whether the data were missing at random. Per variable, the amount of missing data was low, ranging from 0% to 4.8%, with the exception of “number of times moved,” which was missing 11% of responses because it was added after data collection had begun.

Missing data were then examined on a per-participant basis. As mentioned, 23 participants were missing data for either the online or experimental portions of the study, but these participants were retained for analyses that involved only their completed variables. Several *t*-tests revealed that participants who had participated in only one part of the study did not differ from participants who had participated in both parts on the key variables. For example, those who completed only the online questionnaires possessed similar interpersonal attachment anxiety ($M = 2.97, SD = .95$) means as those who completed both parts of the study ($M = 3.27, SD = 1.03$), $t(98) = -.97, p = .34$. Means for avoidance were also not significantly different among online-only ($M = 3.05, SD = 1.23$) and full participants ($M = 2.95, SD = 1.18$), $t(107) = .29, p = .77$.

A missing-value analysis for data from the lab portion of the study revealed that few values were missing; specifically, only 22 data points were missing overall, which is less than 0.1% of the data, and no participant was missing more than four data points. More data were missing from the online portion of the study, ranging from zero to 38 values per participant ($M = 2.27, SD = 6.57$). Of note, 39 participants were missing at least one data point. Overall, 282 online data points were missing, which is about 2.2% of the online data set. Five participants

who were missing over 20% of their online data were removed from analyses involving those variables. This greatly reduced the proportion of online missing data, to 1.03%.

Independent *t*-tests were conducted to assess whether the amount of missing lab and online data differed according to gender, relationship status (single or in a relationship), birth year (above and below the median of 1992), years of university (above and below the median of 1 year), and the order of scales presented on the online questionnaire (Version A or B). None of these tests were significant, except for relationship status: single participants were missing more data on the online questionnaires than were participants in a relationship $t(110.11) = 2.49, p = .01$. Despite this issue, however, missing lab data did not differ by relationship status. Nevertheless, relationship status was included in the primary analyses as a covariate. Given the low percentage of missing data, along with the lack of apparent patterns of it, missing data were not of concern.

Six participants (4.5%) incorrectly responded to the item assessing their attention (i.e., directing them to select to response option 3). However, *t*-tests revealed that these participants did not possess significantly different means on any of the dependent variables or covariates, nor did they possess a greater amount of missing data. Therefore, these participants' data were retained.¹⁴

4.3.1.2 Creating and examining composite variables. Averages for each composite variable were created by dividing the total score by the number of available responses. In addition to those already excluded (see above), five participants who were missing more than

¹⁴ Further, results from the main analyses did not change when these participants were excluded.

50% of responses from the ECR-R anxiety and avoidance subscales were excluded from analyses involving those subscales. Missing data from demographic variables were not replaced.

Negatively worded items were then reverse-coded and composite measures for the appropriate subscales were computed. These composites were examined for normality and outliers. Histograms and reports of skew and kurtosis indicated acceptable normality for all variables except negative affect at Times 1 and 2, which were positively skewed, and kurtotic, and belonging and meaningfulness at Time 2, which were negatively skewed. To assess the presence of outliers, boxplots and z -scores for each composite variable were examined. This revealed one participant with a high place attachment (PA) anxiety score, $Z = 4.08$, $p < .001$. This value was winsorized such that one standard deviation was added to the second highest score (e.g., Field, 2005).

4.3.2 Scale Reliabilities

All scales fared very well on assessments of their internal consistency (see Tables 4.5 and 4.6). In line with previous research (e.g., Sibley, Fischer, & Liu, 2005), both subscales of the ECR-R were highly reliable (anxiety, $\alpha = .95$; avoidance, $\alpha = .96$). The PAS subscales were also reliable (PA anxiety, $\alpha = .85$; PA avoidance, $\alpha = .82$). However, corrected item-total correlations below .3 indicated that four PA anxiety items did not correlate well with the scale's total score (e.g., Field, 2005).¹⁵ The low consistency of these items may reflect the

¹⁵ Specifically, these items were: “*I rarely worry that my place will disappear*” (reverse-coded), “*My place seems to meet my needs only when I force it to,*” “*I feel restored when I am in my favourite place* (reverse-coded), and “*My place really supports me and my needs*” (reverse-coded).

difficulty of translating interpersonally based items into place-relevant items. Once they were removed, the alpha of the PA anxiety subscale increased slightly ($\alpha = .87$). Corrected item-total correlations were low for three PA avoidance items.¹⁶ After these items were removed, the internal consistency of the remaining 15 items increased ($\alpha = .84$).

The overall Need-Threat Scale was reliable at Time 1 ($\alpha = .96$) and Time 2 ($\alpha = .93$), and so were its four subscales (see Table 4.5). The corrected item-total correlation values revealed that one item in the Time 2 subscale did not correlate well with the scale's total score. This item, "*I felt I was unable to influence the actions of others*" (reverse-coded) may have been interpreted differently following the visualization task. However, this item was retained given that removing the item did not change the alpha of the scale, and also so that the scales at Time 1 and Time 2 would be comparable. Subscales on the PANAS presented acceptable reliability at Time 1 (positive affect $\alpha = .89$; negative affect $\alpha = .85$) and Time 2 (positive affect $\alpha = .89$; negative affect $\alpha = .84$). The 20-item place attachment scale also presented excellent reliability ($\alpha = .94$).

4.3.3 Interrater Reliability for Coding of Geographical Scale

Two trained raters coded written responses from the place visualization task according to Freundschuh and Egenhofer's (1997) taxonomy of scale to assess the geographical scale of the place (see section 1.7.3). Overall, the free-marginal kappa indicated good agreement, $\kappa = .78$ (Randolph, 2008). Specifically, the percent of overall agreement was 81%.

¹⁶ "*Sometimes I cut ties with my favourite places for reasons that I don't understand,*" "*I prefer not to show how attached I am to places,*" and "*I am nervous when I start to get too close to a place.*"

Table 4.3

Frequencies for Geographical Scale (n = 93)

	Frequency	Percent
Manipulable object space	2	2.15
Non-manipulable object space	42	45.16
Environmental space	48	51.61
Geographic space	1	1.08

For 26 responses, no agreement was reached for determining place scale, because coders either interpreted responses differently from each other, or because the responses were lacking sufficient description, and so these participants were excluded from scale-related analyses, leaving 93 valid participants. The frequencies of each category are presented in Table 4.3. Overall, environmental space was the most common categorization (51.61%), followed by non-manipulable object space (45.16%). Geographic space (1.08%) and manipulable object space (2.15%) were much less common in participants' responses. Given that the majority of responses were either environmental space or non-manipulable object space, the other categories were not represented by an adequate number of cases to be included in further analyses. Thus, analyses of scale for Study 3 were therefore restricted to those two scales. This left a sample size of 90 participants for analyses involving scale. Examples of places coded as non-manipulable were a living room, a bedroom, a painting studio, inside a vehicle, and a kitchen. Examples of places coded as environmental space included the library at the University, a park, a beach, a multi-room house, and a recreation centre.

Environmental space was the most common geographic scale (62.5%) among participants who had visualized a place of attachment. One participant described the docks at Rocky Point Park in Port Moody, British Columbia:

There is a nearby marina, filled with sailboats and yachts. The water is cold, but just warm enough to dip my feet in. I can hear the cries of seagulls over my head and the sloshing of water up against the barnacle-infested boulders. Seaweed floats around the dock, above the clusters of mussels that are on the thick chains anchoring the dock in place. Across the water I can see a dense forest with small cabins nestled among the pines. I can smell exhaust from the jet boats and the salt from the water. There are white jellyfish deeper in the water, floating like ghosts. The wind is warm. The wood of the dock is old and worn down. It gives me splinters when I walk on it barefoot.

Interestingly, non-manipulable object spaces were slightly more common among participants who visualized a neutral place (54%), followed by environmental spaces (46%). Nevertheless, a chi-square analysis revealed that the scale codes did not significantly differ by visualization condition, $\chi^2(1) = 2.43, p = .12$. One description of a neutral non-manipulable object space was as follows:

I thought of the laundry room back home. The washer and dryer are a crisp white, sitting side by side. Above the washer and dryer, is a clothes line hanging, and it smells like fresh, lemony laundry soap, with my brother's music playing in the background as the computer room is right beside the laundry room. There is a lot of clutter everywhere, behind me are shelves filled with scrapbooks and random canning jars and photos from the past. There is a large

sink beside the washer as well as quite a few cleaning supplies. It's not important to me because nothing has happened in this room that makes it particularly memorable.

4.3.4 Descriptive Statistics

Means, standard deviations, and ranges were computed for the following continuous variables: Current Mood Time 1 (positive and negative affect), Need Satisfaction Time 1 (belongingness, self-esteem, meaningfulness, and control), Place Attachment, Current Mood Time 2 (and its two subscales), Need Satisfaction Time 2 (belongingness, self-esteem, meaningfulness, and control), ECR-R Anxiety, ECR-R Avoidance, PAS Anxiety and PAS Avoidance (see Tables 4.5 and 6).

Table 4.4

Frequencies for Categorical Independent Variables

Independent Variable	Level of Variable	<i>n</i>
Ostracism	Ostracism	57
	Inclusion	62
Place Visualization	Place of Attachment	60
	Neutral Place	59

Table 4.5

Means and Standard Deviations for Dependent Variables and Continuous Covariates

		Experimental Condition								
		Inclusion/PA			Inclusion/Neutral		Ostracism/PA		Ostracism/Neutral	
		α	M	SD	M	SD	M	SD	M	SD
Need Threat Time 1	Overall	.96	3.44	.55	3.51	.54	1.99	.67	2.35	.60
	Belongingness	.90	3.73	.65	3.86	.65	1.95	.77	2.52	.72
	Self-esteem	.89	3.25	.73	3.36	.76	2.10	.72	2.35	.74
	Meaning	.89	3.76	.64	3.83	.60	2.23	.85	2.61	.73
	Control	.78	3.04	.60	2.99	.63	1.71	.70	1.90	.60
PANAS Time 1	Positive Affect	.89	2.45	.61	2.63	.66	2.22	.68	2.05	.68
	Negative Affect	.85	1.30	.28	1.25	.25	1.71	.62	1.60	.65
Place Attachment		.94	4.98	.87	2.78	1.09	4.99	1.08	2.39	.81
Need Threat Time 2	Overall	.93	3.87	.61	3.49	.62	3.82	.72	3.31	.63
	Belongingness	.80	4.23	.61	3.82	.80	4.23	.65	3.69	.70
	Self-esteem	.85	3.89	.78	3.32	.73	3.72	.90	3.02	.74
	Meaning	.79	4.03	.61	3.60	.68	3.91	.72	3.69	.76
	Control	.70	3.37	.78	3.23	.78	3.45	.92	2.86	.65
PANAS Time 2	Positive Affect	.89	2.71	.82	2.56	.73	2.76	.75	2.34	.65
	Negative Affect	.84	1.22	.33	1.02	.33	1.34	.42	1.37	.52

Note: All scales ranged from 1 (not at all) to 5 (very much so), with the exception of place attachment, which ranged from 1 (not at all) to 7 (very much so).

Table 4.6

Reliabilities and Descriptive Statistics for Interpersonal and Place Attachment Styles

Type of Attachment	Subscale	α	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
ECR-R	Anxiety	.95	1.00	6.33	3.25	1.06
	Avoidance	.96	1.00	6.09	2.97	1.20
PAS	Anxiety	.87	1.00	5.71	2.92	.87
	Avoidance	.84	1.07	5.64	3.19	.89

Note: The ECR-R subscales were based on 18 items each, the PA Anxiety subscale was based on 16 items, and the PA Avoidance subscale was based on 15 items; response options ranged from 1, “strongly disagree,” to 7, “strongly agree.”

Overall, IA anxiety ($M = 3.25$, $SD = 1.06$) was slightly greater than IA avoidance ($M = 2.97$, $SD = 1.20$). However, the opposite was true for PAS scores: PA avoidance ($M = 3.19$, $SD = .89$) was slightly greater than PA anxiety ($M = 2.92$, $SD = .87$). Participants reported low levels of negative affect at both Time 1 ($M = 1.46$, $SD = .51$) and Time 2 ($M = 1.28$, $SD = .41$), and medium levels of positive affect at Time 1 ($M = 2.35$, $SD = .69$) and Time 2 ($M = 2.59$, $SD = .76$). Experienced levels of need satisfaction increased from Time 1 to Time 2. Of the four needs, belongingness increased most (Time 1, $M = 3.05$, $SD = 1.07$; Time 2, $M = 3.99$, $SD = .72$), followed by control (Time 1, $M = 2.43$, $SD = .87$; Time 2, $M = 3.21$, $SD = .81$), self-esteem (Time 1, $M = 2.78$, $SD = .92$; Time 2, $M = 3.49$, $SD = .85$), and finally meaningfulness (Time 1, $M = 3.13$, $SD = .99$; Time 2, $M = 3.80$, $SD = .71$).

4.3.5 Correlations

Bivariate correlations among continuous variables were computed. As observed in previous research (e.g., Jamieson et al., 2010), the need subscales were strongly correlated (r 's

ranging from .61-.87). The positive and negative affect subscales were weakly, negatively correlated at Time 1 ($r = -.20, p = .03$), but not correlated at Time 2. Interestingly, PA Anxiety was not correlated with PA avoidance, but it was positively correlated with IA Anxiety ($r = .50, p < .001$), and IA Avoidance ($r = .26, p = .004$). Individuals higher in PA Avoidance also demonstrated higher levels of IA Anxiety ($r = .23, p = .01$), and IA Avoidance ($r = .28, p = .002$). Consistent with previous research (e.g., Fraley, 2012; Sibley, Fischer, & Liu, 2005), IA Anxiety and IA Avoidance were correlated ($r = .42, p < .001$).

Also of interest was the finding that PA Anxiety correlated with many of the other variables; specifically, individuals who were more anxiously attached to place reported less belongingness ($r = -.19, p = .04$), self-esteem ($r = -.25, p = .01$), and positive affect ($r = -.26, p = .01$) and more negative affect ($r = .35, p < .001$) at Time 1, and less belongingness ($r = -.22, p = .02$) and meaningful existence ($r = -.24, p = .01$) and more negative affect ($r = .46, p < .001$) at Time 2. Fewer associations were observed for PA Avoidance.

Demographic variables were not found to be correlated with covariates or dependent variables, with the exception of age and romantic relationship status. Specifically, participants who were younger possessed more PA avoidance ($r = .24, p = .01$), IA avoidance ($r = .25, p = .02$), and IA anxiety ($r = .28, p < .01$). Those who were in a romantic relationship possessed less IA avoidance ($r = -.49, p < .001$). Therefore, these two variables were retained as additional covariates in the primary analyses. These and other correlations are presented in Table 4.7. Because correlations among independent variables were relatively low ($r < .5$) multicollinearity was not a concern.

4.3.6 Manipulation Check

As a manipulation check of the visualization task, a *t*-test was conducted using visualization condition as the independent variable, and place attachment score as the dependent variable. This test demonstrated that participants who visualized a place of attachment reported significantly higher place attachment scores ($M = 4.99$, $SD = .98$) than did those who visualized a neutral place ($M = 2.60$, $SD = .98$), $t(117) = -13.31$, $p < .001$.

4.3.7 Assumptions

The hypotheses were assessed using multivariate analyses of covariance (MANCOVA). Thus, the data were examined to assess their compatibility with the main assumptions of this type of analyses. As mentioned, the dependent variables were generally normally distributed, which lends support to the assumption of multivariate normality (Field, 2009).

To evaluate the assumption of homogeneity of covariance matrices (i.e., whether the variances and covariances among the dependent variables were the same across all levels of the factors), two tests were performed. First, non-significant Levene's tests indicated that the variances of the dependent variables did not differ significantly among groups (significance values ranged from .08 to .97). Second, a non-significant Box's test (Box's $M = 82.79$, $p = .14$) supported the assumption that the covariances of dependent variables did not differ among groups. Because the assumptions were not violated, the MANCOVA was conducted without transformations or other alterations.

Table 4.7

Intercorrelations among Dependent Variables and Continuous Covariates

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Belonging Time1	1																		
2. Self-esteem Time 1	.82**	1																	
3. Meaning Time1	.87**	.84**	1																
4. Control Time 1	.75**	.72**	.78**	1															
5. Positive affect Time 1	.40**	.48**	.45**	.46**	1														
6. Negative affect Time 1	-.47**	-.47**	-.44**	-.33**	-.20*	1													
7. Place Attachment	-.09	-.02	-.05	.06	.04	.06	1												
8. Belonging Time 2	-.01	.05	.03	.06	.22*	-.07	.50**	1											
9. Self-esteem Time 2	-.04	.14	.08	.12	.22*	-.04	.50**	.81**	1										
10. Meaning Time 2	-.05	.05	.11	-.02	.25**	-.07	.33**	.72**	.71**	1									
11. Control Time 2	-.18*	-.02	-.02	-.04	.19*	.10	.28**	.62**	.69**	.64**	1								
12. Positive affect Time 2	-.06	.08	.08	.12	.49**	.12	.35**	.58**	.60**	.55**	.59**	1							
13. Negative affect Time 2	-.24**	-.29**	-.31**	-.14	-.17	.62**	-.02	-.43**	-.28**	-.37**	-.25**	-.13	1						
14. Place Attachment Anxiety	-.19*	-.25*	-.16	-.12	-.26**	.35**	.03	-.22*	-.18	-.24**	-.06	-.04	.46**	1					
15. Place Attachment Avoidance	.06	-.08	.01	-.04	-.11	.08	-.05	-.03	-.19*	.00	-.02	-.10	.02	.07	1				
16. Interpersonal Attachment Anxiety	-.06	-.17	-.14	.01	-.11	.27**	-.08	.01	-.05	-.14	.01	.04	.30**	.50**	.23*	1			
17. Interpersonal Attachment Avoidance	-.10	-.22*	-.16	-.16	-.23*	.28**	.06	.11	.09	.16	.14	.02	.15	.26**	.28**	.42**	1		
18. Birth Year	.00	.00	-.01	-.05	.00	.06	.07	.12	.06	.01	.15	.11	.03	.17	.24*	.28**	.25*	1	
19. Relationship status	-.03	.01	.05	.09	.15	-.09	.03	-.05	.02	-.05	-.05	.13	-.06	-.17	-.14	-.16	-.49**	-.13	1

Note: *.Correlation is significant at the .05 level (2-tailed);**. Correlation is significant at the .01 level (2-tailed).

4.3.8 The Effects of Ostracism and Place Visualization on Mood and Need Satisfaction

To test the first hypothesis, that ostracism would decrease need satisfaction and mood, six *t*-tests were conducted using ostracism condition as the independent variable, and Mood Time 1 (i.e., positive and negative mood), as well as each of the Need Satisfaction Time 1 subscales (i.e., belongingness, self-esteem, control, and meaningfulness) as the dependent variables. The Benjamini-Hochberg procedure was applied to control for the false discovery rate that is problematic with multiple comparisons (Benjamini & Hochberg, 1995; Thissen, Steinberg, & Kuang, 2002). This procedure has been demonstrated to be more powerful and less conservative than the traditional Bonferroni approach (Williams, Jones, & Tukey, 1999). Following this, ostracism was found to significantly decrease the satisfaction of all four needs and positive affect, and increase negative affect (*p*'s all <.001).

To test the second and third hypotheses (i.e., that visualizing a place of attachment would improve mood and need satisfaction compared to visualizing a neutral place, and that the place attachment could increase such outcomes following rejection), a MANCOVA was conducted, using Ostracism condition and Visualization condition as the independent variables, moods and levels of need satisfaction at Time 1 (i.e., Positive Mood Time 1, Negative Mood Time 1, Belongingness Time 1, Self-esteem Time 1, Control Time 1, and Meaningfulness Time 1) as well as birth year and romantic relationship status as the covariates, and moods and levels of need satisfaction at Time 2 (i.e., Positive Mood Time 2, Negative Mood Time 2, Belongingness Time 2, Self-esteem Time 2, Control Time 2, and Meaningfulness Time 2) as the dependent variables.

Table 4.8

Multivariate tests for Composite Variable of Mood and Need Satisfaction at Time 2 (N = 119)

Effect	Wilks' Λ	F	Hypothesis df	Error df	P
Ostracism	.83	3.43	6.00	102.00	.004
Place Visualization	.85	2.97	6.00	102.00	.01
Ostracism*Visualization	.92	1.45	6.00	102.00	.20

The results are presented in Table 4.8. In support of the second hypothesis, a main effect was observed for the visualization condition, Wilks' $\Lambda = .85$, $F(6, 102) = 2.97$, $p = .01$. The strength of this significant effect, as assessed by the multivariate $\eta^2(1 - \Lambda)$ was large: the place visualization factor accounted for 15% of the variance in the multivariate outcome measures. The ostracism condition also exerted multivariate differences in mood and need satisfaction at Time 2 (controlling for Time 1), Wilks' $\Lambda = .83$, $F(6, 102) = 3.43$, $p = .004$.

Importantly, univariate tests on each dependent variable indicated that visualizing a place of attachment increased participants' feelings of belongingness, $F(1, 107) = 11.89$, $p = .001$, self-esteem, $F(1, 107) = 13.56$, $p < .001$, and meaningful existence, $F(1, 107) = 5.04$, $p = .03$, but feelings of control and positive or negative mood were not significantly altered (see Figure 4.1).

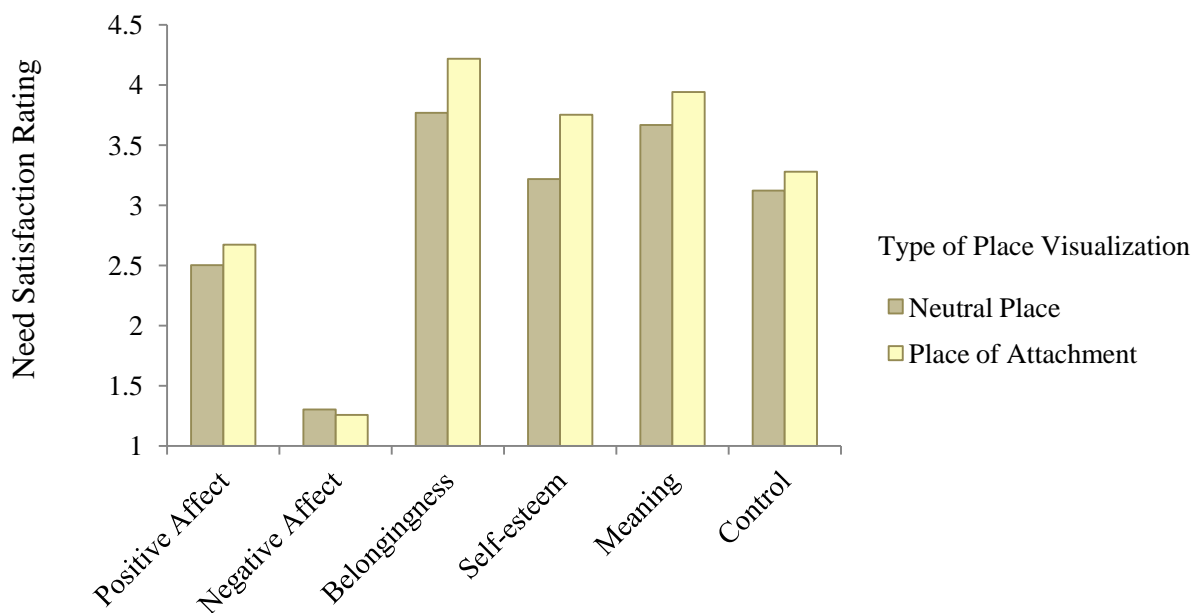


Figure 4.1. Estimated marginal means of the satisfaction of psychological needs at Time 2 according to place attachment and neutral place visualizations; place attachment visualizations significantly increased belongingness, self-esteem, and meaningful existence.

Univariate tests also demonstrated that (above and beyond the effects at Time 1), ostracism reduced participants' sense of control at Time 2, $F(1, 107) = 9.55, p = .003$, but it did not influence other Time 2 variables, when the needs at Time 1 were included as covariates.

The interaction of ostracism and place visualization on mood and need satisfaction at Time 2 (with needs at Time 1 as covariates) was not significant, Wilks' $\Lambda = .92, F(6, 102) = 1.45, p = .20$, indicating that the influence of the place visualization on moods and needs at Time 2 did not differ depending on whether participants had been rejected or included in the ball tossing game. Therefore, the third hypothesis, that the place attachment visualization would have a differential impact among individuals who had been ostracised than not ostracised, was not supported.

The fourth hypothesis was that individuals with stronger attachment avoidance were expected to experience less relief from negative affect and less need satisfaction following the place attachment visualization condition. To assess this, interpersonal attachment style and place attachment style were included in the MANCOVA as additional independent variables. Specifically, following Mikulincer et al. (2002), the anxiety and avoidance subscales for each type of attachment were recoded to be above and below the median (i.e., low and high anxiety and low and high avoidance). Again, the visualization condition had significant effects on the dependent variables at Time 2 (controlling for the Time 1 variables), Wilks' $\Lambda = .80$, $F(6, 77) = 3.23$, $p = .01$, $\eta^2 = .20$, as did the ostracism condition, Wilks' $\Lambda = .83$, $F(6, 77) = 2.68$, $p = .02$, $\eta^2 = .17$.

Attachment style also played a role. Related to the fourth hypothesis, the avoidant (but not the anxious) attachment styles were associated with experienced levels of need satisfaction and affect at Time 2 (controlling for Time 1): for avoidant IA style, Wilks' $\Lambda = .84$, $F(6, 77) = 2.39$, $p = .04$; for avoidant PA style, Wilks' $\Lambda = .80$, $F(6, 77) = 3.30$, $p = .01$. The multivariate η^2 suggested that these effects were large ($\eta^2 = .16$ and $.20$, respectively). Univariate tests indicated that, regardless of condition, participants with stronger PA avoidance experienced lower levels of self-esteem (Time 2), $F(1, 82) = 4.14$, $p = .05$, and, interestingly, that those with stronger IA avoidance experienced more meaningfulness (Time 2), $F(1, 82) = 8.64$, $p = .01$ and self-esteem (Time 2), $F(1, 82) = 4.95$, $p = .03$.

In partial support of the fourth hypothesis, the interaction of avoidant PA style and place visualization was marginally significant, Wilks' $\Lambda = .86$, $F(6, 77) = 2.11$, $p = .06$.¹⁷ Univariate tests revealed that five dependent variables appeared to be influenced by this interaction: belonging, $F(1, 82) = 9.40$, $p = .003$, control, $F(1, 82) = 8.27$, $p = .005$, meaning, $F(1, 82) = 5.53$, $p = .02$, negative affect $F(1, 82) = 5.03$, $p = .03$, and self-esteem, $F(1, 82) = 4.54$, $p = .04$.

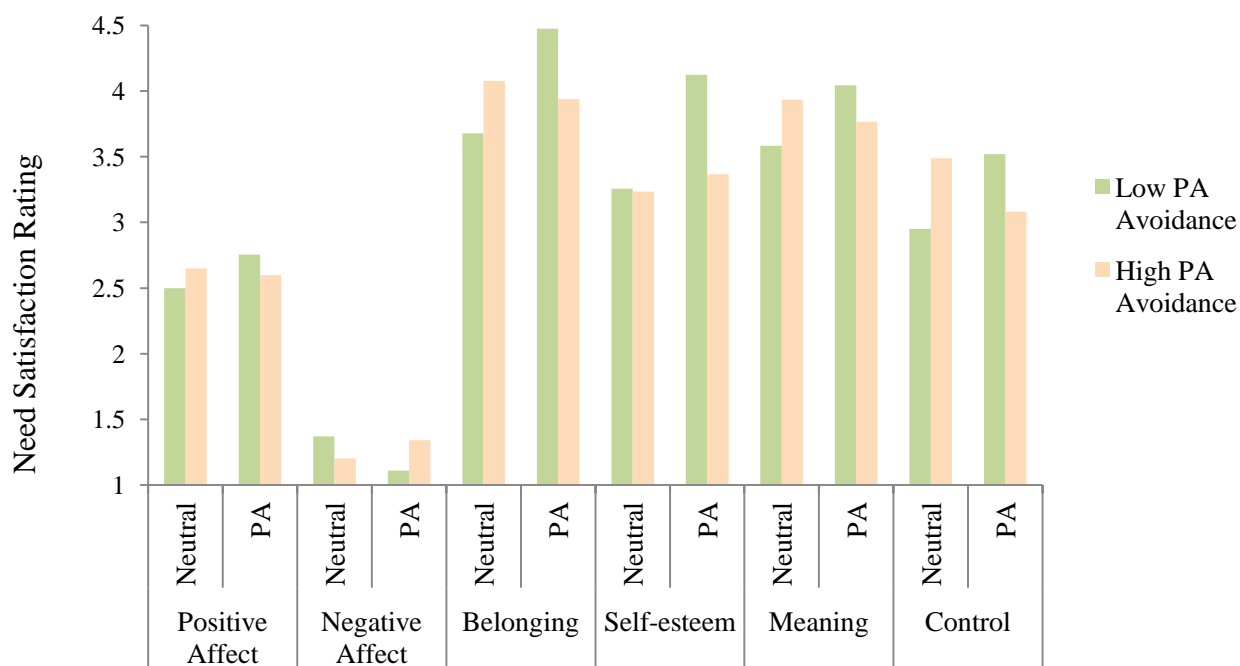


Figure 4.2. The interaction of place visualization (i.e., place attachment or neutral place) and place attachment avoidance on the satisfaction of psychological needs and moods at Time 2; significant univariate effects emerged for belonging, self-esteem, meaning, control, and negative affect.

¹⁷ Without the *post hoc* covariates of birth year and romantic relationships status, Wilks' $\Lambda = .84$, $F(6, 79) = 2.43$, $p = .03$, and the results for the univariate tests were similar.

Estimated marginal means for these variables demonstrate that individuals with weaker PA Avoidance benefited from the PA visualization task more so than did those with stronger PA avoidance (Figure 4.2). This is a disordinal interaction given that the effects of one independent variable has opposite effects on the dependent variable depending on the level of the other independent variable; that is, a place visualization task exerts opposing effects on need satisfaction for individuals with differing place attachment styles. Avoidant PA style did not, however, interact with the ostracism manipulation. In terms of interpersonal attachment style, avoidance did not significantly interact with either of the manipulated variables. Taken together, this suggests partial support for the fourth hypothesis: that the influence of the place visualization on need satisfaction and moods was hampered by avoidant PA (but not IA) style.

To assess the fifth hypothesis, that the effect of place visualization depends on the geographical scale of the place, the MANCOVA was run with the scale (either non-manipulable object space or environmental space) included as an independent variable along with place attachment visualization condition and ostracism condition. Need satisfaction and affect reported at Time 1 were entered as covariates, as were the two demographic covariates included above (i.e., birth year and romantic relationship status). As in the other MANCOVAs, moods and levels of need satisfaction at Time 2 (i.e., Positive Mood Time 2, Negative Mood Time 2, Belongingness Time 2, Self-esteem Time 2, Control Time 2, and Meaningfulness Time 2) were the dependent variables.

Again, ostracism and visualizing a place of attachment were both significant predictors of need satisfaction and affect at Time 2; scale, however, was not significant, Wilks' $\Lambda = .88$, $F(6, 69) = 1.59$, $p = .16$. Furthermore, the scale of the place visualized did not moderate the

effects of the visualization condition on need satisfaction and affect. Interestingly, however, scale significantly interacted with the ostracism condition, Wilks' $\Lambda = .81$, $F(6, 69) = 2.69$, $p = .02$. This indicates that the effects of ostracism on the multivariate outcome measures differed depending on the scale at which the place was visualized.

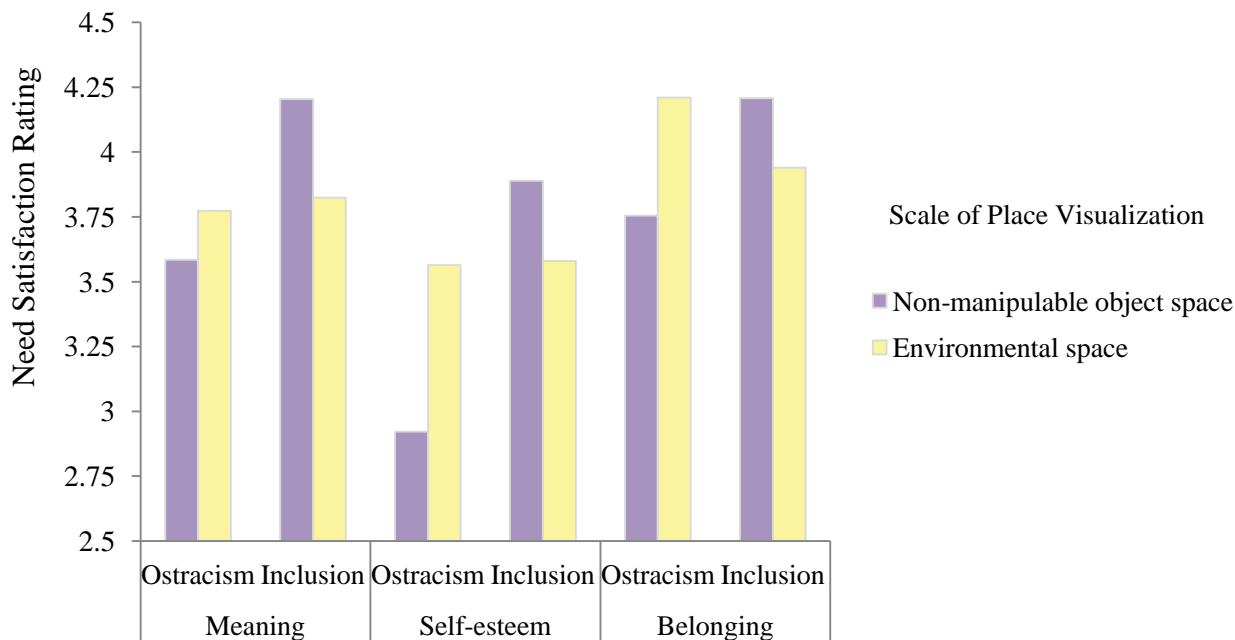


Figure 4.3. Interaction of geographical scale of place visualization and ostracism condition on the satisfaction of three psychological needs at Time 2 (i.e., meaning, self-esteem, and belonging).

Univariate tests further explained how the scale of the place that was visualized moderated the effects of ostracism on each of the outcome variables. In particular, the combination of scale and ostracism did not influence positive or negative affect or control, but it did influence the satisfaction of the other needs including meaning, $F(1, 74) = 4.06$, $p < .05$; self-esteem, $F(1, 74) = 8.80$, $p = .004$, and belongingness $F(1, 74) = 5.27$, $p = .03$.

Estimated marginal means demonstrated (Figure 4.3) that if participants had been included in the ball tossing game, visualizing non-manipulable object space had a beneficial effect on need satisfaction at Time 2 (controlling for Time 1). If the participant had been excluded, visualizing environmental space had a beneficial effect on need satisfaction, particularly for self-esteem and belongingness. In fact, the interaction for belongingness was disordinal; those who had been excluded experienced higher levels of belonging when visualizing environmental space, whereas those who had been included experienced higher levels of belonging when visualizing non-manipulable object space.

4.4 Discussion

This study demonstrated that visualizing a place to which one is attached can facilitate the satisfaction of certain psychological needs. Thus, it partly answers the question of why person-place bonds exist, by demonstrating that they are psychologically functional. Perhaps most importantly, it is the only study of which I am aware to have included place attachment as a manipulated independent variable, which broadens the options for internally valid, methodologically diverse place attachment research.

4.4.1 Hypothesis 1: Ostracism and Need Satisfaction

My investigation of place attachment-supported need satisfaction was conducted in a need-depletion context, using Williams et al.'s (e.g., 2009) well-established ostracism paradigm. Consistent with previous research (Jamieson, Harkins, & Williams, 2010), the first hypothesis, that ostracism would decrease need satisfaction, was supported; ostracism decreased the satisfaction of all four needs (belonging, self-esteem, meaning, and control) and positive affect, and increased negative affect. As Williams and colleagues explain (e.g., Williams, Cheung, & Choi, 2000), sociability and group membership offers survival advantages to the individual, and group cohesiveness also improves selection at the group level. Therefore, individuals are sensitive to a variety of cues indicating exclusion, and emotional and motivational systems aim to restore the individual's status in the group.

At Time 2, the effects of ostracism dissipated for all of these needs and emotions except the satisfaction of control, which remained lower among those who had been rejected. This replication of Williams and colleagues' work further attests to the efficacy of their tasks, yet suggests that the effects of this type of rejection partly decay over time and with the introduction of other tasks.

4.4.2 Hypothesis 2: Place Attachment Visualization and Need Satisfaction

The second hypothesis, that visualizing a place of attachment can increase psychological need satisfaction was supported. Interestingly, the place attachment visualization (relative to the neutral visualization) enhanced participants' sense of belongingness, self-esteem, and meaningfulness, but it did not alter control or mood.

The construct of belongingness has appeared in the place attachment literature, as reported in some qualitative studies (i.e., Fried, 1963; Morgan, 2010) or as represented in definitions of place attachment (e.g., Riger & Lavrakas, 1981) or scale items (e.g., Pretty, Chipuer, & Bramston, 2003; Twigger, 1992). However, apart from this dissertation, belongingness as an outcome of place attachment has not been investigated experimentally. The present study provides evidence that place attachment can increase a sense of belongingness.

This finding is parallel to work showing that interpersonal attachment can enhance belongingness (e.g., LaGuardia, Ryan, Couchman, & Deci, 2000). Although this was not emphasized by Bowlby or Ainsworth, other interpersonal attachment researchers view belongingness in particular as the most important reason for attachment. For example, Baumeister and Leary (1995) proposed that attaining a sense of belongingness to, and connecting with others, is the most fundamental human motivation. Results from Study 1 and Study 3 show that belongingness applies to place attachment too.

However, future experimental research could identify which attributes of place attachment would most enhance belongingness. As revealed in Study 1, place may provide this function when it includes important people, when it represents a larger community or group, or when it speaks to one's identity. Study 3 adds that visualizing an important place is

one way to evoke this sense of belongingness. Interpersonal belongingness is most satisfied by relationships involving frequent positive interactions that are perceived to be stable, long-lasting, and of mutual concern (Baumeister & Leary, 1995). More research is needed to determine whether these qualities apply to person-place relationships.

Self-esteem is another psychological benefit that emerges from secure interpersonal attachment relationships, in part because close relationships contribute to internal working models of the self as positive or negative (e.g., Brennan & Morns, 1997; Collins & Read, 1990; Feeney & Noller, 1990). Less work has explored place attachment as a source of self-esteem (exceptions include Droseltis & Vignoles, 2010; Twigger-Ross & Uzzell, 1992), although related concepts like pride (Brown et al., 2003) and identity (e.g., Proshansky, 1978; Proshansky, Fabian, & Kaminoff, 1983) have been discussed more extensively. Twigger-Ross and Uzzell (1992) documented place-related distinctiveness, the sense of uniqueness accompanied by positive affect that results from person-place bonds. Self-esteem is enhanced when a positive evaluation of one's place translates into a positive self-evaluation. It follows that self-esteem has been associated with place attachment, but the present study demonstrates a more internally valid connection between the two.

Some social psychologists assert that the need for meaning is a grand need that underlies all other psychological needs (e.g., Heine, Proulx, & Vohs, 2006). Meaning can include a sense of coherence and understanding about life and the world around us (Antonovsky, 1987). Studies of interpersonal attachment show that securely attached individuals report more meaning in life, and that priming individuals with representations of a supportive other can similarly increase this sense of meaning (Mikulincer & Shaver, 2013). Meaningfulness is central to some definitions of place attachment (Tuan, 1974), such as those

that portray it as a centre from which the rest of the world becomes coherent (Casakin & Kreitler, 2008; Droseltis & Vignoles, 2010; Tuan, 1974). The present finding that a place attachment visualization increased participants' sense of meaningfulness provides the first experimental evidence of the notion that place attachment supports the need for meaning.

Overall, place attachment visualizations did not seem to enhance participants' sense of control. This contrasts with Study 1, in which freedom emerged as a benefit, as well as other research linking place attachment to control (e.g., Droseltis & Vignoles, 2010). However, the place attachment visualization *did* improve feelings of control for individuals without place attachment avoidance; it is therefore possible that the effect of the place attachment visualization on control was suppressed by the presence of avoidant participants in the sample (see section 4.4.4).

Finally, and somewhat surprisingly, place attachment visualization did not significantly improve mood. This is contrary to previous literature suggesting that place attachment enhances positive affect (e.g., Korpela, Hartig, Kaiser, & Fuhrer, 2001). However, (as was the case for control) once place attachment avoidance was taken into consideration, this expected relationship did emerge; negative affect decreased among individuals without place attachment avoidance. However, positive affect remained unchanged. Attachment styles are discussed in more detail below.

As an experimental tool, my use of the visualization task offers causal evidence for the impact of place attachment on need satisfaction for the first time. Although some authors have previously connected place attachment to need satisfaction (e.g., Kyle, Mowen, & Tarrant, 2004; Moore & Graefe, 1994), issues of directionality (i.e., that need satisfaction increases place attachment) and other unmeasured variables pose limits to the direct effects of

place attachment. Of course, not all confounding factors are absent in this design, but experimentally manipulating place attachment strengthens internal validity. This new option for manipulating place attachment as an independent variable also expands possibilities for future research.

4.4.3 Hypothesis 3: The Interaction of Ostracism and Place Attachment Visualization

The third hypothesis predicted that the place attachment visualization would reduce the negative effects incurred from being ostracised. Although simple means were in the expected direction, the two variables did not significantly interact in the MANCOVA. This indicates that place attachment visualization increases need satisfaction somewhat evenly, regardless of whether someone has previously experienced ostracism or not.

Place attachment appears to be need-enhancing, but remains limited. A next step would be to investigate the buffering effects of place attachment; that is, if one's attachment to place is salient, one may better cope with subsequent stressors. In the interpersonal attachment domain, priming individuals with repetitions of attachment figures can buffer the negative effects of stress (Mikulincer, Hirschberger, Nachmias, & Gillath, 2001). Therefore, experiencing the visualization task *before* the ostracism task would be an interesting variation of the present study.

4.4.4 Hypothesis 4: The Role of Attachment Style

The fourth hypothesis, that place attachment visualization would be less effective among individuals with avoidant attachment styles, was supported for place attachment avoidance, but not for interpersonal attachment avoidance. This is unsurprising given that interpersonal attachment avoidance is not directly relevant to the place visualisation task. Specifically, following the visualization task, those with weaker place attachment avoidance

experienced greater levels of need satisfaction, and those with stronger place attachment avoidance experienced less need satisfaction. This highlights the importance of individual differences in limiting or enhancing the potential psychological functions that are determined by place, and that, although many people benefit from their place bonds, others' relationships with place may be unwanted, ambivalent, or unsatisfying (e.g., Manzo, 2003).

In keeping with principles from interpersonal attachment, avoidance includes an internal working model that attachment figures are rejecting and unavailable, and this includes a general discomfort with closeness to potential attachment figures (e.g., Shaver & Mikulincer, 2002). If place attachment avoidance functions similarly, then visualization forces a proximity that may be uncomfortable or detrimental, for example if the place is a source of painful memories, or if the place was one that, albeit important, continually failed to meet the person's needs.

The place and personality factors that lead to place attachment avoidance remain unclear and, given the current results about the implications for place-derived need satisfaction, makes this topic worthy of further investigation.

4.4.5 The Role of Geographical Scale

The types of places that participants chose to visualize were quite diverse, and importantly, places of attachment were not always residential spaces. Particular rooms, homes, recreation centres, outdoor areas, and even entire cities and provinces were among the types of places that participants reported. The present results once again challenge the assumption that homes and neighbourhoods are prototypical places of attachment, reminding place attachment researchers to extend the range of places they investigate. When this is done, findings from

place attachment research will become more representative and will acknowledge that those without close relationships to home may nevertheless find refuge in other types of places.

Although the two visualization conditions did not result in places of attachment that significantly differed in geographical scale, scale did play a role when it was considered in combination with the ostracism condition. The effects of ostracism on experienced needs at Time 2 differed with scale for meaning, self-esteem, and belongingness. Visualizing environmental space improved satisfaction with these needs if the participant had been ostracised, but visualizing non-environmental space improved satisfaction with these needs if the participant had not been ostracised. This effect may relate to differences in the presence of others found in each type of place. Environmental spaces are larger, and may more often include other people who reduce the negative impacts of ostracism. Non-environmental (i.e., non-manipulable object) places may be more solitary, allowing for the pursuit of individual activities, which could be more desirable following an inclusive ball-tossing game. Of course, other differences, such as control, stimulation, or the presence of nature may also account for this interaction, and therefore, additional research might reveal why scale matters for place-related need satisfaction. At this exploratory stage, scale appears to be an interesting variable, worthy of future study.

4.4.6 Limitations

Some limitations of Study 3 are common to other experiments that employ a student sample, and the other issues relate to participant interpretations of the ostracism and visualization tasks.

As noted by Henrich, Heine, and Norenzayan (2010), student samples do not always support inferences of generalizability to a broader population. Although I have observed that

place attachment has need-enhancing qualities, this effect may be limited to a population who is generally young, educated, predominantly Western, and female. Thus, an important direction for future research would be to explore whether similar benefits exist among individuals with differing backgrounds and place experiences. For example, could place attachment visualizations provide similar psychological benefits in individuals from politically unstable places? Given present results, along with other works demonstrating an existence of strong place attachment in such places (i.e., Gaza; Billig, Kohn & Levav, 2006), I would hypothesize that they can, although more work is required to assess this claim.

Task-related limitations were also evident, although these are unlikely to undermine the results. At the end of the study, several participants suspected that the Cyberball task did not involve other players. However, these suspicions were only revealed once questioned by the experimenter (i.e., “Did you know you were playing Cyberball with the computer and not with the other players?”), and thus the comments may reflect a hindsight bias. Furthermore, the manipulation check of the Cyberball task revealed between-group differences on subsequent affect and need satisfaction ratings. This is in line with Zadro, Williams, and Richardson’s (2004) finding that Cyberball can have an effect even when participants are explicitly told that the other players’ actions were pre-programmed by the computer, and that they were not actual people. Nevertheless, future studies using Cyberball could include a post-test to assess participants’ suspicions about the task, which could be included as a covariate in related analyses.

The place visualization task may benefit from minor alterations. One issue was that a few participants in the neutral place visualization condition described places that were somewhat important to them (as revealed by the place attachment questionnaire). Although

the manipulation check demonstrated a clear difference in place attachment scores between groups, distinguishing between the groups as much as possible to maximize the internal validity of this manipulation is important. Thus, one amendment would be to revise the instructions in the neutral place attachment condition to further emphasize that the selected place should be ordinary and free from any strong emotion. Selection of a neutral place could be facilitated with a guided questionnaire, along with more time to consider the place choice. A related concern is that participants were given only five minutes to describe their selected place. For this research, place descriptions were brief, and so codings for themes were limited. Depending on their aims, future researchers may wish to increase the time allotted for this activity, or use more in-depth questions, such as those from Study 1.

4.4.7 Future Research

Along with the possibilities for future place attachment research already suggested, a few additional ones are relevant. One avenue would be to re-examine and further validate previously proposed models of place attachment using an experimental design in which place attachment is manipulated. For example, claims that place attachment is related to private-sphere pro-environmental behaviours (e.g., Vaske & Kobrin, 2001) or climate change engagement (e.g., Scannell & Gifford, 2013) could all be tested experimentally by manipulating place attachment using a visualization technique. If manipulating place attachment can increase private- and public-sphere environmentalism (e.g., see Stern, 2000) or other place-protective behaviours, it may inform relevant intervention strategies and campaigns. Importantly, it would further validate existing models by providing stronger evidence of causality.

Place attachment researchers should also aim to devise additional ways of effectively manipulating place attachment so that we can approach research questions in diverse ways. For example, these manipulations could include using participants' personal images of their meaningful places, using Google Street View to revisit old neighbourhoods, priming place attachment with subliminal stimuli (i.e., words or images), or by evaluating behavioural, cognitive, and affective outcomes by collecting data in situ.

Study 3 provides evidence that place attachment visualizations can enhance satisfaction with four psychological needs. However, Study 1 revealed many more benefits associated with place attachment. Thus, additional experiments may refine the list of needs most likely to be influenced by place attachment. Relaxation, memory-support, and entertainment (i.e., see Study 1), would be good candidates for such research. Other than psychological needs, future research should consider whether place attachment visualizations (compared to other types of visualizations) can improve health-related outcomes, such as coping with painful stimuli, recovering from an illness, or other painful life experiences.

The lack of effect of place attachment visualization on mood is also deserving of future research because other studies (including Study 1 of this dissertation) have connected place attachment to positive affect. One possibility is that place attachment enhances affect only under specific contexts, and if so, these contexts or conditions should be identified. Length of time spent in a place, the type of place attachment (e.g., Mishra, Mazumdar, & Suar, 2010), and natural features or other restorative qualities of the place (Korpela & Hartig, 1996) may be additional moderators.

Finally, future place attachment research should continue to investigate person-place bonds at different geographical scales. Moving beyond the assumption that place attachment is

found in residential environments, scale becomes an important variable that appears to moderate place attachment processes. This study differentiated between non-manipulable object place attachment (e.g., a particular room in a building) and environmental place attachment (e.g., a park). Future work may expand on this or evaluate the effects of place attachment using different scale classification systems.

4.4.8 Conclusion

Study 3 adds experimental evidence to the notion that place attachment is psychologically functional. It highlights belongingness, self-esteem, and meaning as three psychological benefits that may be derived from place, and specifically from visualizing a place of attachment. Control and negative affect were also improved among those who did not have an avoidant place attachment style. From this, an additional assertion, in line with findings from Study 2, is that we can reap the benefits of place attachment even when we are not immediately in the place. Our mental representations of important places can serve as proxies for tangible environments. In this way, place is not restricted to the outer world, but it also exists in the mind.

CHAPTER 5

General Discussion

5.1 The Functions of Place Attachment

Lewicka's (2011) concern that the progress of place attachment knowledge has been somewhat stagnant, stuck in conceptual debates and lacking explication of processes, is in part addressed by this dissertation on the functions of place attachment. This series of studies shifts the focus from definition to theory, by considering why place attachments exist, and how they benefit us psychologically. The use of experiments suggests some causal explanations about how place attachment processes unfold.

The primary aim of this dissertation was to identify the psychological functions that are commonly afforded by a place attachment bond. In Study 1, 13 possible functions of place attachment emerged from a content analysis: memories, belonging, relaxation, positive emotions, activity support, comfort/security, self-growth, freedom--control, entertainment, connection to nature, practical benefits, privacy, and aesthetics. Studies 2 and 3 provided additional experimental evidence supporting four of these functions (psychological comfort--security, belonging, control and reduced negative affect), as well as two additional ones (meaning and self-esteem). This preliminary work therefore demonstrates that person-place bonds have a multitude of psychological implications. One deduction is that place attachment bonds may form and persist because they provide us with so many benefits. Another possibility is that the benefits may be hierarchically interrelated in a way that, by virtue of satisfying one or two critical needs (such as belongingness), place attachment supports related,

but less-central functions (e.g., activities, memories). The underlying structure of these benefits, and the interrelations among them require further study.

The 15 benefits investigated in the three studies were discussed in relation to interpersonal attachment theory. Interestingly, eight benefits appear to be clearly related to both types of attachment (i.e., belonging, relaxation, positive emotions, comfort--safe haven, self-esteem, self-growth, freedom--control, and meaning), and five appear relevant for place attachment, but not likely interpersonal attachment (i.e., connection to nature, privacy, practical benefits, entertainment and aesthetics). Whether the remaining six benefits of place attachment (i.e., memories, activity support, freedom/control, self-growth, and positive emotions) also apply to interpersonal attachment is still unclear, given a lack of elaboration of these functions in the interpersonal attachment literature.

Three explanations apply to the overlapping functions: (1) that the presence of people in important places supplies interpersonally relevant needs; (2) that bonding supplies these needs, whether or not it involves people; and (3) that the place attachment bond expands from interpersonal attachment bonds and, because of this, some of the psychological functions are common to both. Fried (2000) suggested that place attachment can occur by generalizing attachment bonds from the infant-caregiver relationship to members of the broader community, to the place in which those residents reside. Morgan (2010) similarly postulated that place attachment stems from interactions that oscillate between one's caregiver and stimulating places that generate positive affect. As the bond generalizes from people to place, some of the functions are carried over.

5.2 Attachment Styles

A sub-goal of this dissertation was to explore attachment style differences in the functions of place attachment. Given that no adequate measure to assess place attachment styles existed, the place attachment style scale was created. Across all three studies, reliabilities were acceptable, and most items performed consistently. However, a few items were inconsistent, showing acceptable correlations in some of the studies, but poor correlations in the others. These items may be poorly written, or they may be indicating the presence of additional dimensions. Thus, future work on individual differences in place attachment should continue to explore alternatives in place attachment style operationalization and survey construction. As part of this, the dimensional structure of place attachment style could be further explored using factor analytic techniques.

Despite this issue, subscale intercorrelations indicate some connection between the two types of attachment. For example, place attachment anxiety was strongly correlated with interpersonal attachment anxiety in all three studies, and place attachment avoidance moderately correlated with interpersonal attachment avoidance in all three studies. This supports the notion that place attachment style is inextricably connected to the social environment, which may be hard to disentangle from the physical environment, because places include actors, and so one's style of relating to people may generalize to place. Another possibility is that modes of attachment generalize across attachment figures and so, characteristics of a secure (or insecure) attachment style could apply to both people and places. That is, the same mental representations are being used to interpret both types of relationships, and so individuals have a particular attachment style, regardless of the object of attachment. To test the latter, one might explore correlations of attachment styles among

important places (or objects of attachment) that are specifically unrelated to person attachment figures.

Interpersonal attachment styles influenced study outcomes in mainly predictable ways. In Study 1, secure individuals reported benefits related to proximity-seeking as well as exploration, indicating a balance between these two behavioural systems. The hyperactivation of the anxious attachment system, in contrast, emerged in Study 2 as excessive place attachment proximity seeking, and in Study 1 was associated with using place more often to mentally revisit the past. Those with interpersonal attachment avoidance benefited from self-enhancing and exploratory functions of place. These results again emphasize that styles of relating to people have implications for how we relate to place, too, and therefore contribute to the little work connecting personality to place attachment (but see Tartaglia, 2006 for an exception). More broadly speaking, this adds to the evidence that interpersonal attachment style is a construct important to a variety of psychological outcomes.

The effects of the place attachment styles were fewer and less coherent. One exception was that the success of the visualization task in Study 3 required that individuals have little place attachment avoidance, which seemed to impair place-related need satisfaction. However, Study 2 found that place attachment avoidance (and interpersonal attachment avoidance) did not disrupt proximity-seeking to place when one is threatened. Taken together, these results suggest that individuals with place attachment avoidance automatically seek proximity to places when threatened, but do not benefit from deliberate place visualizations.

5.3 Methodology

The qualitative and quantitative traditions of place attachment research have progressed on separate trajectories and have rarely informed each other (Patterson & Williams, 2005), likely because of different research aims (e.g., describing the lived experience of place attachment versus identifying predictors and correlates). However, the two methods are complementary because qualitative approaches can provide the basis for subsequent testing in quantitative designs, and because they contain different strengths and weaknesses which help to offset each other.

Therefore, uncovering the functions of place attachment was attempted with a multi-method approach. This also served to broaden methodological options for place attachment research, which has (to my knowledge) not yet tapped into experimental methods favoured in other areas of psychology. The content analysis allowed responses that were more individualized and comprehensive, allowing me to extract themes. In addition, Study 1 was more externally valid than the other two studies because it employed a diverse sample of participants and could be completed away from the artificial setting of a laboratory.

As noted earlier, one question that I could not answer was whether each benefit is a consequence of the attachment, or a contributor to, or aspect of the bond. In contrast, the experiments provide some indication about the direction of causation. Study 2 showed that proximity-seeking to one's place of attachment (but not other types of places) occurred following a threat. In addition, Study 3 is the first to use place attachment as a manipulated independent variable in an experimental setting, by using a place attachment visualization.

5.4 Non-attachment

The vast majority of participants were able to identify at least one place of attachment, supporting the notion that place attachment is widespread. Across all three studies, only three participants specifically expressed having no place of attachment, two of whom expressed a preference for interpersonal attachment to the exclusion of place attachment.

Nevertheless, that non-attachment did emerge may challenge the assumption that attachment is a good or necessary phenomenon. Indeed, some Buddhist philosophers depict attachment as a negative force in which an individual grasps at or clings to the bond (Sahdra, Shaver, & Brown, 2010). A state of “non-attachment,” in contrast, is said to offer a preferable state of flexibility, a lack of fixation on attachment objects, and tolerance to the impermanence of bonds. The authors posit, therefore, that cementing early attachment bonds is not optimal, but rather, learning that such bonds are constructed, mutable representations may be more adaptive. However, the Buddhist description of attachment seems comparable to anxious attachment, and non-attachment may show some overlap with secure attachment. For instance, both securely attached and non-attached individuals display greater autonomy, compassion for others, and well-being (e.g., Gillath, Shaver, & Mikulincer, 2005; Sahdra, Shaver, & Brown, 2010). Furthermore, scores on a non-attachment scale are negatively associated with insecure types of attachment (anxious and avoidant) (Sahdra, Shaver, & Brown, 2010).

5.5 Geographical Scale

The functions of place attachment varied with the geographical scale of a place; smaller scales generally afforded more solitary activities, freedom, and privacy (i.e., in Study 1), but larger scales seemed to allow for social (i.e., in Study 3) or physical (in Study 1) benefits. Thus, the benefits seem to depend on the particular features of a place. This idea relates to Stedman's (2003) meaning-mediated model of place attachment, in which individuals become attached to place meanings that are constrained by physical attributes of the environment. Although he focused on particular physical attributes rather than scale, the two are interrelated when scale dictates the types of physical attributes present in a particular place.

5.6 Limitations

Across the three studies, limitations relate to the operationalization of some constructs, and issues of direction of cause and effect. Although the multi-method approach ultimately improved the operationalization of place attachment processes beyond that which has been achieved in previous research, place attachment style and scale may require alternate operationalizations. As mentioned, the place attachment style scale was partly inconsistent in its poor-performing items (i.e., determined by inter-item correlations), and its contributions to the models were limited. The one other researcher who has attempted to operationalize place attachment style (McBain, 2010) also had difficulty in translating the concept into measurable terms with good face validity. Therefore, the conceptualization of individual differences in place attachment style through new questionnaire items, or through qualitative exploration of individual difference themes is still needed.

Measurement was also problematic for the geographical scale construct. Freundschuh and Egenhofer's (1997) classification system postulates six common scales of space, but the range of scales represented in my participants' responses was restricted; in Study 1, three, and in Study 2, four of the types of space were so infrequent that they were not included in analyses. This problem relates to debates about the structure of scale, and the utility of it as an analytical category (e.g., Herod, 2010). Or, it may simply indicate that place attachment mainly exists at certain scales and not others, or that a different coding system may have been more appropriate for these data.

A few of the functions were not consistent across studies. For example, positive emotions emerged as a commonly reported benefit of place attachment in Study 1, but it was not enhanced by the place attachment visualization in Study 3. One explanation may be that these are antecedents or aspects of person-place bonds rather than outcomes. Therefore, an understanding of the causal position of each benefit still needs to be revealed. The nine benefits not investigated in Studies 2 or 3 will need further validation to determine whether they are antecedents, outcomes, or simply aspects of the bond itself (as may be the case with positive emotions). Study 3 illuminates several benefits that occur following place attachment proximity-seeking, but whether these benefits also contribute to place attachment remains to be investigated. Therefore, additional experiments are needed to refine the dynamics of the framework.

Finally, one may question the comprehensiveness of the benefits that I have proposed. Although the methods aimed to produce a comprehensive list of benefits, the possibility that some are yet to be uncovered remains. Further research and refinement is therefore needed.

5.7 Application and Future Research

Despite its relatively slow theoretical and methodological development, place attachment research has excelled in the area of application, informing topics such as displacement, immigration, pro-environmental behaviour, reactions to climate change, social housing, and community design (e.g., Manzo & Devine-Wright, 2014). Findings from this dissertation could enrich and extend the application of place attachment.

One application would be to use the framework to assess and describe the psychological benefits experienced in particular places, thus contributing a psychological component to landscape or building assessment. For example, the environmental assessment required for the Site C hydroelectric dam project in the Peace River area of British Columbia (i.e., see BC Hydro, 2013) involved evaluation of how the project might impact “valued ecosystem components,” including physical environment (e.g., geology and hydrology), economic (e.g., local government revenue), social (e.g., community infrastructure and services), heritage (e.g., archaeological sites; Aboriginal cultural activities), and health factors (e.g., changes to air and water quality). Because the value of a place can also be considered at a psychological level of analysis, I propose that the psychological benefits of the place should also be assessed, using the framework of place attachment benefits. Similarly, assessment of sustainable buildings goes beyond typical indicators of water supply, energy use, and waste treatment, but should include social and psychological benefits, which could partly be explored using the framework.

Other applications could be investigated through future research. To inform the design of particular environments such as residences or neighbourhoods, physical variables most predictive of place attachment should be identified. Although some such features have been

named (e.g., see Gifford, 2007), this research is still relatively sparse but would be interesting, especially if physical predictors of each benefit could be identified. This could be done by examining associations between place attachment benefits experienced in a given place and measurements of various physical environment features (e.g., lighting, air quality, acoustics, etc.). In a follow-up quasi experiment, actual changes could be made to an existing place, and resulting increments or decrements to place attachment could be evaluated.

Although I have assumed that a lack of place attachment does not necessarily preclude the experience of these psychological benefits, whether an absent place attachment is substituted for by another source of support is unclear. This raises questions about the effects of displacement, environmental change, or having no place attachment. A future study could investigate which benefits of place attachment are diminished (and which are not) when a place of attachment is lost. This would offer further detail about the impact of displacement, and it would also show which benefits are contingent on continued contact with a place, and which can remain even after the place is no longer part of one's immediate experience. Similarly, environmental changes, such as a new development, or impacts related to climate change might also interact with the benefits afforded by place attachment. As Devine-Wright (2014) argued, such work is crucial to understanding the dynamics of place attachment, which co-evolves with changes to place and changes to people.

5.8 Conclusion

Most people can think of one or more places to which they feel emotionally attached, and this phenomenon – whether or not an individual is conscious of it – is a common theme in daily conversation, self-narratives, and major life events. Although person-place bonds are not

unequivocally beneficial (e.g., Manzo, 2014), they are often associated with positive health outcomes and well-being (e.g., Hornsey & Gallois, 1998). This dissertation shows that part of the reason for place attachments is that they serve us psychologically, offering a variety of psychological benefits. One implication is that aspects of place valuation such as valued ecosystem components and ecosystem services (e.g., de Groot, Wilson, & Boumans, 2002) should expand to include psychological benefits, of which there are many.

The present studies have moved beyond research traditions in the place attachment literature, incorporating experiments which can reveal more about processes and interrelationships pertinent to place attachment. Further, they show that place attachment can be operationalized at different scales and through different tasks and measures that do not depend on self-reported attachment.

Following comparison with the other major theory of bonding, interpersonal attachment theory, it became clear that the benefits of place attachment had not been fully identified. Further, the overlap between the benefits experienced by both types of bonds suggests that attachment either has general psychological outcomes, or the benefits of person attachment are embedded in place. Benefits that do not appear to overlap add to the understanding of place attachment as a unique phenomenon, with outcomes independent from interpersonal attachment relationships. This reinforces the importance of place attachment in our lives, and as a worthy topic of study.

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THE PSYCHOLOGY OF IMPORTANT PLACES

You are being invited to participate in a research study conducted by Leila Scannell, a graduate student in psychology at the University of Victoria. You may contact Leila (scannell@uvic.ca, 250-475-4876), or her supervisor, (rgifford@uvic.ca, 250-721-7532), if you have further questions or concerns. In addition, you may verify the ethical approval of this study by contacting the Human Research Ethics office (ethics@uvic.ca, 250-472-4545).

The **purpose** of this project is to investigate what types of places are important to people, and why people feel connected to these places. Furthermore, we ask about your relationship style, to assess how personality interacts with place.

Participation: You were selected for participation in this study because you are a resident over the age of 18. We are interested in your experiences and opinions, whatever they may be. If you choose to participate, we will ask you to write about places that are important to you, as well as complete two questionnaires that assess various aspects of your personality, relationship style, and basic demographics. The time involved in participation is approximately 30 minutes.

If you are interested in participating, you may do so through **mail, email, or over the telephone**. By **mail**, please complete the questionnaires, and return these things to us using the self-addressed stamped envelope that we have provided. If you prefer to complete the questionnaire via **email**, please email us at scannell@uvic.ca, and we will send you the electronic file. If you prefer to complete the questionnaire over the **phone**, please call us at 250-475-4876.

Confidentiality: Your responses will not be linked to your name, address, or any other identifying information. Emailed data will be printed and the email with your name will be deleted immediately. If you participate over the phone, we will delete your phone number from our call display after the interview is complete. All data will be identified numerically. Your confidentiality and the confidentiality of your data will be protected. Raw data will be stored in a locked filing cabinet and electronic data will be stored on our computers.

Potential Risks and Benefits: Completing the 30-minute questionnaire may inconvenience you, or may raise emotional discomfort (i.e., the questionnaire on relationships); however, it is unlikely that you will experience any other risks, as a result of participation. Nevertheless, if you happen to be having serious relationship problems at the moment, feel free to not read or complete the questionnaire about relationships. Also, feel free to skip questions you feel uncomfortable answering, take a break while participating, or terminate your participation at any point. You are encouraged to participate at a time that is most convenient for you. If you would like more information about relationship styles or place experiences, please feel free to email the researcher, and we will direct you to some informative websites.

Participation in this research also holds potential benefits. This exercise may improve your mood, and will provide some experience with current psychological research. It may also offer

potential benefits to society, by informing therapists, planners, and others about how individuals benefit from interacting with a meaningful place.

Compensation: As compensation for your participation, you may enter a draw to win a prize of \$100. The draw will take place once data from all participants has been collected. The contact information that you provide for the draw will not be linked to your responses, but will be separated immediately upon receiving your mail. You can even mail the lottery form and survey separately if you prefer. This form of compensation must not be coercive as it is unethical to provide undue compensation or inducements to research participants. If you would not participate if the compensation were not offered, then you should decline. You may mail your lottery form along with the questionnaire, or if you prefer, separately.

Your participation in this research must be completely voluntary. If you decide to participate, you may withdraw at any time without consequences or explanation. To withdraw, simply do not return your questionnaire to the researcher. Once you have submitted your questionnaire, however, we cannot remove the data, because it will have been anonymously submitted. You may still enter the lottery draw even if you withdraw from the study. We will assume that the submission of your data indicates your consent, unless you decide to withdraw from the study. Leila Scannell or other researchers may use submitted data for analyses in future studies of a similar nature. Results of this study will be shared in published articles, and presented at scholarly meetings.

By completing and submitting the following questionnaires by mail, your consent in this study is implied, and indicates that you understand the above conditions and have taken any necessary actions to contact us with questions pertaining to the study.

Thank you for your interest in this study!

PART 1: Place Attachment

- ❖ Broadly speaking, **place attachment** is feeling especially connected to a place that is meaningful to you. People become attached to all sorts of places, for different reasons.

Now, take a few minutes to think of a place to which you are especially attached. This could be any place from any time. People are often attached to many places, but for the purposes of this section, please pick just one.

If you do not have a place to which you feel attached, please mention that, and explain why in the spaces below.

- Which place are you thinking about?

(1) Describe this place in detail (i.e., Where is it? What is it like?)

(2) Why do you feel attached to this place? Please provide one or two reasons.

(3) When you are not at this place, what makes you want to go there? Please provide one or two reasons. If you don't want to go there, please explain why.

(4) What psychological and other **benefits** do you experience from being connected to this place? Please provide two or three benefits.

(5) How attached do you feel to the physical features of this place?	<table border="0" style="width: 100%; text-align: center;"> <tr> <td>Not at all</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Very much so</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td></td> </tr> </table>	Not at all							Very much so	1	2	3	4	5	6	7	
Not at all							Very much so										
1	2	3	4	5	6	7											
(6) Are there other people in this place with whom you frequently interact?	<table border="0" style="width: 100%; text-align: center;"> <tr> <td>Yes</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>No</td> </tr> </table>	Yes						No									
Yes						No											
(7) If yes, how attached do you feel to these other people?	<table border="0" style="width: 100%; text-align: center;"> <tr> <td>Not at all</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Very much so</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td></td> </tr> </table>	Not at all							Very much so	1	2	3	4	5	6	7	
Not at all							Very much so										
1	2	3	4	5	6	7											

PART 2: Relationships with Places

The statements below concern how you feel about places that are important to you. By “place” we mean any location that is especially important to you; this could be a certain room, apartment, office, house, coffee shop, neighbourhood, town, city, park, wilderness, region, country, or any other type of place. Please think of one such place (you can think about the same place you picked for Part 1), and answer questions that refer to “my place” with that special place in mind. Other questions ask about places in general. Answer those questions while thinking about your general tendencies toward places. Please respond to each statement by circling the appropriate number to indicate how much you agree or disagree with the statement.

		Strongly disagree			Neutral		Strongly agree	
1.	I feel restored when I am in my favourite place.	1	2	3	4	5	6	7
2.	I often worry that I will lose my place.	1	2	3	4	5	6	7
3.	I get upset when I hear people criticizing my place.	1	2	3	4	5	6	7
4.	I find it difficult to allow myself to depend on my favourite place.	1	2	3	4	5	6	7
5.	I worry that places won't support me as much as I need them to.	1	2	3	4	5	6	7
6.	When I'm away from my place, I worry that someone else might take it over.	1	2	3	4	5	6	7
7.	It helps me to seek out my place in times of need.	1	2	3	4	5	6	7
8.	Sometimes I cut my ties with my favourite places for reasons that I don't understand.	1	2	3	4	5	6	7
9.	My place makes me doubt myself.	1	2	3	4	5	6	7
10.	I don't get the support I need from my place.	1	2	3	4	5	6	7
11.	I get uncomfortable when I start to get too emotionally close to a place.	1	2	3	4	5	6	7
12.	I find it easy to depend on places.	1	2	3	4	5	6	7
13.	I often wish that I could be closer to my place than I am.	1	2	3	4	5	6	7
14.	It's not difficult for me to get close to my place.	1	2	3	4	5	6	7

		Strongly disagree			Neutral		Strongly agree	
15.	I worry that my place won't measure up to those of other people.	1	2	3	4	5	6	7
16.	My place seems to meet my needs only when I force it to.	1	2	3	4	5	6	7
17.	I am very comfortable being close to my place.	1	2	3	4	5	6	7
18.	I rarely worry that my place will disappear.	1	2	3	4	5	6	7
19.	I get anxious when I can't be close to this place.	1	2	3	4	5	6	7
20.	I prefer not to show how attached I am to places.	1	2	3	4	5	6	7
21.	I find that I have a strong need to be close to this place.	1	2	3	4	5	6	7
22.	I worry a lot about my place.	1	2	3	4	5	6	7
23.	I trust my place to support me when I need help.	1	2	3	4	5	6	7
24.	I do not often worry about losing my place.	1	2	3	4	5	6	7
25.	I prefer not to get too emotionally close to places.	1	2	3	4	5	6	7
26.	My desire to be very close to places sometimes causes me problems.	1	2	3	4	5	6	7
27.	I often worry that I don't fit in well in places.	1	2	3	4	5	6	7
28.	I feel comfortable depending on places.	1	2	3	4	5	6	7
29.	I usually go to this place when I want to problem-solve.	1	2	3	4	5	6	7
30.	I'm afraid that once I really get settled into a place, something about it won't support my needs.	1	2	3	4	5	6	7
31.	I find it relatively easy to get close to my place.	1	2	3	4	5	6	7
32.	I can figure things out best when I'm in this place.	1	2	3	4	5	6	7

		Strongly disagree			Neutral		Strongly agree	
33.	I am nervous when I start to get too close to a place.	1	2	3	4	5	6	7
34.	I'm afraid that I will lose the place I love.	1	2	3	4	5	6	7
35.	I don't feel comfortable relying on my place to meet my needs.	1	2	3	4	5	6	7
36.	It's easy for me to appreciate my place.	1	2	3	4	5	6	7
37.	My place really supports me and my needs.	1	2	3	4	5	6	7

PART 3: Relationships with People

The statements below concern how you usually feel in emotionally intimate relationships. We are interested in how you generally experience romantic relationships, not just in what is happening in a current relationship. Please note that people vary in how they experience relationships, and we are interested in your experiences, whatever they may be. Respond to each statement by clicking the appropriate number to indicate how much you agree or disagree. You may also skip questions that you prefer not to answer. If you are single, you may think about partners you have had in the past. If you prefer, you may think about close relationships with others (e.g., parents or best friends), rather than romantic partners.

		Strongly disagree			Neutral		Strongly agree	
1.	I usually discuss problems and concerns with my partner.	1	2	3	4	5	6	7
2.	I find it easy to depend on romantic partners.	1	2	3	4	5	6	7
3.	I'm afraid that I will lose my partner's love.	1	2	3	4	5	6	7
4.	I prefer not to show a partner how I feel deep down.	1	2	3	4	5	6	7
5.	I often wish that my partner's feelings for me were as strong as my feelings for him or her.	1	2	3	4	5	6	7
6.	I prefer not to be too close to romantic partners.	1	2	3	4	5	6	7
7.	I worry a lot about my relationships.	1	2	3	4	5	6	7
8.	I am very comfortable being close to romantic partners.	1	2	3	4	5	6	7
9.	When my partner is out of sight, I worry that he or she will become interested in someone else.	1	2	3	4	5	6	7
10.	My partner really understands me and my needs.	1	2	3	4	5	6	7
11.	When I show my feelings for romantic partners, I'm afraid they will not feel the same about me.	1	2	3	4	5	6	7
12.	I rarely worry about my partner leaving me.	1	2	3	4	5	6	7
13.	My romantic partner makes me doubt myself.	1	2	3	4	5	6	7
14.	I feel comfortable sharing my private thoughts and feelings with my partner.	1	2	3	4	5	6	7
15.	I do not often worry about being abandoned.	1	2	3	4	5	6	7
16.	I find that my partner(s) don't want to get as close as I would like.	1	2	3	4	5	6	7
17.	I find it difficult to allow myself to depend on romantic partners.	1	2	3	4	5	6	7

		Strongly disagree			Neutral		Strongly agree	
18.	Sometimes romantic partners change their feelings about me for no apparent reason.	1	2	3	4	5	6	7
19.	My desire to be very close sometimes scares people away.	1	2	3	4	5	6	7
20.	I often worry that my partner doesn't really love me.	1	2	3	4	5	6	7
21.	I am nervous when partners get too close to me.	1	2	3	4	5	6	7
22.	I'm afraid that once a romantic partner gets to know me, he or she won't like who I really am.	1	2	3	4	5	6	7
23.	I talk things over with my partner.	1	2	3	4	5	6	7
24.	It makes me mad that I don't get the affection and support I need from my partner.	1	2	3	4	5	6	7
25.	I find it relatively easy to get close to my partner.	1	2	3	4	5	6	7
26.	I worry that I won't measure up to other people.	1	2	3	4	5	6	7
27.	It's not difficult for me to get close to my partner.	1	2	3	4	5	6	7
28.	I tell my partner just about everything.	1	2	3	4	5	6	7
29.	My partner only seems to notice me when I'm angry.	1	2	3	4	5	6	7
30.	I worry that romantic partners won't care about me as much as I care about them.	1	2	3	4	5	6	7
31.	I often worry that my partner will not want to stay with me.	1	2	3	4	5	6	7
32.	I don't feel comfortable opening up to romantic partners.	1	2	3	4	5	6	7
33.	It's easy for me to be affectionate with my partner.	1	2	3	4	5	6	7
34.	I get uncomfortable when a romantic partner wants to be very close.	1	2	3	4	5	6	7
35.	It helps to turn to my romantic partner in times of need.	1	2	3	4	5	6	7
36.	I feel comfortable depending on romantic partners.	1	2	3	4	5	6	7

PART 4: About You

Please tell us a little bit more about yourself. We ask so we can understand the views of different people. Remember that all responses are anonymous and confidential.

1. Year of Birth: _____
2. Gender: _____
3. What is your current city (or region) of residence? _____
4. For how many months or years have you lived in your current area? (50 km radius) _____
5. Do you own or rent your residence? or other (explain if you wish) _____
6. How many people other than yourself currently live with you in your residence? (in your unit, not the whole building if multiple units) _____
7. What is your ethnicity (or ethnicities)? _____
8. Are you currently in a romantic relationship? Yes No Other (explain if you wish) _____
9. If you are currently in a romantic relationship, do you live in the same residence as your partner?
 N/A Yes No Other (explain if you wish): _____
10. Occupation: _____
11. Highest level of education completed: _____

12. Attention Question (Included to screen for quality of responses; Goodman et al., in press):

Research in decision making shows that people, when making decisions and answering questions, prefer not to pay attention and minimize their effort as much as possible. Some studies show that over 50% of people don't carefully read questions. If you are reading this question and have read all the other questions, please select the box marked 'other' and type 'Decision Making' in the box below. Do not select "predictions of your own behaviour." Thank you for participating and taking the time to read through the questions carefully! What was this study about?

Choose one of the following answers:

- Predictions of your own behaviour
- Predictions of your friends' behaviour
- Political preferences
- Other
- No answer

[Participant is supposed to select "Other" and type "Decision Making" in a comment box]

THANK YOU FOR PARTICIPATING IN OUR STUDY!!

Coding Manual # 1

1. What is the goal of this coding?

Identify the psychological "functions" or benefits of place attachment that are evident in participants' written responses. You will be asked to create several categories of benefits, and code different aspects of participants' responses into those categories.

2. What do I need to know in order to do the coding?

You are expected to have a basic knowledge of general concepts in psychology. You will be asked to consider whether the participants' description of their important place is benefitting them in some way. It is also important that you do not know too much about attachment theory or place attachment theory, because we want you to be able to code the responses based on the data itself, rather than being influenced by pre-existing expectations from theory. All of the coding will be done on NVivo. I will ask you to do the webinar as well as the tutorials.

The time involved for the training is approximately 3 hours (1 hour to read through this manual, 1(or more) hours for the NVivo tutorial, and 1 hour for the meeting to discuss the practice coding). The time involved for the actual coding is expected to be approximately 10 hours (approximately 5 minutes per participant). The coding needs to be done before October 25th, because that is close to the time when the NVivo license expires (and save some time for the RAs to Round # 2 coding). Please keep track of your hours!

3. What is a psychological function?

The psychological functions of attachment are defined as the psychological benefits afforded by the attachment bond. Attachment is functional when it provides a positive outcome for the individual, for example, by helping individuals satisfy certain psychological needs. These benefits could be emotional, cognitive, goal-related, identity related, and so on.

4. Should it only be psychological benefits, or can I code for other benefits too?

Although the study focuses on psychological benefits, please code for any benefits that are mentioned (e.g., monetary, benefits to health, benefits to the environment, etc).

5. How do I do the coding?

All coding will be done using the NVivo program. You will be asked to carefully read the responses of each participant. For each segment of text, you will want to consider what type of benefit (if any) the participant is talking about. Then, you will want to assign this benefit to a particular category of benefits. Try not to speculate too far beyond what the participant wrote, so that the categories you create are close to the data. For example, if one sentence is "This place allows me to get away from my everyday routine," it sounds like that person is getting a benefit of "getting away from everyday." You could then create a category called "getting away from everyday," and assign that sentence to that category. Any similar responses of that participant or other participants can be put in the "getting away from everyday" category. If you have several categories that are similar, you may wish to merge them into one larger category. For example, "getting away from everyday," and "seeing new places" could be merged into the category "novelty." Thus, you will be creating your own categories, and categorizing responses into them as you go through the data. This will allow us to determine the main categories of benefits that exist in the data.

Start by creating a new category for each new theme that you come across. Eventually, your list of categories will be fairly comprehensive, so as you go through the data, you will be doing more sorting and less category-creation.

Responses may be coded into more than one category if you view it as fulfilling more than one function. For example, a response such as “this place evokes memories of time spent with my family” could be coded into the categories of “place memories” and “family ties.”

6. Coding practice

Below is a sample coding that was done on just three questionnaires. First, read through the questionnaires. Think about which types of benefits participants are gaining from being attached to their place. Then, you can see what types of categories I created. Note that you might have thought of different categories. There is no "right" answer, but we do want to try and be somewhat consistent. So for the first few practices, we will discuss our differences in coding and try to align ourselves.

Steps involved:

1. Read though the participants' response carefully. Each time you notice that the person is expressing some benefit of their connection to the place, code it into a new category.
2. If you already have a category that describes this benefit, you can code that response into an existing category.

[Note: with NVivo, you will actually highlight the text and drag it into the categories that you have created. For now, we will just create categories without assigning text to all possible categories.]

3. Reduce the categories you have into main categories. You can make subcategories too.

7. A Few Details

1. NVivo can help calculate a measure of interrater reliability. Thus, it is important that we highlight the text in exactly the same way. Spaces and periods count towards this measure of interrater reliability. Thus, highlight the sentence beginning with the first letter, and stop after the

period. It would be as such: **My place is a large park in Southern France.** If there is no period, stop after the last letter: **My place is a large park in Southern France**

Coding Practice # 1

Participant ID: # 5

Creston, Female, 1957

Which place are you thinking about?

A home on the seaside in Eastern Canada/US [note: Imaginary place]

1. Describe this place in detail (i.e., Where is it? What is it like?)

It has a veranda; it is close to a town, but yet remote enough to be quiet and isolated. It is breezy. It is not too large a place, but it is in good shape and low maintenance. I would love to live in a place like this.

2. Why do you feel attached to this place? Please provide one or two reasons.

I have never been to this place. I have been to Eastern Canada and Eastern US, but this is an imaginary place where I would like to live. It speaks to me of a place where I could be innovative; I could create; I could make music as loud as I want.

3. When you are not at this place, what makes you want to go there? Please provide one or two reasons. If you don't want to go there, please explain why?

When I have time to actually think about this place, which is not often, I go there because I feel I could look at physical geographical beauty and I could create. It would be a small enough place and low maintenance that it would make efficient use of my time.

4. What psychological and other benefits do you experience from being connected to this place? Please provide two or three benefits.

- peace
- creativity – art, writing, music
- as long as this place had great access to high-speed internet, it would be a good place to do research

Leila's Coding of Benefits:

- Balance of privacy and proximity to town
- Comfortable physical environment
- Manageable maintenance
- Creativity
- Freedom
- Being in a beautiful place
- Peacefulness
- Supports work

Participant ID: # 6

North Vancouver, 1967, Male

Which place are you thinking about?

Barcelona, Spain

1. Describe this place in detail (i.e., Where is it? What is it like?)

The city of Barcelona, Spain

- One of the old Mediterranean cities
- Destination for tourists and different nationalities

- Very vibrant [sp], colourful and historically artistic
- Sunny and warm climate, a big city meets the beach

2. Why do you feel attached to this place? Please provide one or two reasons.

Although I have been there once and a very brief stay, I had almost an instantaneous connection to the city

- I grew up partly in Mexico as a child and felt home being in a Spanish speaking city
- I love and enjoy dry, sunny and warm climate very much particularly by the water
- Most people were very free, laid back and friendly
- I was surrounded by a lot of artistic things especially the architecture

3. When you are not at this place, what makes you want to go there? Please provide one or two reasons. If you don't want to go there, please explain why?

- Living in Vancouver during the gloomy rainy season
- When I find that Vancouver doesn't provide enough stimulation with limited resources of activities that I enjoy (weather factors, events, art, architecture, etc..)

4. What psychological and other benefits do you experience from being connected to this place? Please provide two or three benefits.

I feel very excited and fulfilled with my interests. I didn't stay long enough so not sure exactly, but I felt very positive, motivated, and excited.

Leila's Coding of Benefits:

- matches my identity
- enjoys climate
- Being in a beautiful place
- being away
- stimulation
- offers activities I enjoy
- emotional: fulfillment; excitement; motivated; enjoyment; positive

Participant ID: # 8

Okanagan, Female, 1937

Which place are you thinking about?

Our motor home

1. Describe this place in detail (i.e., Where is it? What is it like?)

Our motor home is 30 feet long with all the conveniences one would want. It has lots of windows for light and [is] comfortable.

2. Why do you feel attached to this place? Please provide one or two reasons.

When we live in the motor home, there is such a feeling of freedom – go where you want, do what you want in comfort. We have a furnace if its cold, air-conditioning if it is hot. We like to be in the country away from noise and pollution.

3. When you are not at this place, what makes you want to go there? Please provide one or two reasons. If you don't want to go there, please explain why?

I feel no stress and thoroughly enjoy the outdoors. It is peaceful.

4. What psychological and other benefits do you experience from being connected to this place? Please provide two or three benefits.

[No response]

Leila's Coding of Benefits:

- comfort
- freedom

- being away
- access to outdoors

- **Now, I'm going to try to merge these into the main categories of benefits**

- freedom
- being away
- supports creativity
- supports work
- enjoy physical aesthetics and/or climate
- stimulation and activities
- supports identity
- emotional benefits: fulfillment; excitement; motivated; enjoyment; positive
- comfort
- stress reducing
- peacefulness
- Balance of privacy and close to town
- Manageable maintenance

-This list has come up with 13 categories that are assumed to represent all of the benefits in my small data set of three responses.

Coding Practice # 2

- Let's try another practice, but this time, forget about the coding that we've already done. Let's start from scratch. Below you will see three new responses. Please try and identify the benefits that participants are expressing about their places of attachment.

Participant ID: # 9

Okanagan, Female, 1979

Which place are you thinking about?

Mom and Dad's Farm

1. Describe this place in detail (i.e., Where is it? What is it like?)

It's in a rural farming area, outside a small town. It's fast, relatively flat, dry but there are 3 ponds. Treed around the whole perimeter, old dilapidated sheds, cows horses, dogs and cats.

2. Why do you feel attached to this place? Please provide one or two reasons.

It's home. It's where mom and dad are.

3. When you are not at this place, what makes you want to go there? Please provide one or two reasons.

If you don't want to go there, please explain why?

It's quiet and beautiful. There's always food on the table.

4. What psychological and other benefits do you experience from being connected to this place? Please provide two or three benefits.

I feel like I am taken care of when there; I feel rested and sleepy all at the same time.

Fresh air and exercise as I walk around the farm to visit the animals and see the ponds.

Friendly conversations with mom and dad and any siblings (or other relatives) who may be visiting.

Participant ID: # 10

Gibsons and Vancouver, Female, 1964

Which place are you thinking about?

Gibsons, BC

1. Describe this place in detail (i.e., Where is it? What is it like?)

Lower Gibsons, BC is on the Sunshine Coast. It is on the water. A steep slope falls down to the ocean and original roads run parallel to the shoreline with arteries running up and down the slopes bordering the shore. It is a small town that is famous because of a show filmed there for 20 years. It is beautiful and the view is amazing. People are friendly and accepting. It is relaxing and friendly.

2. Why do you feel attached to this place? Please provide one or two reasons.

I visited Gibsons from 6 weeks old until about age 11 years because my grandparents spent 10 months of each year living in their small cottage 10 feet from the ocean. I was alone most of those visits (that is, I was the only child in the home and often the only visitor). I did not know anyone else in the area. I have fond memories of doing many things – swimming, games, puzzles, arts and crafts, reading, watching my grandfather catch crabs and spending time with him splitting wood, walking on the beach, looking for bark, building things and my grandmother in the kitchen. I loved those times.

3. When you are not at this place, what makes you want to go there? Please provide one or two reasons. If you don't want to go there, please explain why?

I didn't want to go there for many years (over 20), but when my husband was looking for a job, I saw a suitable position on the Sunshine Coast at the high school in Gibsons. I was so happy when he got it and have lived in Gibsons since then (but working in Vancouver).

4. What psychological and other benefits do you experience from being connected to this place? Please provide two or three benefits.

I feel safe and relaxed when in Gibsons. I feel more grounded; more at ease. I like living in a place where strangers talk to one another and laugh. People are considerate of others, generally. I like living in a place so removed from Vancouver's pace but so close geographically. I like Vancouver as well and being able to spend time in both is good for me.

Participant ID: # 11

North Vancouver, Female, 1933

Which place are you thinking about?

Walking in the forest, also the seashore

1. Describe this place in detail (i.e., Where is it? What is it like?)

I like to walk amongst tall trees, around Leapelaie (sp??) Rd in and around that area. I also like to walk near the sea, the seawalk in West Vancouver.

2. Why do you feel attached to this place? Please provide one or two reasons.

It reminds me of my youth. I lived in a very tall forest and had many happy times there in my childhood. I love to hear the sound of the sea, although I was not close to the sea in childhood.

(I had to give up my house and garden which I designed myself and had trees planted and 1 big one already there, gave up due to surgery).

(Where I am now living, I have 4 huge trees outside of my window!).

3. When you are not at this place, what makes you want to go there? Please provide one or two reasons. If you don't want to go there, please explain why?

I go to these places when the weather permits, mostly spring, summer.

4. What psychological and other benefits do you experience from being connected to this place? Please provide two or three benefits.

I feel very calm.

Enjoy listening to the birds singing.

I can clear my mind and enjoy the positive thoughts.

Coding Practice # 3

Just for good measure, here is more practice coding. Again, here are three new responses. Try to identify new categories from scratch. We will discuss the categories you came up with when we next meet.

Participant ID: # 12

Peace River, Female, 1951

Which place are you thinking about?

Quesnel Lake, Caribou area of British Columbia

1. Describe this place in detail (i.e., Where is it? What is it like?)

50 years ago I worked at a hunting and fishing lodge near the junction of the 3 arms of the lake. It was lots of wilderness with bears and other wildlife seen up close, daily. A moose came to the corral to eat with the horses and rubbed his nose up and down my jacket. Wolves roamed the area, and one winter I befriended a lone wolf, and sat on the ice surrounded by 5 wolves none of who where more than 4 feet away. It was heaven on earth.

2. Why do you feel attached to this place? Please provide one or two reasons.

I loved the ability to be so close to wildlife in their natural habitat, and be able to communicate and relate with wolves, moose, bears, ground squirrels, snakes, etc., in a way I never was able to again.

When I'm stressed or angry I can call on my memories and return to the peace of the lake and calm down and relax. Its been 30 years since I've been there in reality, but in my mind, it never changes.

3. When you are not at this place, what makes you want to go there? Please provide one or two reasons. If you don't want to go there, please explain why?

To me, to be able to relate to wild animals especially is nearly as close to being with God as I can imagine. No one can ever take away or change my memories – they are mine alone and returning to that place in my mind is my personal hidey-hole I can enjoy any time I want to or need to.

4. What psychological and other benefits do you experience from being connected to this place? Please provide two or three benefits.

I find the experiences I had there at the lake very calming and enjoyable. My experiences with the animals was beyond I would ever dream of having and as a result were spiritual in a sense "like sitting in God's lap." As a lot of time was spent working alone, I found i had to learn to do things and call on my own strengths in ways I never would of had to in more urban areas, and as a result became stronger physically, emotionally, and mentally.

Participant ID: # 1

Surrey; 1943; female

1. Describe this place in detail (i.e., Where is it? What is it like?)

Waikiki beach in Honolulu, Hawaii, on the island of Oahu. To me it is the most beautiful place, the weather is hot, but always a breeze is blowing. The beach is very busy during the day, but by eleven at night, all is quiet and shut down. You see everything from limos to homeless people. Very interesting.

2. Why do you feel attached to this place? Please provide one or two reasons.

The reason I feel attached to Hawaii, Waikiki in particular is I have been there many times, and go there for relaxation, not all the tourist things (maybe just the first couple of times)!! But to get into the island pace. Slow, relaxed and enjoy the ocean, sailboats, flowers, sitting on lanai watching glorious sunsets.

3. When you are not at this place, what makes you want to go there? Please provide one or two reasons. If you don't want to go there, please explain why?

I love going there as it makes me feel good. I love the slower pace, the people there are friendly. I stay at hotel with 90% ocean front view, and love to just watch the turquoise ocean and surfers and sunsets.

4. What psychological and other benefits do you experience from being connected to this place? Please provide two or three benefits.

1. I feel calmer and more relaxed.
2. I enjoy all the excitement and nightlife.
3. The food and entertainment is great, my attitude there is much better. It makes me happy.

Participant ID: # 2

Gibsons, Male, 1957

Which place are you thinking about?

Home

1. Describe this place in detail (i.e., Where is it? What is it like?)

1200 sq ft Rancher in Gibsons, BC on the sunshine coast

2. Why do you feel attached to this place? Please provide one or two reasons.

This is where my family comes together.

3. When you are not at this place, what makes you want to go there? Please provide one or two reasons. If you don't want to go there, please explain why?

This is where I live

4. What psychological and other benefits do you experience from being connected to this place? Please provide two or three benefits.

- Sense of belonging
- Comfort

7. Coding the main data

- I will put all of the data into NVivo so it is ready for you to use.

Coding Manual # 2

1. What is the goal of this coding?

Identify the psychological "functions" or benefits of place attachment that are evident in participants' written responses.

2. What do I need to know in order to do the coding?

You are expected to have a basic knowledge of general concepts in psychology. You will be asked to consider whether the participants' description of their important place is benefitting them in some way. It is also important that you do not know too much about attachment theory or place attachment theory, because we want you to be able to code the responses based on the data itself, rather than being influenced by pre-existing expectations from theory. All of the coding will be done using Excel.

3. What is a psychological function?

The psychological functions of attachment are defined as the psychological benefits afforded by the attachment bond. Attachment is functional when it provides a positive outcome for the individual, for example, by helping individuals satisfy certain psychological needs. These benefits could be emotional, cognitive, goal-related, identity related, and so on. Two of my lab mates (Christine Kormos and Jessica Rourke) have prepared a coding scheme that we will use to determine which functions each participant is experiencing.

4. How do I do the coding?

First, familiarize yourself with the coding scheme. Then, carefully read the responses of each participant. Using the coding scheme, determine whether each category of benefits is present (code as "1") or absent (code as "0") in the person's response. Try not to speculate too far beyond what the participant wrote, so that the coding remains close to the data. For example, if one sentence is "This place allows me to get away from my everyday routine," it appears to fit within the category of "Freedom" (which includes "escape"); it may also fit within the category of "Relaxation," but we would not code it as part of relaxation, unless the participant specifically mentioned something to do with this. Ensure you have a specific part of the text that speaks to the category. Thus, you will determine whether each category is present or absent. This will allow us to report which of the benefits are most commonly mentioned.

Responses may be coded into more than one category if you view it as fulfilling more than one function. For example, a response such as "this place evokes memories of time spent with my family" would count as two categories: "memories" and "belonging" (given that belonging includes social benefits, such as family).

- If you are finding that some of the categories are very similar, let me know, and we might come up with a new category.
- Feel free to suggest new categories, or revise current categories if something else seems better than what we have
- Feel free to add examples and notes to the "description of categories" document to expand a little bit on our definitions of each category.

5. Coding practice

Below is a sample coding that was done for three participants. Note that you might have coded it slightly differently than I did. There is no "right" answer, but we do want to try and be

somewhat consistent. So for the first few practices, we will discuss our differences in coding and try to align ourselves. Remember to keep track of your hours.

Coding Practice # 1

Participant ID: # 5

Creston, Female, 1957

Which place are you thinking about?

A home on the seaside in Eastern Canada/US [note: Imaginary place]

1. Describe this place in detail (i.e., Where is it? What is it like?)

It has a veranda; it is close to a town, but yet remote enough to be quiet and isolated. It is breezy. It is not too large a place, but it is in good shape and low maintenance. I would love to live in a place like this.

2. Why do you feel attached to this place? Please provide one or two reasons.

I have never been to this place. I have been to Eastern Canada and Eastern US, but this is an imaginary place where I would like to live. It speaks to me of a place where I could be innovative; I could create; I could make music as loud as I want.

3. When you are not at this place, what makes you want to go there? Please provide one or two reasons. If you don't want to go there, please explain why?

When I have time to actually think about this place, which is not often, I go there because I feel I could look at physical geographical beauty and I could create. It would be a small enough place and low maintenance that it would make efficient use of my time.

4. What psychological and other benefits do you experience from being connected to this place? Please provide two or three benefits.

- peace
- creativity – art, writing, music
- as long as this place had great access to high-speed internet, it would be a good place to do research

Coding of Benefits:

Activities	Aesthetics	Belonging	Comfort	Physical comfort	Psych comfort	Connection to nature	Freedom	Intrigue	Memories
1	1	0	0	0	0	0	1	0	0

Positive emotions	Practical needs (amenities)	Privacy	Relaxation	Self-growth	Social	Stability	Value-expressive	Other: No Place Attachment	Other: Does not want to go there
0	1 (internet)	1	1	1 (self-expression)	0	0	0	0	0

Participant ID: # 6

North Vancouver, 1967, Male

Which place are you thinking about?

Barcelona, Spain

1. Describe this place in detail (i.e., Where is it? What is it like?)

The city of Barcelona, Spain

- One of the old Mediterranean cities
- Destination for tourists and different nationalities
- Very vibrant [sp], colourful and historically artistic

- Sunny and warm climate, a big city meets the beach

2. Why do you feel attached to this place? Please provide one or two reasons.

Although I have been there once and a very brief stay, I had almost an instantaneous connection to the city

- I grew up partly in Mexico as a child and felt home being in a Spanish speaking city

- I love and enjoy dry, sunny and warm climate very much particularly by the water

-Most people were very free, laid back and friendly

- I was surrounded by a lot of artistic things especially the architecture

3. When you are not at this place, what makes you want to go there? Please provide one or two reasons.

If you don't want to go there, please explain why?

-Living in Vancouver during the gloomy rainy season

-When I find that Vancouver doesn't provide enough stimulation with limited resources of activities that I enjoy (weather factors, events, art, architecture, etc..)

4. What psychological and other benefits do you experience from being connected to this place? Please provide two or three benefits.

I feel very excited and fulfilled with my interests. I didn't stay long enough so not sure exactly, but I felt very positive, motivated, and excited.

Coding of Benefits:

Activities	Aesthetics	Belonging	Comfort	Physical comfort	Psychological comfort	Connection to nature	Freedom	Intrigue	Memories

Positive emotions	Practical needs (amenities)	Privacy	Relaxation	Self-growth	Social	Stability	Value-expressive	Other: No Place Attachment	Other: Does not want to go there

Participant ID: # 8

Okanagan, Female, 1937

Which place are you thinking about?

Our motor home

1. Describe this place in detail (i.e., Where is it? What is it like?)

Our motor home is 30 feet long with all the conveniences one would want. It has lots of windows for light and [is] comfortable.

2. Why do you feel attached to this place? Please provide one or two reasons.

When we live in the motor home, there is such a feeling of freedom – go where you want, do what you want in comfort. We have a furnace if its cold, air-conditioning if it is hot. We like to be in the country away from noise and pollution.

3. When you are not at this place, what makes you want to go there? Please provide one or two reasons.

If you don't want to go there, please explain why?

I feel no stress and thoroughly enjoy the outdoors. It is peaceful.

4. What psychological and other benefits do you experience from being connected to this place? Please provide two or three benefits.

[No response]



PERSONALITY AND LIFE EXPERIENCES

You are invited to participate in a study on visualization, conducted by Leila Scannell, a graduate student in psychology. You may contact Leila (scannell@uvic.ca, 250-472-4876), if you have any questions or concerns. In addition, you may verify the ethical approval of this study by contacting the Associate Vice-President of Research at the University of Victoria (250-472-4545).

The **purpose** of this project is to investigate the links between personality traits and life experiences.

Participation: You were selected for participation in this study because you are a University of Victoria student with your own unique attributes and experiences.

Participation occurs in two parts, and involves the following tasks:

- *Part 1:* Complete three questionnaires about various aspects of your personality and past experiences (approx. 20 min). These questionnaires may be completed online. If you decide to participate, we will send you the link to the website; please complete the questionnaires within the next 24-hours, at a time that is most convenient for you. We will also assign you a participant number. You will need this number to complete the online questionnaires.
- *Part 2:* Visit our laboratory (Cornett B311) to participate in several activities, including a word decision making task on the computer, and three additional questionnaires (approx. 40 min.). **You will need to remember your participant number for this phase of the study.**

Following the experiment, you will be given a debriefing form, which provides more information about the study and our hypotheses.

Confidentiality: Your responses will be kept confidential. To ensure this confidentiality, we will assign you with a participant number, and data will be recorded according to this number. We will delete the separate file containing your name and your participation number on the next business day following your participation. Your information will not be given to anyone outside of our research team, and all reports will be based on averages across all participants. Raw data will be stored in a locked filing cabinet and electronic data will be stored on the researcher's password-protected computer.

It is possible that you will know the principal investigator as your teaching assistant for a previously taken course. If this is of concern for you, we recommend that you do not continue with your participation.

Potential Risks and Benefits: Completing some of the questionnaires or participating in the study activities may raise some emotional discomfort; however, it is unlikely that you will experience any other risks, as a result of participation. To minimize these potential risks, feel free to skip questions you feel uncomfortable answering, take a break while participating, or terminate your participation at any point. To improve participants' moods, we have included a mood-lifting activity at the end of the experiment.

Participation in this research also holds potential benefits. You will have the opportunity to learn more about the discipline of Psychology, and some of the research currently being carried-out at the University of Victoria. This research also offers potential benefits to society. Results may be used to

inform therapists, policy makers, planners, and architects. Finally, your data will contribute to the body of knowledge and development of theory related to this research area.

Compensation: As compensation for any inconvenience involved in participation, you will receive 2 bonus participation credits. This compensation will occur upon completion of the study. This form of compensation must not be coercive as it is unethical to provide undue compensation or inducements to research participants. If you would not participate if the compensation were not offered, then you should decline.

Withdrawal: Your participation in this research must be completely voluntary. If you decide to participate, you may withdraw at any time without any explanation, provided that is before all data are collected and analysed. You will need to remember your participant number so we know which data to remove. This is necessary given that we will not be able to link your data to your name. You can do this at any time, and we will remind you of this again in the debriefing form when the study is complete. You will receive partial compensation if you withdraw from the study before it is complete (1 participation credit).

Implied Consent: Any data you submit during the study period will be used unless you indicate that you wish to withdraw from the study. All data will be electronic and will be stored and archived on the password-protected personal computer of the principal investigator. Submitted data may be used for analyses in related studies. Therefore, by participating in this study, you acknowledge that your data may be used in future studies of a similar nature. Results of this study may be shared with others in published articles, a final dissertation presentation, on the internet, in the media, and at scholarly meetings.

Thank-you very much for your interest in our study!

Sincerely,

Leila Scannell, M.Sc.
University of Victoria

Part A) PA WHERE TO (adapted from Fraley & Davis, 1997)

People often have places that are extremely important to them. For each of the following questions, please list the place that is the most relevant. You may list a place more than once if you'd like, or you may provide different places for different questions. Please provide the specific place name (if possible, e.g., "Victoria," "Glendale gardens") as well as the type of place it is (e.g., city, park, office, etc.)

1. Where is the place you most like to spend time at?

_____ (place name) _____ (what kind of place is this?)

2. Where is the place you don't like to be away from?

_____ (place name) _____ (what kind of place is this?)

3. Where is the place you want to be when you are feeling upset or down?

_____ (place name) _____ (what kind of place is this?)

4. Where is the place you can always go when you feel threatened?

_____ (place name) _____ (what kind of place is this?)

5. Where is the place you would go if you achieved something good?

_____ (place name) _____ (what kind of place is this?)

6. Where is the place you can always count on?

_____ (place name) _____ (what kind of place is this?)

Part B) Familiar Places

Please type the names of six places with which you are familiar (e.g., a particular city, park, restaurant, etc.). Please do NOT type any place names that you mentioned on the previous page. These places should be places that you are familiar with, but don't have any specific emotional connection to.

**Please provide the specific place name (if possible, e.g., "Victoria," "Glendale gardens") as well as the type of place it is (e.g., city, park, office, etc.) There are no right or wrong answers!

1. _____ (place name) _____ (what kind of place is this?)

2. _____ (place name) _____ (what kind of place is this?)

3. _____ (place name) _____ (what kind of place is this?)

4. _____ (place name) _____ (what kind of place is this?)

5. _____ (place name) _____ (what kind of place is this?)

6. _____ (place name) _____ (what kind of place is this?)

Part C) Unfamiliar Places

Below is a list of place names. For each place, please indicate whether you have NEVER heard of it; OR, you have heard of it, but are unfamiliar with it; OR, you are familiar with it or have been there. Indicate this by typing an "X" underneath the box that best represents your experience.

- | | | | | | |
|----|-----------------------|----|-----------------|----|-----------------------|
| 1 | Guadalajara | 27 | Slocan | 51 | Harrods |
| 2 | Tallahassee | 28 | Rarotonga | 52 | Chatuchak Market |
| 3 | Rapa Nui | 29 | Kispiox | 53 | Bruges |
| 4 | Eritrea | 30 | Pucón | 54 | Lhasa |
| 5 | Fort Carleton | 31 | Mérida | 55 | Wood Buffalo Park |
| 6 | Marbleton | 32 | Dunhuang | 56 | Griffith Observatory |
| 7 | Donghai Bridge | 33 | Xingcheng | 57 | Zipi's Place |
| 8 | Yemen | 34 | New Caledonia | 58 | Turks and Caicos |
| 9 | Olympic National Park | 35 | Adelaide | 59 | Neuschwanstein Castle |
| 10 | San Luis Potosi | 36 | Cameroon | 60 | Pelagos |
| 11 | Nimpkish Lake | 37 | Maldives | | |
| 12 | Burj Khalifa | 38 | Lagos | | |
| 13 | Sierra Leone | 39 | Phillips Square | | |
| 14 | Callisburg | 40 | Madison Avenue | | |
| 15 | Tokelau | 41 | Groningen | | |
| 16 | Moldova | 42 | Dunbar Street | | |
| 17 | Cascade Mountain | 43 | Masset Inlet | | |
| 18 | St-Hubert | 44 | Valencia | | |
| 19 | Delancey Street | 45 | Foshay Tower | | |
| 20 | Svalbard | 46 | Be'er Sheva | | |
| 21 | Bulgàiria | 47 | Nisqually River | | |
| 22 | Owen Sound | 48 | Champs Elysées | | |
| 23 | Mpumalanga | 49 | Balestrino | | |
| 24 | Naden Harbour | 50 | Asgard | | |
| 25 | Legoland | | | | |
| 26 | Eypona | | | | |

Part D) Need For Cognition (Cacioppo, Petty, & Kao, 1984)

There are no right or wrong answers! Please indicate your level of agreement with each of the following statements by typing an "x" below the appropriate number. Scroll down to see all of the questions.

-
- 1 I would prefer complex to simple problems.
 - 2 I like to have the responsibility of handling a situation that requires a lot of thinking.
 - 3 Thinking is not my idea of fun.
 - 4 I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.
 - 5 I try to anticipate and avoid situations where there is likely a chance I will have to think in depth about something.
 - 6 I find satisfaction in deliberating hard and for long hours.
 - 7 I only think as hard as I have to.
 - 8 I prefer to think about small, daily projects to long-term ones.
 - 9 I like tasks that require little thought once I've learned them.
 - 10 The idea of relying on thought to make my way to the top appeals to me
 - 11 I really enjoy a task that involves coming up with new solutions to problems.
 - 12 Learning new ways to think doesn't excite me very much.
 - 13 I prefer my life to be filled with puzzles that I must solve.
 - 14 The notion of thinking abstractly is appealing to me.
 - 15 I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.
 - 16 I feel relief rather than satisfaction after completing a task that required a lot of mental effort.
 - 17 It's enough for me that something gets the job done; I don't care how or why it works.
 - 18 I usually end up deliberating about issues even when they do not affect me personally.
-

Part E) Lexical Decision Task

Thank you for signing up for our study on personality and life experiences. This task is a lexical decision task. Please read through the instructions, and focus your attention as much as possible during the task. If you have any questions at any point during the experiment, please feel free to ask the researcher.

The following task involves CLASSIFYING WORDS as either REAL WORDS or NONSENSE WORDS. On each trial, you will see a random string of letters. Then, a word will be displayed, and you must indicate whether it is a real word or a nonsense word.

Please remember that NAMES of People and Places also count as REAL WORDS. You should respond AS RAPIDLY AS POSSIBLE in categorizing each word after it appears, but don't respond so fast that you make many errors (Occasional errors are okay). Press the 'e' key if the stimulus is a NONSENSE word. Press the 'i' key if the stimulus is a REAL word

At the beginning of each trial you will first see an "X" on the screen. Look at that X. Then, you will see a random string of letters followed by the target word. Pay attention, and respond only to the last, clearly visible word shown on each trial.

After this page, you will be given a chance to practice. As a reminder of the instructions for responding: (1) Look at the "X" in the middle of the screen. (2) Wait for the random string of letters to pass. (3) Then, the word will appear. (4) Press the 'e' key if the stimulus is a NONSENSE word, OR, Press the 'i' key if the stimulus is a REAL word.

The practice session is over! After this page, the first set of trials will start. These are the ACTUAL TRIALS, and your responses will be recorded. Also, this time we will NOT tell you whether the response was correct or incorrect. Just try your best. Be ready for the first stimulus on the next page.

Take a second to relax. After this page, a new set of trials will start. There are a total of three sets of trials in this task. As before, your responses will be recorded. Again, we will not tell you whether the response was correct or incorrect. Just try your best. Be ready for the first stimulus on the next page.



Figure A.1. Screenshot of Lexical Decision Task

Part F) Climate Change Engagement Questionnaire (Scannell & Gifford, 2013)

The questions below ask you about your thoughts, feelings, and behaviours related to climate change. Please circle the response that most accurately represents how you feel.

	Not at all						Very much so	
1.	How relevant do you feel climate change is to you?	1	2	3	4	5	6	7
2.	How interested are you in learning about how to reduce your climate change impact?	1	2	3	4	5	6	7
3.	How much would you be willing to watch a commercial or public service announcement about climate change?	1	2	3	4	5	6	7
4.	How likely are you seek out information about climate change?	1	2	3	4	5	6	7
5.	To what extent do you feel that climate change will affect you personally?	1	2	3	4	5	6	7
6.	How concerned do you feel about the effects of climate change?	1	2	3	4	5	6	7
7.	Please type an "x" below the number three to indicate your ongoing consent in this study.	1	2	3	4	5	6	7
8.	To what extent do you find climate change issues boring?	1	2	3	4	5	6	7
9.	How much does climate change information capture your attention?	1	2	3	4	5	6	7
10.	How important is it to reduce your climate change impacts?	1	2	3	4	5	6	7
11.	How dangerous are the effects of climate change?	1	2	3	4	5	6	7
12.	How willing would you be to use sustainable modes of transportation more often such walking or cycling?	1	2	3	4	5	6	7
13.	How likely would you support a law requiring public buildings to reduce thermostat and air conditioning use, to reduce their impact on climate change?	1	2	3	4	5	6	7
14.	How willing would you be to attend a meeting to discuss climate change?	1	2	3	4	5	6	7
15.	How willing would you be to write a letter to a public official about climate change?	1	2	3	4	5	6	7
16.	How willing would you be to donate money to an organization concerned with climate change?	1	2	3	4	5	6	7

Part G) Relationships with People

The statements below concern how you usually feel in emotionally intimate relationships. We are interested in how you generally experience romantic relationships, not just in what is happening in a current relationship. Please note that people vary in how they experience relationships, and we are interested in your experiences, whatever they may be. Respond to each statement by clicking the appropriate number to indicate how much you agree or disagree. You may also skip questions that you prefer not to answer. If you are single, you may think about partners you have had in the past. If you prefer, you may think about close relationships with others (e.g., parents or best friends), rather than romantic partners.

- **Items are presented in Appendix A, ECR-R**

Part H) Relationships with places

The statements below concern how you feel about places that are important to you. By “place” we mean any location that is especially important to you; this could be a certain room, apartment, office, house, coffee shop, neighbourhood, town, city, park, wilderness, region, country, or any other type of place. Please think of one such place (you can think about the same place you picked for Part 1), and answer questions that refer to “my place” with that special place in mind. Other questions ask about places in general. Answer those questions while thinking about your general tendencies toward places. Please respond to each statement by circling the appropriate number to indicate how much you agree or disagree with the statement.

- **Items are presented in Appendix A, Place Attachment Style Questionnaire**

Part I) Demographics

Please tell us a little bit more about yourself. We ask so we can understand the views of different people. Remember that all responses are anonymous and confidential.

1	How many years of post-secondary have you completed? (If you are in your first year, type ".5")
2	What is your major, or probable major? (If you don't know, type, "don't know").
3	What is your gender?
4	In which year were you born?
5	How many people are you currently living with? (If you are a dorm, type "1 - dorm.")
6	What is your ethnicity or ethnicities?
7	Are you currently in a romantic relationship?
8	If you are currently in a romantic relationship, do you live in the same residence as your partner?
9	How many times in your life have you moved?

Debriefing Form: A Study on Place Attachment and the Need for Safety

Thank you very much for your participation!

Now that you have completed the study, we can provide you with a more detailed description of our research purpose, hypotheses, and the possible applications of our findings. You may verify the ethical approval of this study by contacting the Human Research Ethics office at the University of Victoria (ethics@uvic.ca, 250-472-4545).

Background:

Why do we develop close bonds to meaningful places? One possible explanation is that place attachment helps to satisfy our need for safety and security. This experiment investigates whether place attachment can be used as a means to feel secure in the face of threats.

You were not initially told that the study was specifically about place attachment and security because this may have influenced your responses; it was important to receive your unaltered opinions and choices. You were also not told that, embedded in the word task were subliminal primes (i.e., words that were presented so briefly, that you barely perceived them) intended to evoke a sense of threat.

In addition, two unrelated questionnaires were included to conceal the purpose of the study (one was about the need for cognition, and one was about climate change attitudes). Your responses from these questionnaires will be retained and may be used in future analyses unrelated to the current study.

Ongoing consent in the study is implied, and any data you submit during the study period will be used unless you indicate that you wish to withdraw from the study. If you prefer to withdraw from the study, please indicate this to the researcher now, and your responses will not be retained. You will need to tell the researcher your participation number so that your data can be removed.

Independent variables:

(1) *Threatening words*: To evoke a sense of threat at the subconscious level, the word task included subliminal primes (i.e., words that were presented so briefly, that you barely perceived them) that were either threatening (e.g., "failure") or neutral (e.g., "folders").

(2) *Place attachment*: The word task included words that were either names of your places of attachment; names places you had identified as familiar; names of unfamiliar places; and nonwords, derived from scrambled English words.

Dependent variable:

The dependent variable was your reaction time (in milliseconds) to identify whether the word was a real word or a nonsense word.

Hypotheses:

If place attachment indeed provides security in the face of threats, participants are expected to more quickly recognize place attachment words after being primed with threatening words than after being primed with neutral words. Threat primes are not expected to increase reaction times to names of places that are not places of attachment.

Potential Contributions:

Research exploring the psychological benefits of place attachment has both theoretical and applied value. Although some previous research in this area has investigated the meaning of place attachment, or its links to other constructs (e.g., Low & Altman, 1992), this is the first study to experimentally identify whether place attachment can serve a safety function. If so, this will contribute to the notion that place and person attachment serve similar functions. Additionally, it introduces a new methodological paradigm (i.e., priming) to the place attachment literature.

This research also has applied value. Knowledge about the psychological benefits afforded by place attachment could be applied to place-based therapies or other therapies that assist individuals with emotion-focused coping.

Help for relationship or other personal issues:

Some of the questions about relationships may have triggered some emotional discomfort in you. If you would like to discuss relationship issues with a professional counselor, please book an appointment at the UVic counseling services centre: you may do this in person at counseling services, university centre, or by phone: 250-721-8341.

Thank you again for your time, and please feel free to contact me if you have further questions. If you wish to request an abstract, or the full paper when it is complete, please email us.

Leila Scannell, M.Sc.
Environmental and Social Psychology Lab
University of Victoria
(scannell@uvic.ca, 250-472-4876)

Appendix C: Study 3 Materials



Participant Consent Form and Letter of Information

PERSONALITY AND MENTAL VISUALIZATION

You are invited to participate in a study on visualization, conducted by Leila Scannell, a graduate student in psychology. You may contact Leila (scannell@uvic.ca, 250-472-4876), if you have any questions or concerns. In addition, you may verify the ethical approval of this study by contacting the Associate Vice-President of Research at the University of Victoria (250-472-4545).

The **purpose** of this project is to investigate the links between personality traits and mental visualization.

Participation: You were selected for participation in this study because you are a University of Victoria student with your own unique attributes and experiences.

Participation occurs in two parts, and involves the following tasks:

- *Part 1:* Complete four questionnaires about various aspects of your personality (approx. 20 min). These questionnaires may be completed online. If you decide to participate, we will send you the link to the website; please complete the questionnaires within the next 24-hours, at a time that is most convenient for you. We will also assign you a participant number. You will need this number to complete the online questionnaires.
- *Part 2:* Visit our laboratory (Cornett B311) to participate in several activities, including a social interaction visualization on the computer, a solitary visualization activity and a few additional questionnaires (approx. 70 min.). You will need to remember your participant number for this phase of the study.

Following the experiment, you will be given a debriefing form, which provides more information about the study and our hypotheses.

Confidentiality: Your responses will be kept confidential. To ensure this confidentiality, we will assign you with a participant number, and data will be recorded according to this number. We will delete the separate file containing your name and your participation number on the next business day following your participation. Your information will not be given to anyone outside of our research team, and all reports will be based on averages across all participants. Raw data will be stored in a locked filing cabinet and electronic data will be stored on the researcher's password-protected computer.

It is possible that you will know the principal investigator as your teaching assistant for a previously taken course. If this is of concern for you, we recommend that you do not continue with your participation.

Potential Risks and Benefits: Completing some of the questionnaires or participating in the study activities may raise some emotional discomfort; however, it is unlikely that you will experience any other risks, as a result of participation. To minimize these potential risks, feel free to skip questions you feel uncomfortable answering, take a break while participating, or terminate your participation at any point. To improve participants' moods, we have included a mood-lifting activity at the end of the experiment.

Participation in this research also holds potential benefits. You will have the opportunity to learn more about the discipline of Psychology, and some of the research currently being carried-out at the University of Victoria. This research also offers potential benefits to society. Results may be used to inform therapists, policy makers, planners, and architects. Finally, your data will contribute to the body of knowledge and development of theory related to this research area.

Compensation: As compensation for any inconvenience involved in participation, you will receive 3 bonus participation credits. This compensation will occur upon completion of the study. This form of compensation must not be coercive as it is unethical to provide undue compensation or inducements to research participants. If you would not participate if the compensation were not offered, then you should decline.

Withdrawal: Your participation in this research must be completely voluntary. If you decide to participate, you may withdraw at any time without any explanation, provided that is before all data are collected and analysed. You will need to remember your participant number so we know which data to remove. This is necessary given that we will not be able to link your data to your name. You can do this at any time, and we will remind you of this again in the debriefing form when the study is complete. You will receive partial compensation if you withdraw from the study before it is complete (1 participation credit).

Implied Consent: Any data you submit during the study period will be used unless you indicate that you wish to withdraw from the study. All data will be electronic and will be stored and archived on the password-protected personal computer of the principal investigator. Submitted data may be used for analyses in related studies. Therefore, by participating in this study, you acknowledge that your data may be used in future studies of a similar nature. Results of this study may be shared with others in published articles, a final dissertation presentation, on the internet, in the media, and at scholarly meetings.

Thank-you very much for your interest in our study!

Sincerely,

Leila Scannell, M.Sc.

University of Victoria

A) Cyberball (Williams, Cheung, & Choi, 2000; Williams & Jarvis, 2006)

Instructions: In the upcoming experiment, we test the effects of practicing mental visualization on task performance. Thus, we need you to practice your mental visualization skills. We have found that the best way to do this is to have you play an on-line ball tossing game with other participants who are logged on at the same time.

In a few moments, you will be playing a ball tossing game with other students over our network. The game is very simple. When the ball is tossed to you, simply click on the picture of the player you want to throw it to. When the game is over, the experimenter will give you additional instructions.

What is important is not your ball tossing performance, but that you **MENTALLY** visualize the entire experience. Imagine what the others look like. What sort of people are they? Where are you playing? Is it warm and sunny or cold and rainy? Create in your mind a complete mental picture of what might be going on if you were playing this game in real life.

Okay, ready to begin? Please click 'Start' to begin.")

Please enter your name.

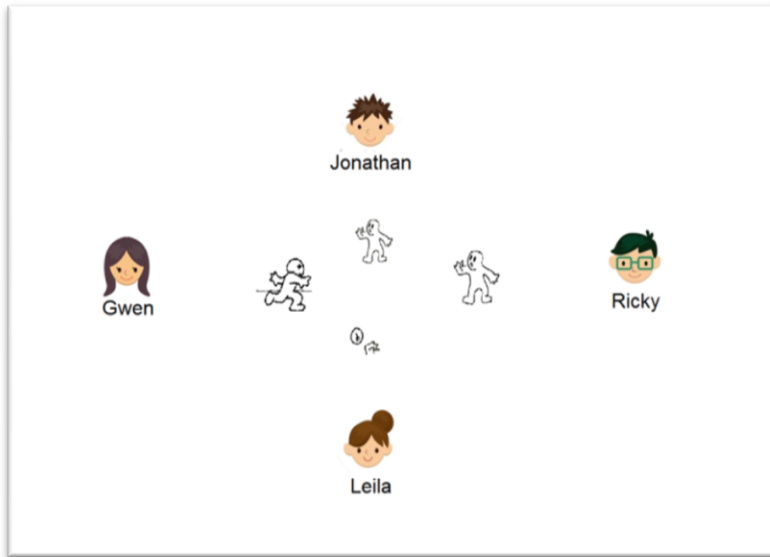


Figure A.2. Screenshot of Cyberball.

B) Need-Threat Scale (Jamieson, Harkins, & Williams, 2010; Williams, 2009)

This is a questionnaire designed to measure your current feelings, based on the activity you just experienced. There is, of course, no right answer for any statement. The best answer is what you feel is true of yourself at this moment. Be sure to answer all of the items, even if you are not certain of the best answer. Again, answer these questions as they are true for you.

Please indicate your level of agreement with each of them by typing an "x" below the appropriate number. Scroll down to see all of the questions.

	Not at all	A little bit	Somewhat	Very much	Extremely
	1	2	3	4	5
1	I felt "disconnected."				
2	I felt rejected.				
3	I felt like an outsider.				
4	I felt a sense of belonging.				
5	I felt included.				
6	I felt good about myself.				
7	My self-esteem was high.				
8	I felt liked.				
9	I felt insecure.				
10	I felt satisfied.				
11	I felt invisible.				
12	I felt meaningless.				
13	I felt nonexistent.				
14	I felt important.				
15	I felt useful.				
16	I felt powerful.				
17	I felt I had control.				
18	I felt I had the ability to significantly alter events.				
19	I felt I was unable to influence the actions of others.				
20	I felt that others decided everything.				

C) Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988)

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way right now, that is, at the present moment. Use the following scale to record your answers. Again, answer these questions as they are true for you RIGHT NOW.

Please indicate your answers by typing an "x" below the appropriate number. Scroll down to see all of the questions.

	very slightly or not at all	a little moderately	moderately	quite a bit	extremely
	1	2	3	4	5
1	interested				
2	distressed				
3	excited				
4	upset				
5	strong				
6	guilty				
7	scared				
8	hostile				
9	enthusiastic				
10	proud				
11	irritable				
12	alert				
13	ashamed				
14	inspired				
15	nervous				
16	determined				
17	attentive				
18	jittery				
19	active				
20	afraid				

D. Place Visualization Activity

A) For those in the place attachment condition

“The next activity is another visualization exercise, but this one is a little different. I’m going to ask you to visualize something in as much detail as possible. First it’s important to get comfortable, and take a moment to just relax. So sit back in your chair and close your eyes. Now take a few moments to bring your attention to your mind, and just observe what you are thinking about right now.

[researcher waits about 15 seconds]

“Now I’d like you to think about a place to which you are especially attached – pick one place that is meaningful for you in a positive way; a place that you really feel connected to. This could be any type of place, on any spatial level, from any time, for any reason. Just pick one that you feel close to, and one that comes to mind easily. *[researcher waits about a minute]*. Now that you have that place in mind, I’d like you to imagine yourself there.

“What do you see? Imagine all the details of what your place looks like. What are the smells of the place? What are the sounds that you hear? What is happening there? Focus on all the details of your place. *[researcher waits another minute]*.”

“OK, good. I’d like you to come back from your place now, and return to your computers. Now please take a few minutes to jot down some details about your place in the spaces provided. There are two separate questions, so just scroll down to see them both. This writing activity will take five 5 minutes, so I’ll let you know when the time is almost up. After that, you can click on “Part 6” and continue on with the questionnaires.”

B) For those in the non-place attachment condition

“The next activity is another visualization exercise, but this one is a little different. I’m going to ask you to visualize something in as much detail as possible. First it’s important to get comfortable, and take a moment to just relax. So sit back in your chair and close your eyes. Now take a few moments to bring your attention to your mind, and just observe what you are thinking about right now. *[researcher waits about 15 seconds]*

“Now I’d like you to think about a regular place – a neutral place that you do not have any strong feelings toward, but somewhere that is fairly familiar to you. This could be any type of place, on any spatial level, from any time, for any reason. Just pick one that *feels really ordinary for you and not important*, and one that comes to mind easily. *[researcher waits about a minute]*. Now that you have that place in mind, I’d like you to imagine yourself there.

“What do you see? Imagine all the details of what the place looks like. What are the smells of the place? What are the sounds that you hear? What is happening there? Focus on all the details of this place. *[researcher waits another minute]*.”

“OK, good. I’d like you to come back from your place now, and return to your computers. Now please take a few minutes to jot down some details about your place in the spaces provided. There are two separate questions, so just scroll down to see them both. This writing activity will take 5 minutes, so I’ll let you know when the time is almost up. After that, you can click on “Part 6” and continue on with the questionnaires.”

E. Place Attachment Scale

The questions that follow assess your feelings and thoughts about the place you just thought about. Some of the questions may or may not be relevant to that place. Please think about and answer each question separately, and as accurately as possible.

Please indicate your level of agreement with each of them by typing an "x" below the appropriate number. Scroll down to see all of the questions.

Not at all **Very much so**

1 2 3 4 5 6 7

- 1** I feel that this place is a part of me.
- 2** This place says very little about who I am.
- 3** I feel that I can really be myself in this place.
- 4** Please indicate your ongoing participation in this study by typing an "X" below number 3.
- 5** This place reflects the type of person I am.
- 6** I feel relaxed when I'm in this place.
- 7** I feel happiest when I'm in this place.
- 8** This place is my favorite place to be.
- 9** I really miss this place when I'm away from it for too long.
- 10** This place is the best place for doing the things that I enjoy most.
- 11** For doing the things that I enjoy most, no other place can compare to this one.
- 12** This place is not a good place to do the things I most like to do.
- 13** As far as I am concerned, there are better places to be than in this one.
- 14** I feel attached to this place.
- 15** I am proud of this place.
- 16** The spiritual nature of this place ties me to this place.
- 17** I feel a connection to the visual landscape of this area.
- 18** I feel that this place is my home.
- 19** My roots are in this place.
- 20** I intend to continue going to or staying in this place for the next 3 years.
- 21** I wish to be close to this place for the rest of my life.

F. Relationships with People

The statements below concern how you usually feel in emotionally intimate relationships. We are interested in how you generally experience romantic relationships, not just in what is happening in a current relationship. Please note that people vary in how they experience relationships, and we are interested in your experiences, whatever they may be. Respond to each statement by clicking the appropriate number to indicate how much you agree or disagree. You may also skip questions that you prefer not to answer. If you are single, you may think about partners you have had in the past. If you prefer, you may think about close relationships with others (e.g., parents or best friends), rather than romantic partners.

- **Items are presented in Appendix A, ECR-R**

G. Relationships with places

The statements below concern how you feel about places that are important to you. By “place” we mean any location that is especially important to you; this could be a certain room, apartment, office, house, coffee shop, neighbourhood, town, city, park, wilderness, region, country, or any other type of place. Please think of one such place (you can think about the same place you picked for Part 1), and answer questions that refer to “my place” with that special place in mind. Other questions ask about places in general. Answer those questions while thinking about your general tendencies toward places. Please respond to each statement by circling the appropriate number to indicate how much you agree or disagree with the statement.

Items are presented in Appendix A, Place Attachment Style Questionnaire

H. Demographics

About You

Please provide us with the following information about yourself by typing in your responses to the questions below.

- 1 How many years of post-secondary have you completed?
- 2 What is your major, or probable major?
- 3 What is your gender?
- 4 In which year were you born?
- 5 How many people are you currently living with?
- 6 What is your ethnicity or ethnicities?
- 7 Are you currently in a romantic relationship?
- 8 If you are currently in a romantic relationship, do you live in the same residence as your partner?

Debriefing Form: A Study on Place Attachment and the Need to Belong

Thank you very much for your participation!

Now that you have completed the study, we can provide you with a more detailed description of our research purpose, hypotheses, and the possible applications of our findings. You may verify the ethical approval of this study by contacting the Human Research Ethics office at the University of Victoria (ethics@uvic.ca, 250-472-4545).

Background:

Why do we develop close bonds to meaningful places? One possible explanation is that place attachment helps to satisfy our need to belong. This experiment investigates whether place attachment can help meet the need to belong following social exclusion.

You were not initially told that the study was about place attachment and the need to belong because this may have influenced your responses; it was important to receive your unaltered opinions and choices. Therefore, the ball tossing game was intended to evoke social exclusion among half of the participants. The other players were not real people, but were programmed to “behave” in a pre-determined way. In addition, two unrelated questionnaires were included to conceal the purpose of the study (one was about mindfulness, and one was about climate change attitudes). Your responses from these questionnaires will be retained and may be used in future analyses unrelated to the current study.

Any data you submit during the study period will be used unless you indicate that you wish to withdraw from the study. If you prefer to withdraw from the study, please indicate this to the researcher now, and your responses will not be retained.

Independent variables:

(1) *Social exclusion*: This was manipulated using the ball-tossing game. Half of the participants were socially excluded by receiving the ball only twice, and then not again. The other half of participants were included by receiving the ball one-third of the time.

(2) *Place attachment*: This was manipulated using the visualization activity. Half of the participants were given the opportunity to visualize a place of attachment, whereas the other half of participants were asked to visualize an ordinary place (such as a grocery store).

Dependent variables:

We assessed the impact of these different social exclusion x place attachment conditions on two dependent variables: current mood and current levels of need satisfaction.

Hypotheses:

We expect that place attachment will help buffer the negative impacts of social exclusion.

Potential Contributions:

Research exploring the psychological benefits of place attachment has both theoretical and applied value. Although some previous research in this area has investigated the meaning of place attachment, or its links to other constructs (e.g., Low & Altman, 1992), this is the first study to identify whether place attachment can serve a belongingness function. If so, this will contribute to the notion that place and person attachment serve similar functions..

This research also has applied value. Knowledge about the psychological benefits afforded by place attachment could be applied to place-based therapies or other therapies that assist individuals with emotion-focused coping.

Help for relationship or other personal issues:

Some of the questions about relationships may have triggered some emotional discomfort in you. If you would like to discuss relationship issues with a professional counselor, please book an appointment at the UVic counseling services centre: you may do this in person at counseling services, university centre, or by phone: 250-721-8341.

Thank you again for your time, and please feel free to contact me if you have further questions. If you wish to request an abstract, or the full paper when it is complete, please email us.

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