Exploring the Relationship between Motivation and Dog-Walking Behaviour: What Motivates Older Adults to Walk with their Dogs?

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Abstract

Background/Objectives: Dog ownership in older adulthood has been connected with increased likelihood of meeting the physical activity guidelines. There are older dog owners, however, that do not walk their dogs. Investigation utilizing the Self-Determination Theory was used to identify differences in motivation between regular and infrequent dog-walkers, while qualitative investigation helped identify and explore factors that influence motivation (basic psychological needs). Finally, meeting the advised levels of physical activity is related to improved health, so investigation into the differences was completed. **Method:** Ninety-four dog owners, aged 55 years and older, participated in the study. Participants completed the BREQ-2, a measure of motivation, a questionnaire to measure dog-walking behaviour, the SF-36v2, a measure of health, and demographic information. *T and* Mann-Whitney *U* tests were used to identify differences between in motivation and health. Nine regular dog-walkers participated in interviews to explore if the basic psychological needs influenced motivation to dog-walk. **Results:** Regular dog-walkers had significantly higher levels of intrinsic motivation ($U_{(80)}$=355.50, Z=-4.001, p<.002), integrated regulation (t_{79}=-4.050, p<.002), and identified regulation ($U_{(80)}$=186.00, Z=5.549, p<.002), as well as lower levels of amotivation ($U_{(80)}$=530.50, Z=-3.404, p<.002). Interviews supported that the needs were satisfied in dog-walking. Conclusion: The findings revealed that regular dog-walkers possessed higher levels of self-determined motivation, which is connected to higher levels of physical activity. Data from interviews supported further investigation into the needs within the context of dog-walking to inform future intervention.

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Introduction and Review of Literature

Human-Animal Interactions and Health

Beneficial influences of pet ownership. A unique and enriching bond evolves between humans and companion animals; the development of which is connected to the affordance of beneficial influences to aspects of physical, psychological, and social health and well-being. Siegel (1990), for instance, found that older adult pet owners sought the care of a physician less frequently than non-pet owners, when demographic variables and health status were controlled. In addition, dog ownership imparted protective benefits against stressful events, when examining the influence of these stressful life events on the frequency of physician contact. In other words, dog owners who experienced an increase in stressful events did not experience the same increase in contact with a physician as other pet owners and non-pet owners (Siegel, 1990). The correlational nature of the previous study makes it difficult to discern causality; therefore, research design is an essential consideration.

A design used by Serpell (1991) addressed this concern by collecting information during the acquisition of a new pet. Evidence illustrated that participants who acquired a pet reported fewer minor health, when compared to the group of participants who did not own a pet. They also experienced an improvement on the 30-item General Health Questionnaire, which provides an indication of psychological health. The results indicated benefits emerged differentially for different types of pet owners. Benefits were maintained over the ten-month period of the study for dog owners, while these findings were not upheld in cat owners (Serpell, 1991). These findings support that owning a pet,

or more specifically a dog, is connected with beneficial influences to certain aspects of health and well-being.

Pet ownership may also occupy a similar protective role in the maintenance of older adults' ability to perform activities of daily living (ADLs). Raina, Waltner-Toews, Bonnett, Woodward, and Abernathy (1999) found that pet owners maintained ADLs over a one-year period, while non-pet owners experienced decrements in this measure of physical functioning. Furthermore, it appeared that when an individual experienced a lack of social support, pet ownership counteracted the detrimental consequences of this lack of support on psychological well-being (Raina et al.). These findings are important in the context of an aging population, because the ability to perform ADLs, which include basic functions such as walking, bathing, dressing, eating, or toileting (Cavanaugh, Blanchard-Fields, & Norris, 2008), is important for independent function (Jagger, Arthur, Spiers, & Clarke, 2001).

Evidence also supports that dogs may influence different effects on social well-being than other pets; that is, dogs may act as a mechanism or precipitant that increase social interactions with others. McNicolas and Collis (2000) employed an investigation that paired an individual with a dog, previously instructed to avoid eliciting interactions, in order to ascertain whether the mere presence of the dog increased contact with others. The results supported that, even without seeking out attention of others, being in the company of a dog significantly increased the incidence of social interactions, particularly with strangers (McNicholas & Collis). The concept of dogs as stimulants of social interactions was supported in qualitative research conducted by Wood, Giles-Corti, Bulsara, and Bosch (2007). The qualitative approach of this study allowed data to

be collected through focus groups of differing ages, including retired older adults. Analysis of the conversations with this particular age group revealed that dogs have the ability to act as “icebreakers” and the casual interactions that dogs elicit may facilitate the development of new friendships (Wood, Giles-Corti, Bulsara, & Bosch). Although there is a great heterogeneity that exists as we age, a curvilinear trend indicates that the size of an individual’s social network is reduced over time (McPherson & Wister, 2008). It appears that dogs have the potential to increase the number of contacts community-dwelling older adults develop, when they engage in behaviour that would stimulate these occurrences, including walking. However, there is a body of literature that fails to support the encouraging findings indicated above, or negates the presence of any benefits.

Contradictory evidence. Although numerous studies have associated pet ownership with health benefits, there are others that fail to support this idea. In order to arrive at appropriate and informed interpretations, we must acknowledge the contrasting findings and critically analyze the evidence. For instance, Parslow, Jorm, Christensen, Rodgers, and Jacomb (2005) found, in a sample of 2,551 sixty to sixty-four-year-old adults, that pet ownership was related to various unfavourable influences to owners’ health and well-being, including increased depressed symptomology, inferior physical health, and greater reliance on pain medication. The results, at first glance, are shocking in sight of the reported benefits and negate that there is any advantage to owning a pet. The sample, for one, is not representative of the older adult population, as it is difficult to capture the heterogeneity that exists in later life from a group of individuals within a five-year age span. In addition, as acknowledged by the

researchers, the duration of pet ownership was unknown. To address this issue, it is necessary to further investigate specific characteristics surrounding pet ownership history and, as suggested, collect longitudinal data (Parslow et al.). A final issue to consider is the influence of research design on causality and, more specifically, the issue of the correlational or cross-sectional data collected from individuals who already own pets. In other words, unless the study design is experimental (or quasi-experimental) in nature, it is difficult to determine the exact nature of the relationship that develops over the course of pet ownership (Cutt, Giles-Corti, Knuiman, & Burke, 2007; Pancha, Ford, Andrew, & Dobson, 2005; Winefield, Black, & Chur-Hansen, 2008).

A study conducted by Winefield, Black, and Chur-Hansen (2008) investigated the proportion of the variance in health and well-being that is explained by pet ownership or pet attachment. The results indicated that neither of the proposed variables significantly contributed to the variance in health, when the involvement of other variables (demographics, smoking, exercise, social support) was considered (Winefield, Black, & Chur-Hansen). An important consideration when performing a regression relates to the number of variables entered into the regression equation, as the inclusion of a large number of predictor variables decreases the likelihood of achieving statistical significance (Diekhoff, 1992). In this study, exercise and social support did, however, contribute significantly to the variance in health and well-being (Winefield, Black, Chur-Hansen); thus, the relationship between pet ownership and health may be mediated by other factors.

Nature of the Relationship Between Pet Ownership and Health

The relationship between pet ownership and health, based on the above discussion, is still not clearly understood. McNicholas et al. (2005) conceptualized the interaction between owning a pet and health by three pathways: 1) a common factor that underlies health and pet ownership; thus, the appearance of a relationship is determined by an outside, unrelated factor, 2) a causal relationship between pet ownership and health exists; therefore, acquiring and owning a pet directly accrues benefits to health and well-being, or 3) another variable (described by these authors as augmented social interactions), which intervenes or moderates the relationship between pet ownership and health, exists. The proposition that a common factor exists that independently elicits both health and pet ownership remains unsupported (McNicholas et al., 2005) and it is doubtful that a direct, causal relationship exists due to the variation of results reported in the literature. For instance, Raina et al. noted that the relationship between pet ownership and psychological well-being was not direct, but rather that pet ownership acted as a protection to psychological well-being in situations where there was a social support deficit. Although this is simply one example, it helps to illustrate that a more complicated interaction is present between health and pet ownership. Increased social interactions were proposed to mediate this relationship (McNicholas et al.), which reflects the findings of McNicholas and Collis that dogs greatly increase the occurrence of social interactions. Although social networks are certainly related to health and well-being for older adults (McPherson & Wister), it is likely an individual would experience this augmentation in social interactions in conjunction with another activity, such as by taking a walk with one's dog. In order to provide a clearer picture of

the relationship between pet ownership and health, pets and pet owners cannot be viewed as a homogenous group and, more specifically, the differential influences of various types of animals must be taken into consideration. For instance, there is evidence that supports that dogs appear to provide a different pattern of benefits to owners than other animals (*see* Serpell, 1991; Siegel, 1990). The literature suggests that dog ownership increases physical activity by encouraging walking and that, in fact, physical activity catalyzed by the presence of a dog may be one of the intervening variables that helps explain the complex relationship found between dog ownership and health (Schofield, Mummery, & Steele, 2005). Although Serpell (1991) reported that the findings regarding the influence of dog-walking on measures of health and well-being did not completely support this hypothesis, it was noted that the benefits of physical activity are likely to have an impact on long-term health.

Benefits of Physical Activity: A Closer Look at Walking

Physical activity or, “any bodily movement produced by skeletal muscles that requires energy expenditure” (CSEP, 2011), provides a medium that individuals in which can engage for personal and social enjoyment, with additional benefits that span a wide spectrum of factors related to health and well-being. Older adults are advised to accumulate approximately 150-minutes of moderate-intensity aerobic physical activity over the course of a given week, which can be accrued in sessions of 10 minutes (WHO, 2011a). A large majority of Canadians enjoy walking as a form of physical activity; approximately 70% of individuals noted that they engaged in walking within a three-month period (Statistics Canada, 2010). It is an appealing medium for physical activity, as it requires little equipment, minimal financial commitment, and is easily

implemented in a variety of environments. More importantly, walking lends many health benefits throughout the lifespan (Lee & Buchner, 2008). A review conducted by Lee and Buchner illustrated that, as individuals age, walking can assist with lower rates and improved management of chronic diseases, reduced incidence of falls, improved bone health, and improved cognitive function. Walking is an important form of lifelong activity and the most basic form of mobility; therefore, it is imperative to maintain this activity into older adulthood. Decrements in walking behaviour can manifest issues such as loss of muscle mass and flexibility, which negatively influence walking patterns (Haywood & Getchell, 2005). Evidence illustrates that walking as a form of physical activity is supportive of and ameliorates mobility as individuals age (Frank & Patla, 2003; Simonsick, Guralink, Volpato, Balfour, & Fried, 2005). Supporting and promoting walking into older adulthood is important, so that an individual's ability to interact with his or her environment is not compromised. The central issue of mobility and independence is complemented by a plethora of other advantageous outcomes connected with moderate-intensity physical activity.

Psychological benefits. Physical activity, including walking, imparts numerous benefits to psychological health and well-being for individuals of all ages, including older adults. A twelve-month investigation into the impact of various formats and intensities of exercise programming (focusing on brisk walking endurance training or jogging) on measures of psychological health found that older adults experienced decreased levels of anxiety and symptoms of depression, regardless of format or intensity (King, Taylor, & Haskell, 1993). In another walking-based intervention, older adults assigned to a ten-week walking intervention group experienced improvements to stress and mood, as well

as other variables that are indicative of quality of life (pain, general health, vitality, social functioning, and mental health) (Starkweather, 2007). Although the first study occurred over a period of twelve-months, it is encouraging to note that improvements were experienced in just ten-weeks in the second study. Finally, walking has also been connected to improved cognitive functioning into older adulthood. Data from the longitudinal Nurses' Health Study illustrated that women who engaged in physical activity had better scores on measures of cognitive functioning and highlighted that those who reported the highest levels of physical activity had a 20% less chance of experiencing cognitive impairment (Weuve et al., 2004). In addition, walking activity was analyzed in the group of women who did not report any vigorous intensity physical activity. The results illustrated that higher levels of walking activity still imparted benefits to cognitive functioning (Weuve et al.). In a similar study, focusing on older men, walking was found to impart protective benefits against dementia (Abbott et al., 2004). Walking less than a quarter of a mile a day was related to 1.8 times greater risk of developing dementia, when compared to individuals who walked more than two miles a day (Abbott et al.). Examining this information as a whole allows us to see the significant influence walking for physical activity has on psychological health and well-being throughout the aging process. In conjunction with psychological benefits, there are a vast number of physiological benefits attached to walking.

Physiological benefits. Walking as a form of physical activity has widespread physiological and functional benefits. For instance, older adults who reported walking for less than an hour each week had a greater risk of being hospitalized in relation to cardiovascular disease, than those who walked for more than four hours per week

(regardless of participation in vigorous physical activity) (LaCroix, Leveille, Hecht, Grothaus, & Wagner, 1996). Walking more than four hours per week was also related to a lower risk of mortality, prior to adjustment for health status and cardiovascular risk factors (LaCroix et al., 1996). In another study, older adults were administered a walking test, which consisted of the long-distance corridor walk (400 m) (Newman et al., 2006). Individuals' who were not able to finish the 400-m walk had a more pronounced risk of mortality and cardiovascular disease, than those who were able to complete the test. The lack of ability to complete the test was also connected to issues with mobility (Newman et al.). When individuals' were able to complete the walk in its entirety, each extra minute it took to perform the test related to an increased risk of mortality, cardiovascular disease, mobility issues, and disability (Newman et al.). Walking also improves balance and functional abilities. Older adults living within the community have experienced improvements in balance and walking speed, as well as ability to climb the stairs (Rooks, Kiel, Parsons, & Hayes, 1997). In addition to the physiological and psychological benefits of walking, there are certain social influences connected to this form of activity.

Social benefits. Although the connection to social benefits related to walking and physical activity seem intuitive, it is important to reiterate the value of social health and well-being. Evidence illustrates that older adults who walk frequently, have a greater level of social participation; that is, walking positively predicts older adults' involvement in the social environment (Richard, Gauvin, Gosselin, & Laforest, 2008). Another finding supports the importance of social cohesion to physical activity. When investigating the influence on neighbourhood walkabililty, social cohesion, and safety on the physical

activity levels, King (2008) found that the highest levels of physical activity were not found in the neighbourhoods that were considered the most “walkable”. Older adults within neighbourhoods deemed to have lower walkability participated in higher levels of physical activity, because of the higher perceived safety and social cohesion within these areas (King). These findings supplement the intrapersonal benefits of physical activity, illustrating the social world bi-directionally influences walking and physical activity. The previous discussion includes a minute sample of the benefits connected to walking; however, the purpose of reporting these examples is to simply highlight a few of the many different areas that can be influenced by engaging in walking behaviour. In light of these findings, it is important to analyze whether or not older adults are completing the recommended levels of physical activity, in order to acquire the numerous benefits possible.

Are Older Adults Getting Enough Physical Activity?

Despite the numerous positive benefits of adopting and maintaining a physically active lifestyle, there are still a great proportion of older adults who are not physically active. To reiterate, it is recommended that older adults complete 150-minutes of moderate-intensity physical activity each week, which can be accumulated in short intervals of ten minutes (WHO, 2011a). Recent evidence, however, highlights the extremely low levels of physical activity within this age group. According to data collected for the Canadian Health Measures Survey, approximately 85% of individuals 40 to 59 and 87% of individuals aged 60 to 79 are not meeting this guideline (Colley et al., 2011). These results indicate that only 13% of older adults in this age category are completing enough physical activity to total 2.5 hours over the course of a 168-hour

week (Colley et al.). When put into the total commitment over the course of a week, individuals simply need to dedicate only 1.5% of their week to engaging in a behaviour with numerous preventative advantages. Despite these low levels of adherence to physical activity, a sub-group of older adults seem to have an increased propensity to complete the recommended levels of physical activity.

Dog-Walking as a Form of Physical Activity

The proportion of population who owns dogs is unavailable, as statistical data have not been collected to illustrate the exact breakdown of dog ownership within age groups across Canada. Regardless, research conducted in other countries identifies that adults, throughout the lifespan, do in fact own and walk their dogs (Reeves, Rafferty, Miller, & Lyon-Callo, 2011; Thorpe, Kreisle, et al., 2006; Thorpe, Simonsick, et al., 2006); thus, this behaviour is likely exhibited by Canadian older adults, as well. Although the preponderance of literature examining dog-walking has looked at dog-walking in a wide range of age groups, there has been a shift in focus to studies that have focused on older populations (Motooka, Koike, Yokoyama, & Kennedy, 2006; Thorpe, Kreisle, et al., 2006; Thorpe, Simonsick, et al., 2006). Information provided from studies conducted within younger and older populations affords important insight into the relationship between dog ownership and physical activity, while illuminating areas to be addressed by future research.

Several studies have associated dog ownership with higher levels of ambulatory activity. In Western Canada, a sample of 351 men and women, between ages 20 and 80, completed questionnaires encompassing personal demographics, walking completed in one’s leisure-time, overall physical activity, dog ownership, and the

constructs of the Theory of Planned Behaviour (TPB) (Brown & Rhodes, 2006). The data revealed that dog owners spent approximately 300 minutes per week walking (total walking not specifically dog-walking), while non-dog owners completed an average of 168 minutes, both very high values of walking activity (Brown & Rhodes, 2006). Another study, conducted in California, illustrated that dog-walkers walked an average of 186 minutes a week (Hoerster et al., 2011), which is much lower than findings from the Canadian study. The difference could be attributed, however, to the fact Brown and Rhodes reported total walking opposed to solely dog-walking minutes. The findings from Hoerster and colleagues' study supported that dog-walking was independently related to attaining the recommended levels of moderate-vigorous physical activity (Hoerster et al.), which was similar to findings that determined dog-walkers were 1.5 times more likely to meet recommendations (Oka & Shibata, 2009). Reeves, Rafferty, Miller, and Lyon-Callo (2011) obtained complementary evidence, which illustrated that dog walkers were 34% more likely to walk for 150-minutes each week and 69% more likely to participate in leisure-time physical activity. The findings suggest that walking with a dog is beneficial in accumulating recommended levels of physical activity throughout the week. Research conducted specifically in older populations complements studies that include a wider range of ages, by focusing more narrowly on older adults designated by chronological boundaries.

To expand on the literature that suggests dog ownership supports physical activity, Thorpe, Kreisle, et al. (2006) collected information from older adults participating in the Health ABC Study. Based on longitudinal data collected, results demonstrated that dog owners walked more and for a longer duration in walking that

was deemed “non-exercise”, than non-pet owners and pet owners who did not own a dog (Thorpe, Kreisle, et al., 2006). While results illustrated that dog owners engaged in more walking that was deemed non-exercise, classification of walking as non-exercise included other examples such as walking for transportation to places such as the store or church. Specifically asking about dog-walking behaviour would help delimit time spent dog-walking from other activities, without classifying this activity as non-exercise. It is possible for dog-walking to serve as an individual’s main mode of physical activity or is a component of his or her physical activity regime. Collecting physical activity information that allows individuals to provide more specific examples of their activities, including dog-walking, would help to collect more specific measures of dog-walking behaviour. The authors also highlighted that further research should investigate if this higher level of walking contributes to improved health measures (Thorpe, Kreisle, et al., 2006).

Thorpe, Simonsick, et al. (2006) endeavoured to make a connection between walking behaviour and maintained mobility for older adults. Results revealed that older adults who walked their dogs were more likely to achieve the recommended value of 150 minutes of activity per week, which is supported by other studies that showed dog-walkers are more apt to meet physical activity recommendations (Coleman et al, 2008; Cutt, Giles-Corti, & Knuiman, 2008). Dog owners were also found to have faster walking speeds than non-dog owners who walked less than three times a week, but comparable walking speeds to non-dog owners who participate in the recommended amount of physical activity (Thorpe, Simonsick, et al., 2006). A study with a sample ranging from 18 to 85 years of age also found health benefits associated with being a dog-walker

(Lentino, Visek, McDonnell, & DiPietro, 2011). Dog walkers, in this study, were more likely than non-dog owners and owners who did not walk their dogs to participate in higher levels of physical activity and lower body mass indices (Lentino, Visek, McDonnell, & DiPietro). When age and physical activity levels were controlled, dog walkers had lower odds than non-dog owners for self-reported diabetes, hypertension, hypercholesterolemia, and depression (Lentino, Visek, McDonnell, & DiPietro). The question arises as to whether walking with a dog can confer benefits greater than walking alone.

Although minimal research has attempted to determine if walking with a dog holds a greater value than simply walking alone, a study by Motooka, Koike, Yokoyama, and Kennedy (2006) suggest this statement may be true. Parasympathetic activity, which acts to counteract stress, was significantly higher when walking with a dog than when walking unaccompanied, yet even greater when interacting with a dog at home (Motooka, Koike, Yokoyama, & Kennedy). Although these results indicate walking with a dog may offer greater stress attenuating benefits than walking alone, there are still many questions regarding the nature of the relationship between dogs and health. Regardless, dog-walking materializes as a beneficial form of physical activity, which wields potentially greater benefits than walking without a dog (Motooka, Koike, Yokoyama, & Kennedy).

Another benefit, although not directly related to health outcomes, was found from a study in Calgary, Alberta (similar climate to Thunder Bay). Seasonal influence on physical activity is an important consideration in Canada. Winter is associated with an increase in physical inactivity (Merchant, Dehghan, & Akhtar-Danesh, 2007). Lail,

McCormack, and Rock (2011) investigated patterns of walking activity during the summer and winter, within a group composed of dog owners and non-dog owners. The results illustrated that dog owner's walked an average of 213 minutes in the summer and an average of 253 minutes during the winter months, to (Lail, McCormack, & Rock). Non-dog owners, however, decreased recreational walking in the winter, from 123 minutes on average in the summer to 107 minutes in the winter (Lail, McCormack, & Rock). When considering the evidence presented, owners who walk with their dog appear to have an increased propensity to be physically active. Understanding why this occurs is a vital step in promoting this activity within the subset of dog owners who do not walk with their dogs. Cutt, Giles-Corti, Knuiman, and Burke (2008) investigated various motivators and barriers to dog-walking activity. Qualitative focus groups revealed that owning a dog was a form of motivation to walk (Cutt et al.), which was supported by the findings that individuals who do not walk their dogs were less likely to perceive their dogs as motivation or social support (Cutt, Giles-Corti, & Knuiman, 2008). Investigating the motivating role of dogs in physical activity within a theoretical framework is a logical next step to understanding this behaviour.

Motivation: The Self-Determination Theory

Motivation plays a significant role in many facets of life, including physical activity. Being motivated has a simple, yet profound outcome: it "produces" (Ryan & Deci, 2000b, pg. 69). Motivation drives an individual to act; that is, to begin and maintain action (Ryan & Deci, 2000a; 2000b), which translates into the adoption and maintenance of a physically active lifestyle. Although previous theoretical inquiry framed motivation in terms of the quantity an individual possesses, the Self-Determination

Theory (SDT) shifted focus towards discriminating the nature of motivation (Deci & Ryan, 2008b) and emphasizes investigation within specific contexts that promote processes that facilitate motivation (Ryan & Deci, 2000b). The theory conceptualizes motivation in terms of the type or orientation, rather than the quantity of motivation an individual possesses (Deci & Ryan, 2008a; 2008b; Ryan & Deci, 2000a; 2000b). These different types of motivation can be arranged along a continuum, based on the level of self-determination that they embody (Deci & Ryan, 2000; Ryan & Deci, 2000a)

The continuum of motivation. Categorization of motivation, within the SDT framework, depends upon the extent of autonomous or controlled regulation that underlies each type of motivation (Deci & Ryan, 2000; 2008a; 2008b). Autonomous motives are those that originate from an individual; therefore, to be self-determined is to be propelled by motives that are congruent with ones self and derived from within (Ryan & Deci, 2007). The Self-Determination Continuum, illustrated in Figure 1, provides a visual representation depicting the organization of motivation, ranging from a complete lack of autonomous motives (amotivation) to fully self-determined motives (intrinsic). Although motivation was previously differentiated based on the distinction between intrinsic and extrinsic, the current understanding of motivation as a continuum that reflects the level of autonomy or self-determination (Deci & Ryan, 2008a), allows for a more sophisticated explanation. Conceptualizing motivation in this manner accounts for actions that are extrinsically motivated, but are still catalyzed by self-determined motives (Ryan & Deci, 2007). An explanation of each type of motivation, as well as amotivation, will clarify the differences found between the various types, as well as the implications in the context of physical activity and dog walking. Amotivation, located at

the far right of the continuum, is unique because, unlike intrinsic and extrinsic motivation, it is characterized by neither autonomous nor controlled regulation (Deci & Ryan, 2000; 2008a; 2008b).

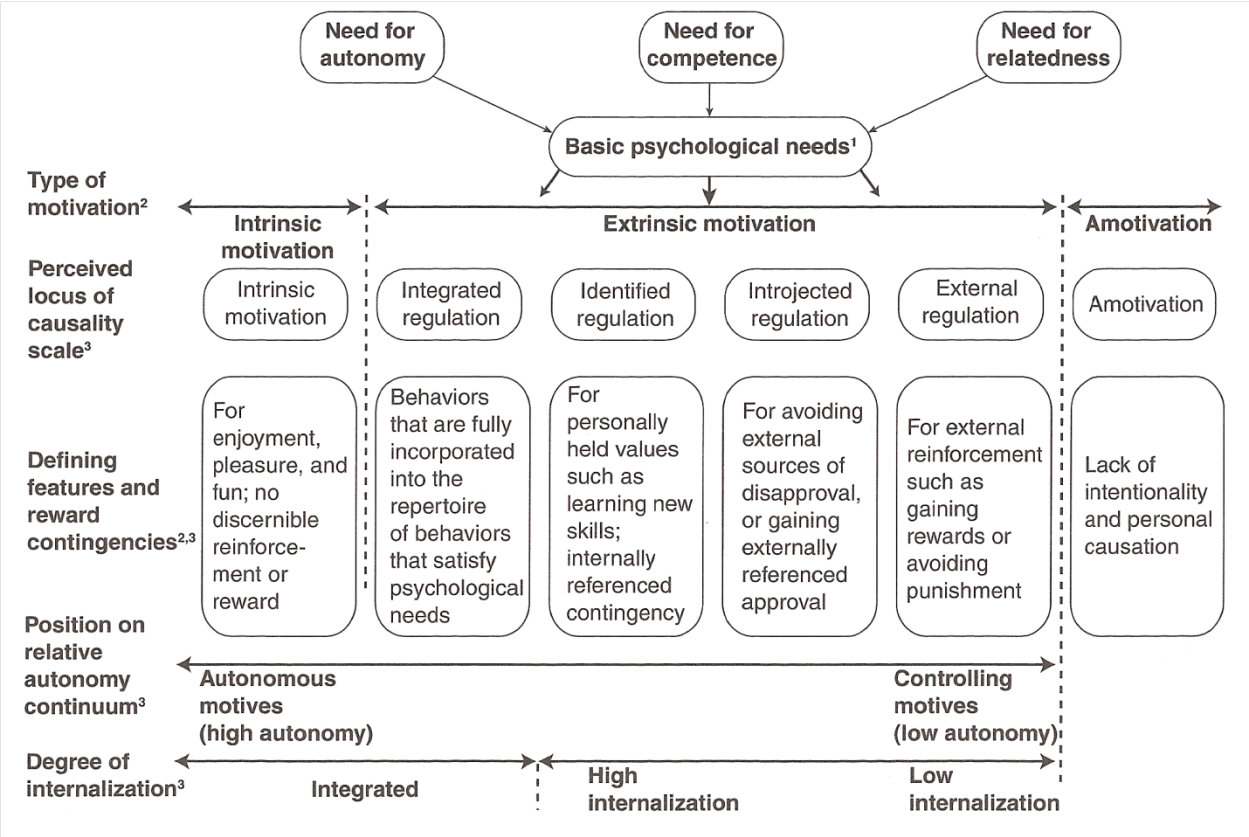

Figure 1.0 Schematic representation of self-determination theory. Reprinted, with permission, from R.M. Ryan and E.L. Deci, 2007, Active human nature: Self-determination theory and the promotion and maintenance of sport, exercise, and health. In Intrinsic motivation and self-determination in exercise and sport, edited by M.S. Hagger and N.L.D. Chatzisarantis (Champaign, IL: Human Kinetics), 8.

Amotivation. The description of amotivation is antagonistic to the essence of both extrinsic and intrinsic motivation. Motivation, whether intrinsic or extrinsic, deals with action; specifically, the various types are distinguished by whether action is driven from self-determined, autonomous motives or, in contrast, by external and controlled motives (Deci & Ryan, 2008a; 2008b; Ryan & Deci, 2000a; 2007). Amotivation, in comparison, is

not action-oriented; therefore, the “intention” to act is absent (Deci & Ryan, 2000; 2008a; Ryan & Deci, 2000a; 2000b; 2007). To put this concept into context, a dog owner who does not to walk his or her dog due to a lack of motivation, or who does so without intent, would be classified as amotivated toward dog walking (Ryan & Deci, 2000b). Theoretically, this would result in a lack of physical activity (or meaningful activity) for the owner, as well as for his or her dog.

Controlled forms of motivation. Moving up the continuum of self-determination, there is a shift from amotivation into the realm of action. Directly to the left of amotivation lie the different forms of extrinsic motivation. While extrinsic motivation is essentially characterized by executing an action for an outside outcome, the different subtypes range from what Deci and Ryan (2000a) deem “impoverished” motivation, to forms that frame the individual as an active entity. External and introjected regulations fall on the lower end of the extrinsic spectrum, resulting in more feelings of external control (Deci & Ryan, 2008a). There are, however, important differences between external and introjected regulation, despite the fact both are categorized as being precipitated by controlling motives. A significant distinction between these two forms of regulation is the level of internalization of each.

Internalization is a process, “through which an individual acquires an attitude, belief, or behavioral regulation and progressively transforms it into a personal value, goal, or organization” (Deci & Ryan, 1985, p. 130). Feelings of self-determination (force from within oneself) will increase, as an individual actively takes in a behavioral regulation and begins to assimilate the value within him- or herself (Deci & Ryan, 1985; 2000). Internalization, therefore, accounts for the process by which the varying forms of

extrinsic motivation move from being characterized by feelings of control from external forces, to actions that are valued and propelled from within (increases in autonomy) (Deci & Ryan, 2000). Essentially, it is this process that begins to explain the paradoxical occurrence of extrinsic motivation that is self-determined, because it is the taking in of a behavioural regulation that helps explicate the differing degrees of autonomy present in actions that are inherently influenced by exterior forces.

External regulation, which reflects the lowest embodiment of autonomous motives, is characterized by performing an action solely because of forces external to oneself (Ryan & Deci, 2000b). The behaviour or action is performed for specific reasons, unlike amotivation; however, an individual enacts a behaviour based on externally controlled motives, rather than from internal drive. These controlling motives include performance of an action to secure a reward or desirable outcome, or to avoid the negative repercussions incited when activity is not performed (Deci & Ryan, 2000). As a result, without the external influence, the performance of the specific behaviour may not be continued (Deci & Ryan, 1985). An older adult who exhibits external regulation towards dog walking may walk his or her dog to avoid the chance of their dog misbehaving due to lack of exercise, or because a friend or relative tells him or her they must do it. Introjected regulation is more internalized, yet still driven by non-autonomous forces.

Introjection occurs when an individual begins to internalize a regulation, yet her or she still perceives driven by external forces (Deci & Ryan, 2000; 2008a; Ryan & Deci, 2000b). Although the regulation of a behaviour has begun to emanate from an individual, he or she does not claim ownership of the regulation (Deci & Ryan, 2008a;

Ryan & Deci, 2000b). In other words, introjected regulation is still controlled because an individual acts as a result of contingencies; however, the application of consequences is self-controlled (Deci & Ryan, 2000). An older dog owner who walks his or her dog due to introjected regulation would do so to avoid the guilt experienced from not walking the dog. Behaviour that results from this form of regulation is not self-determined even though internalization has begun, because the behavioural regulation has not been incorporated into the self, which is described as, “swallowing regulations whole without digesting them” (Perls, 1973 in Deci & Ryan, 2000).

Autonomous forms of motivation. The degree of internalization differentiates the types of motivation directed by autonomous motives, by influencing the extent that a behavioural regulation has been taken in and integrated into the self. In contrast to the previously discussed controlled forms of extrinsic motivation, autonomous forms (including self-determined extrinsic motivation) have been internalized to the point that behavioural regulation begins to be congruent with the self (Deci & Ryan, 2000). The shift into the realm of self-determined behaviour occurs under identified regulations.

When an individual has identified regulation toward a specific behaviour, such as dog walking, he or she begins to recognize the significance of that behaviour (Ryan & Deci, 2000a). By identifying the value of a behaviour, the regulation is brought within an individual who now becomes responsible, resulting in more self-determined action, but it still remains extrinsically motivated to attain that valued outcome (Deci & Ryan, 2000; 2008a). An older adult who has identified regulation towards dog walking may walk his or her dog because he or she realizes that the associated physical activity is beneficial for health.

The most self-determined form of extrinsic motivation, integrated regulation, exhibits the highest level of internalization for extrinsic motivation, as the behaviour becomes integrated into an individual (Deci & Ryan, 2000; Ryan & Deci, 2000a). Integrated regulation is a result of an identified regulation becoming entirely incorporated into oneself (Deci & Ryan, 2000; 2008a; Ryan & Deci, 2000a). When this occurs, the individual recognizes the value of a behaviour and it subsequently becomes a part of his or her value system (Ryan & Deci, 2000a). Although this form of extrinsic motivation has many similarities to intrinsic motivation, it is still deemed extrinsic motivation because performing the behaviour leads to a separate, yet valued, outcome (Ryan & Deci, 2000a). In this situation, dog walking may be motivated because of the benefits attainable through physical activity, yet dog-walking behaviour is integrated within the individual and his or her values.

Intrinsically motivated behaviours, unlike the previously discussed forms of extrinsic motivation, are engaged in simply because of the enjoyment of performing the behaviour. Intrinsic motivation is situated at the far left of the continuum, in Figure 1, with the highest level of autonomous motives underlying the regulation of behaviours. Individuals perform intrinsically motivated behaviours simply out of the sheer pleasure, rather than to gain an external, valued outcome (Deci & Ryan, 2008a; Ryan & Deci, 2000a). An older adult who is intrinsically motivated to dog-walk does so because he or she finds it exhilarating and satisfying to walk with his or her dog. Highlighting and explaining the differences between the amotivation, the differentiated forms of extrinsic motivation, and intrinsic motivation is vital to provide a deeper comprehension of the underlying processes and regulations, while also emphasizing the importance of more

self-determined forms of motivation. Being more self-determined in our actions is associated with beneficial outcomes.

Why is self-determined motivation desirable? Highlighting and explaining the differences between the amotivation, the differentiated forms of extrinsic motivation, and intrinsic motivation is vital to provide a deeper comprehension of the underlying processes and regulations, while also emphasizing the importance of more self-determined forms of motivation. Being more self-determined in our actions is associated with beneficial outcomes. With the exception of amotivation, the above continuum of differing types of motivation depicts states that prompt action. Although the different types of regulations, associated with varying degrees of autonomy, propel an individual to act, the level of engagement in that behaviour and the subsequent maintenance is influenced by the extent to which it is self-determined (Stephan, Boiché, & Le Scanff, 2010). In other words, an individual is more likely to engage in and maintain a behaviour that he or she perceives to be enjoyable and interesting, than one performed to gain an external outcome (Kilpatrick, Hebert, & Jacobsen, 2002). The conceptualization of motivation within the SDT can help frame the discussion of the significance of self-determined motivation to the initiation and sustained participation of physical activity behaviour, such as dog-walking.

It seems intuitive, based on the previous theoretical discussion of the SDT, that an individual who is more self-determined toward physical activity is more likely to participate. Although the nature of sport is connected to more intrinsically related motives (Frederick & Ryan, 1993), evidence within the realm of physical activity and exercise also supports that more autonomous motives relate to greater participation.

For instance, Standage, Sebire, and Loney (2008) found, in a sample of 55 adults, that autonomous motives (intrinsic motivation and identified regulation) were positively related to and predicted moderate-intensity physical activity, while less autonomous motives (introjected and external regulation) were not significantly correlated with participation. In addition, Duncan, Hall, Wilson, and Jenny (2010) found that exercise frequency of males and females was predicted by integrated and identified regulations, while the duration of exercise was solely predicted by integrated regulation. Intensity of exercise, however, differed from frequency and intensity components of physical activity. Evidence illustrated that introjected regulation predicted intensity for females, while no significant predictors emerged for males (Duncan et al., 2010). Higher levels of motives linked to intrinsic motivation and self-determined extrinsic motivation have also been related to greater levels of physical activity in the older adult population (Dacey, Baltzell, & Zaichkowsky, 2008). These findings help to illuminate the importance of self-determined motivation in the manifestation of exercise and physical activity behaviour.

Although autonomous motives are pertinent to frequency, intensity, and duration of current participation in physical activity, self-determined motivation emerges as relevant to intention to be physically active, as well as maintenance of physical activity. Hall, Rodgers, Wilson, and Norman (2010) found that regular exercisers illustrated the lowest levels of amotivation and highest levels of self-determined forms of motivation (identified and intrinsic regulations). Another group, composed of individuals who did not exercise and did not intend to begin exercising, possessed the highest levels of amotivation and the lowest levels of identified motivation, but the same levels of intrinsic motivation as individuals who did not exercise but intended to begin exercising. Finally,

the group of individuals who did not exercise but had intentions to exercise showed values of amotivation and identified regulation that fell between those of the regular exercisers and non-intenders (Hall et al.). Similarly, older women participating in physical activity programs were more likely to continue in a program if they possessed higher levels of self-determined forms of motivation and lower levels of amotivation, than those women who discontinued participation (Stephan, Boiché, & Le Scanff), which has also been supported by evidence found in younger populations (Ryan, Frederick, Lepes, Rubio, & Sheldon, 1997). The amalgamation of the previous evidence supports the importance of self-determined forms of extrinsic motivation and intrinsic motivation in the adoption and continuation of physical activity behaviour. It is imperative, therefore, to identify and understand what promotes and enhances these forms of motivation.

How do we optimize self-determined motivation? Given the previous discussion depicting the beneficial influence of more self-determined forms of motivation (intrinsic and self-determined extrinsic motivation) on physical activity behaviours like dog-walking, devising approaches to enhance and support these forms of motivation would be advantageous. It is essential, then, to understand relevant variables of the SDT, in order to better comprehend factors integral to the development of these forms of motivation. The SDT outlines three basic psychological needs or “nutriments” (p. 7) that, when satisfied, are related to optimal functioning (Ryan & Deci, 2002). The need for competence denotes an individual’s feelings of capability and success in realizing the tasks to be undertaken (Ryan & Deci, 2002). The second need, autonomy, relates to an individual’s perception that a specified behavior originates from within oneself or, in

other words, an individual feels he or she is able to exert choice in relation to the performance of a behaviour (Deci & Ryan, 2000; Ryan & Deci, 2002). Finally, the need for relatedness refers to an individual's perception that he or she is related to and a part of a group; feelings that he or she can carry out meaningful relationships with others (Ryan & Deci, 2002). The satisfaction of these three psychological needs, by supportive environments, is outlined in various mini-theories to explicate their importance to processes such as intrinsic motivation and the internalization of extrinsic motivation (Deci & Ryan, 2000; Ryan, 1995; Ryan & Deci, 2000b; 2002).

Within the realm of physical activity and exercise, much of the preliminary research that investigated the role of basic need satisfaction focused solely on one of the three needs and utilized instruments initially developed for use in other areas of research (Wilson, Mack, & Grattan, 2008). In order to overcome these issues, two exercise-based needs inventories (see Vlachopoulos & Michailidou, 2006; Wilson, Rogers, Rodgers, & Wild, 2006) were developed in order to appropriately attend to each of the three basic psychological needs in a domain-specific format (Wilson, Mack, & Grattan). An early investigation evaluating the relationship between the three basic psychological needs and self-determined motivation within a group of adults (M age=41.75) revealed that competence and autonomy were weakly related to identified regulation, competence was moderately related to intrinsic motivation, while relatedness was not found to be significantly correlated with any of the regulation variables (Wilson, Rodgers, Blanchard, & Gessell, 2003). Similarly, research utilizing one of the developed inventories discerned that competence and autonomy were satisfied to a larger degree within an exercise-context than relatedness and that satisfaction of these needs

provided additional benefits to various measures of well-being (Wilson, Longely, Muon, Rodgers, & Murray, 2006; Wilson, Mack, Blanchard & Gray, 2009).

In another study focusing within the adult population, all three of the basic psychological needs were positively related to self-determined forms of motivation to a greater extent than in the previous studies and, while relatedness yielded slightly lower values, it was still moderately correlated with self-determined motivation (Wilson, Mack, Muon, & LeBlanc, 2007). Wilson and Rogers (2008) found similar significant results; however, relatedness was found to correlate significantly, yet weakly, to self-determined motivation. The results of the previous studies neglected to investigate the relevance of basic psychological need satisfaction in physical activity within other age groups, such as older adults. Kirkland, Karlin, Babkes Stellino, and Pulos (2011) addressed this gap by utilizing an older adult population. The instrumentation used to measure both basic psychological needs and behavioural regulations was different than the previous research discussed, but the results illustrated that older adults who exercise experience significantly higher levels of intrinsic motivation, self-determined extrinsic motivation, and nonself-determined extrinsic motivation, as well as higher levels of each basic psychological need (Kirkland et al.). In light of the connection between exercisers and higher levels of self-determined motivation, as well as higher levels of basic psychological needs satisfaction, this study helps to illustrate the relevance of all of the needs (including relatedness) to physical activity behaviours in older adulthood. Given the evidence that basic psychological needs are related to more self-determined forms of motivation and that self-determined motivation is associated with sustained physical

activity, it would be helpful to understand how these needs relate to the context of dog-walking.

Theoretical investigation using the SDT has established that individuals who are more self-determined are more likely to participate in physical activity. Determining if self-determined motivation differs between individuals who are regular dog-walkers, who meet the recommended levels of physical activity, and those who are infrequent dog walkers will help further understand dog-walking as a form of physical activity. In addition, preliminary exploration of how the interaction with a dog influences motivation of individuals who are regular dog walkers, will increase our knowledge of factors that facilitate forms of motivation that promote sustained activity. These findings are important because there remains a proportion of dog owners, young and old, who do not walk with their dogs (Christian, Giles-Corti, & Knuiman, 2010; Thorpe, Simonsick, et al., 2006); thus, intervention-type research would be a beneficial adjunct to the literature. Currently, there are a limited number of studies that employ intervention-type techniques; an observation supported by Reeves, Rafferty, Miller, and Lyon-Callo (2011). Therefore, initial theoretical investigation is imperative to provide a basis for future theoretically-informed interventions.

Purpose

The purpose of the study was to investigate the differences in types of motivation and measures of health between individuals who regularly walk their dogs and those who infrequently walk their dogs, as well as to determine which type(s) of motivation predict dog-walking behaviour, from a sample of dog owners who were aged 55 and older. Additionally, pilot interviews were conducted to explore factors, including the

basic psychological needs that influenced motivation to dog-walk in a sub-sample of regular dog-walkers.

Hypotheses

Based on the SDT, it was hypothesized that individuals who regularly walked their dogs would express higher levels of self-determined motivation than those who walked infrequently. Also, since 150-minutes of moderate intensity physical activity is recommended for health benefits, it was hypothesized that regular dog-walkers would have better health, as measured by the SF-36v2.

Method

Participants and Sampling Techniques

A sample of 94 adults, aged 55 and older, were recruited, after gaining ethical approval from Lakehead University's Research Ethics Board. In addition to the age criterion, participants owned one or more dogs. The owner must have owned the dog(s) for a minimum of 8 months, so measures of dog-walking behaviour were more stable and included behaviour during both temperate and winter conditions. To be included in the study, individuals had to be able to ambulate independently, which included those who were able to walk without assistance from another person or those who were able to walk with an assistive device (e.g., cane or walker).

Purposive sampling techniques were used to recruit participants. The population possessed predefined attributes that were integral to answering the research question, so this method of sampling was necessary in order to include participants who exhibited these characteristics (Trochim, 2005). Once participants were recruited, snowball sampling was used to allow individuals the opportunity to recommend other potential participants whom they believed possessed the inclusion criteria (Trochim).

Recruitment of participants occurred in locations frequented by individuals who possessed key characteristics of the study. Consideration was given to a variety of areas, including those accessed by the general public, as well individuals that fit the inclusion criteria. It was necessary to include areas visited by all dog owners, not only those who walk their dogs. These locations included settings that accessed dog owners such as a few veterinary offices, dog training facilities, dog parks, various dog sport competitions, and a pet store in Thunder Bay. Settings frequented by individuals aged

55 and older, such as the Thunder Bay 55+ Centre, a physiotherapist, and the Canada Games Complex, were also included. Finally, other more general locations included the C.J. Sander's Fieldhouse, a health and well-being fair held at the 55 + Centre, a few local vendors, and the Great Canadian Superstore. Also, notices were placed in the Thunder Bay Seniors Newspaper and Communications Bulletin at Lakehead University and posters were given to various employees of the Thunder Bay District Health Unit (see Appendix A to see the recruitment poster). Finally, contacts the researcher had in the community were able to recommend potential participants.

Prior to entering the specified locations for recruitment, individuals responsible for granting entrance into the facilities were contacted. These individuals were supplied with a letter asking for permission and outlining key characteristics of the study (see Appendix B). They were also asked if they wanted to view the materials used in the study, including the poster used during the recruiting process. Depending on the arrangement with each facility, the researcher recruited participants at a table set up at the facility or by walking around the facility. If the researcher was not able to be present within facility, the location was provided with posters to display, directing interested individuals to contact the researcher.

Design of the Study

The study employed a mixed methods design and, more specifically, a sequential explanatory strategy (Creswell, 2003). Mixed methods is an approach to research that incorporates both qualitative and quantitative methods in order to answer a research question (Creswell). The sequential explanatory strategy is utilized when the quantitative phase is completed prior to the qualitative phase. After the quantitative data

were collected and preliminary analysis were completed, qualitative interviews helped expand on the findings of the quantitative data (Creswell).

Quantitative data enabled the researcher to examine the differences in motivation and health between individuals who regularly walked their dogs and those who infrequently walked their dogs. These data also suggested which type of motivation best predicted dog-walking behaviour, while the qualitative data allowed for preliminary exploration of the basic psychological needs in the context of dog-walking. Based on the Self-Determination Theory, regular dog-walkers should have higher levels of intrinsic and self-determined extrinsic motivation than those who dog-walk infrequently. An activity that is valued or enjoyable is more likely to engage an individual in regular activity than one that is motivated from external sources, such as guilt or rewards. Since the basic psychological needs were proposed to support intrinsic motivation or the internalization of extrinsic motivation, the qualitative phase of the study explored whether regular dog-walkers expressed that these needs were satisfied. The qualitative approach was a beneficial addition to the quantitative measures, since it allowed the researcher to ask more directive questions regarding the needs, but provided a thicker description than a questionnaire. The nine participants shared their thoughts and feelings about why they were motivated to dog-walk, which allowed the researcher to learn from the experiences of her participants.

Although the quantitative data were collected prior to the qualitative, collection of the quantitative data from every participant was not necessary for the study to move forward into the qualitative phase. Approximately 40 participants returned the participant package and initial analysis of dog-walking behaviour was conducted. A subsample of

nine participants, who were classified as regular dog-walkers, were invited to complete the qualitative phase as a result of this analysis. The interviews occurred at the same time as the collection of the remaining quantitative data.

Procedure

Phase one: quantitative. Two separate phases were completed for the study. Phase one focused on collecting the quantitative data. These data provided a description of dog-owners aged 55 and older, helped determine if different forms of motivation, as well as a measure of health, differed between regular and infrequent dog-walkers, and provided basic information about dog-walking behaviour in order to proceed into Phase 2 (qualitative inquiry). Phase one began following ethical approval from Lakehead University's Research Ethics Board. Recruitment in the above specified locations occurred. In situations where recruitment tables were used, individuals were provided with the information letter and consent form. Prior to inclusion in the study, participants read the information letter and provided consent to participate in the study with a signature. Once consent was gained, the instrumentation package consisting of the demographic questionnaire, BREQ-2, SF-36v2, and dog-walking and physical activity inventory were completed (questionnaires will be discussed in further detail in the instrumentation section). If a participant did not have time to complete the questionnaires, consent was collected and materials were given to the participant in a stamped envelope, addressed to the researcher.

When advertisements were used in various locations or in the media sources, participants contacted the researcher and organized a convenient place and time to meet. At this meeting, the information letter and consent were given, followed by the

instrumentation package (once informed consent was provided). Lastly, in locations that the questionnaires could not be easily completed, such as dog parks, interested individuals signed the consent form and then were provided with the instrumentation package in a stamped envelope and addressed to the researcher. Finally, once quantitative data were collected from approximately 40 participants, preliminary analysis of the dog-walking behaviour occurred, which helped identify regular dog-walkers to be contacted for participation in phase two of the study.

Phase two: qualitative. After participants completed the quantitative portion of the study, nine of the participants who met the definition of a regular dog-walker (>150 minutes/week) and had agreed to participate in a follow-up interviews by providing contact information on their consent form, were contacted. Once individuals were contacted, those who chose to move forward with the interview provided the researcher with a convenient place and time for the interview to be conducted. The researcher also suggested the interview room located in the School of Kinesiology at Lakehead University, if the participant indicated he or she wanted to meet the researcher at the school. Interviews were conducted at the participants' homes or the interview room. The day of the interview, the researcher reviewed the purpose of the interview with the participant, provided an information letter and consent for phase 2, addressed any questions or concerns, and proceeded with a semi-structured interview. The questions developed were designed to provide a better understanding of factors like the basic psychological needs that influenced regular dog-walkers' motivation to walk. The interview process took approximately 30 to 60 minutes. The interview protocol was used to collect participant information and record field notes. Interviews were documented

using an audiotape recorder, to allow for later transcription and analysis. At the completion of the interview, participants were thanked and were asked if the researcher could contact them if there were any further questions. The researcher transcribed the dialogue from the interview and the transcribed information was preliminarily coded and analyzed in relation to the basic psychological needs.

Instrumentation

After recruitment occurred for phase one and interested individuals provided informed consent (see Appendices C & D for phase one and E & F for phase two), an instrumentation package, used in phase one, was given to each participant. The package included four questionnaires (see G through K) to collect quantitative data: 1) the Behavioural Regulations in Exercise Questionnaire-2 (BREQ-2), adapted for dog-walking, to measure behavioural regulations for dog-walking behaviour, 2) a questionnaire to collect information about dog-walking practice, 3) the SF-36v2, a measure of health and well-being, and 4) a questionnaire to collect demographic information from the participant (including information about his/her dog). The researcher used an interview protocol in the second phase of the study, not included in the participant package, to guide the interview.

Behavioural regulations in exercise questionnaire-2. The Behavioural Regulations in Exercise Questionnaire-2 (BREQ-2) was used to measure participants' behavioural regulations toward dog-walking. The BREQ-2 questionnaire is an extension of the BREQ, which was developed to measure behavioural regulations, based on the continuum proposed by Deci and Ryan (Mullan, Markland, & Ingledew, 1997). The BREQ-2, similar to the BREQ, includes intrinsic, identified, introjected, and external

regulation subscales, with the addition of a subscale to measure amotivation. Questions are based on a five-point Likert scale ranging from 0, 'Not true for me', to 4, 'Very true for me'. In addition to the five subscales included in the BREQ-2, a scale of integrated motivation was added to the questionnaire based on development by Wilson, Rodgers, Loitz, and Scime (2006). The integrated subscale was based on inclusion within the BREQ, but the author of the scale confirmed it was acceptable to include it in the BREQ-2 (D. Markland, personal communication, December 12, 2011). The BREQ-2 was established to have strong factorial validity and reliability (Cronbach's alpha values ranging from .72 to .86); therefore, this measure could be used to collect information regarding behavioural regulations (Markland & Tobin, 2004). The BREQ-2 was modified to reflect the target behaviour of this study; dog-walking (see Appendix G). The phrase 'walk my dog' or 'dog-walking' were substituted for exercise, in order to evaluate behavioural regulations specific to dog-walking.

Dog-walking and physical activity behaviour inventory. In order to measure the dog-walking behaviour of older adult dog owners, questions focused on establishing the frequency of dog-walking in an average week, as well as the average duration of these walks. These two measures were used to calculate an average of weekly dog-walking activity. Dog-walking behaviour was collected based on two periods: more temperate conditions of the summer, as well as more extreme weather associated with the winter. Finally, participants were asked to choose the intensity of their dog-walks for both the summer and the winter.

The researcher looked at a variety of physical activity measures when determining how to collect dog-walking behaviour. Although the Dogs and Physical

Activity tool (Cutt, Giles-Corti, Knuiman, & Pikora, 208) collects a measure of dog-walking behaviour, it was developed in Australia and some areas addressed by the tool did not appear to applicable to this Canadian sample or support the objectives of this study. In addition, elements of the Godin Leisure Time Exercise Questionnaire were considered, however the researcher wanted to collect seasonal dog-walking information, as well as a measure of duration, which were not addressed in the GLTEQ (Godin & Sheppard, 1997). The researcher considered aspects of validated questionnaires, but ultimately included information to reflect the parameters that were relevant the population in question. An example of the inventory can be found in Appendix H.

SF-36v2. The SF-36v2 was used as a measure of health and well-being. The survey includes eight domains that encompass aspects of physiological and mental health. Ware (2000) provided an overview of the updates to the SF-36v2 from version one, as well an overview of the psychometric properties. The SF-36 has been widely used and Ware noted that good levels of reliability and content, construct, criterion, concurrent and predictive validities have been demonstrated. The domains, scored by the software provided by Quality Metric, utilized in this study included Physical Functioning, Role-Physical, Bodily-Pain, General Health, Vitality, Social Functioning, Role-Emotional, and Mental Health. The Physical Functioning scale is composed of ten items to determine individuals' limitations on various activities, including self-care. The Role-Physical scale includes four items to assess role limitations due to physical health. The Bodily-Pain scale has two items regarding extent of bodily pain and how this impacts activities. The General Health scale contains five items regarding general

health and health expectations. The Vitality includes four items about feelings of well-being, in terms of degree of tiredness or energy. The Social Functioning measure poses two questions regarding social activities and influence of health on social activities. The Role-Emotional includes three items regarding role limitations influenced by mental health. Finally, the Mental Health scale is composed of five items regarding mental health (Ware et al., 2008) (see Appendix I).

Demographic information. Demographic information was collected utilizing a questionnaire compiled by the researcher. Information collected included basic demographic details such as gender, age, education, profession, as well as factors such as housing situation and location, and self-rated health and mobility. In addition, details about the participants' dogs were collected. These questions gathered information such as the dog's age, size, and health. To see the questionnaire, refer to Appendix J.

Interview protocol. The interview protocol, developed by the researcher, guided the semi-structured interviews. Questions asked participants to reflect on how a dog or the context of dog-walking influences his/her motivation to walk. More specifically, participants were asked if they walked alone or with other people, whether dog-walking gave them a sense of satisfaction or accomplishment, and if they felt dog-walking was a valuable activity. These questions were focused on the basic psychological needs, but the interview explored other ideas related to the basic psychological needs, which emerged during conversation. More specifically, individuals were asked if dog-walking was a valuable activity, to explore whether it was an activity that was important. Enjoyment and importance of an activity are connected to feelings of autonomy. Also, individuals were asked if they walked with other people, to explore relatedness. Finally,

competence was explored when individuals were asked whether dog-walking gave them a sense that they were successful or had accomplished something. Although these were more directive, ideas that related to each theme emerged throughout the interview. To see the interview protocol, refer to Appendix K.

Data Analysis

Data analysis was conducted for both the quantitative and qualitative phases and subsequently interpreted in unison. The information gathered from qualitative interviews added further to understanding the influence of dogs on individuals' motivation to dog-walk.

Quantitative. The quantitative data analysis was conducted using Statistical Package for Social Sciences 18.0 and was first analyzed using descriptive and frequency functions. After the sample was described based on the demographic information collected, dog-walking behaviour was determined. An index of dog-walking behaviour was calculated by summing the daily duration of dog-walking sessions provided in an average week in the winter and spring/summer periods. An average of these two indices then categorized individuals as regular dog-walkers (>150 minutes/week) or infrequent dog-walkers (<120 minutes/week). Although there were participants who accumulated between 120 and 150 minutes of dog-walking in an average week, the groups were differentiated within these parameters to allow for sufficient distinction between those who walked regularly and those who did not dog-walk or did so less frequently. In addition, Cronbach's alpha values were calculated for each of the BREQ-2 subscales, in order to establish internal consistency of the scale.

Next, a paired-samples *t*-test was used to determine if dog-walking behaviour differed from the summer to winter months. In addition, a series of independent *t*-tests were conducted to determine if regular dog-walkers differed significantly in terms of types of motivation and health and well-being (domains of SF-36v2). If the data did not meet the assumptions of the independent samples *t*-test, determined by the Levene's test, Mann-Whitney *U* tests were used as a non-parametric alternative. Finally, a backwards regression was conducted to determine if any of the types of motivation significantly predicted dog-walking behaviour. All of the tests were interpreted using the Bonferroni adjustment, to control for increased chance of type I error. Statistical significance for each test was determined at the $p < .002$ level (two-tailed significance), since the Bonferroni adjustment divides the alpha-level by the number of tests conducted (.05/21) (Vincent, 2005).

Qualitative. Information collected from semi-structured, open-ended qualitative interviews underwent preliminary thematic analysis. Braun and Clarke (2006) described the benefits of this approach and an overview as to how to implement this type of analysis. Essentially, important, reoccurring ideas were determined, through the process of getting to know the data, coding the data, and initially developing, describing, and reviewing these themes (Braun & Clarke). The three basic psychological needs were utilized as sensitizing concepts during the interview process, as well as data analysis. Sensitizing concepts guided the researcher during the interviews and acted as a jumping off point to suggest routes to explore (Blumer, 1954). During the interview, the researcher was sensitized to paths that explored the basic psychological needs as supportive of motivation to dog-walk, but she was also open to exploring ideas and

thoughts that the participants believed were important to supporting their motivation to dog-walk. The use of the basic psychological needs as sensitizing concepts also occurred during analysis, as the researcher was approaching the study through the lens of the Self-Determination Theory (Charmaz, 2003). Themes developed focused on the basic psychological needs, although further analysis beyond the scope of the pilot is possible for future investigation. The more directive questions helped explore the basic psychological needs in the context of dog-walking, but other ideas that were related to the needs emerged during conversation, which added to the information gained from the directive questions. During the analysis, the researcher went through the interview transcripts and coded data based on the basic psychological needs, which subsequently helped support the themes.

Results

Sample Characteristics

The sample consisted of 94 older dog owners comprised of 65 females and 25 males (four individuals did not indicate their gender). In addition, 34% of participants were categorized into the 60 to 64 years of age range, making it the largest age group in the sample. Figure 2 provides an overview of the age distribution of the sample.

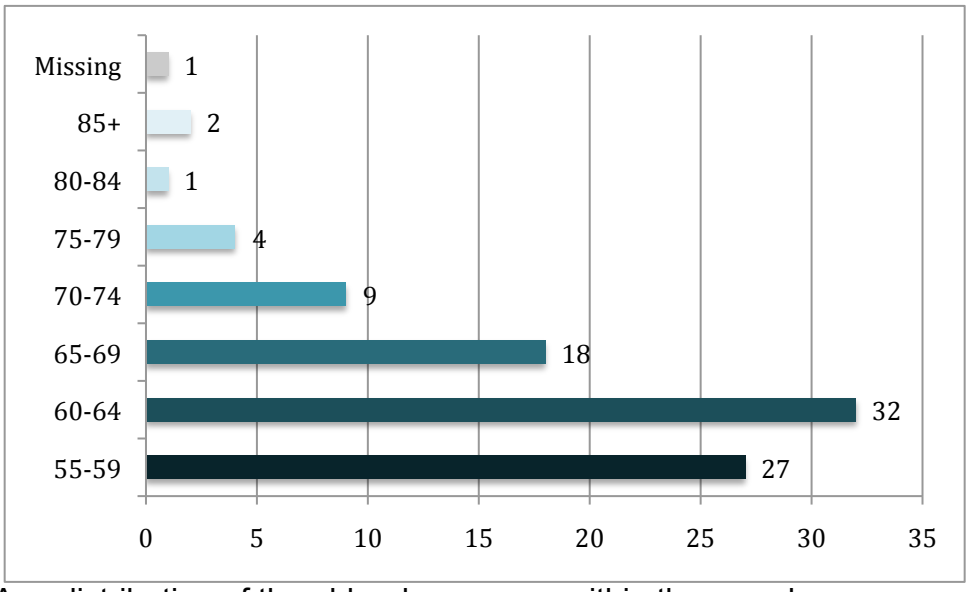

Figure 2. Age distribution of the older dog owners within the sample.

As Figure 2 illustrates, the majority of participants reported ages that fell within the 55-69 age range (approximately 82% of the sample). Additionally, 70% of the sample reported education at the college or trade/vocational school level or higher, with 33% who reported a graduate or professional degree. The vast majority of participants lived in detached homes (90.4%), while only 6.4% of the sample lived in a townhouse and 1.1% in assisted living. Urban locations were most frequently reported and only 18 participants lived in rural areas. Finally, a large proportion of the sample reported being

married. Almost three-quarters (71%) of the sample were married, while the remaining participants reported being separated/divorced, widowed, single, or common-law.

Internal Consistency of the BREQ-2

Cronbach's alpha was computed to determine internal consistency of each of the subscales. It was necessary to analyze the internal consistency of the BREQ-2, since it was adapted for dog-walking. Table 1 illustrates the various subscales and the associated α values. The alpha values listed in Table 1, with the exception of the introjected subscale, were above .7; and thus, had acceptable levels of internal consistency (George & Mallery, 2003). Although the introjected subscale was slightly lower than the .7, a reliability coefficient of .6 may be appropriate, when scales have less than ten items (Loewenthal, 2001). The introjected subscale has only three items and a low number of items can make it more difficult to reach higher reliability coefficients (Loewenthal).

Table 1
Cronbach's α Values for BREQ-2 Subscale

BREQ-2 Subscale	Cronbach's α
Amotivation	.791
External Regulation	.765
Introjected	.602
Identified	.754
Integrated	.892
Intrinsic	.909

The results from this analysis show that, in general, the BREQ-2 had appropriate internal consistency within a sample of dog owners.

Dog and Dog Ownership Characteristics

Participants within the sample (n=92) reported ownership of between 1 and 5 dogs (*M*=1.46; *SD*=.942). The average age of the first dog reported was 7.6 years

(*SD*=4.2), while the second dog reported (in 23 cases) had a mean age of 5.1 years (*SD*=4.1). Ten participants owned a third dog, with an average age of 5.4 (*SD*=2.9), while six individuals had a fourth dog, whose mean age was 5.2 (*SD*=4.26). One participant reported having 5 dogs, but information was not collected about this dog.

Table 2 illustrates owners' perceptions of their dogs' sizes. Owners most frequently reported owning a medium sized dog, while small dogs were the second most frequently reported. To illustrate the sizes of dogs owned by the sample, frequency information is provided in Table 2 below.

Table 2
Reported Frequencies of Dog Size for First Through Fourth Dogs

Size of Dog	**Dog**				**Total Number of Each Size**
	First	Second	Third	Fourth	
Small	30	10	3	2	45
Medium	40	8	5	1	54
Large	21	5	3	2	31
Extra Large	1	0	0	1	2
	92	23	11	6	**132**

Table 3 provides owners' perceptions of their dogs' health and mobility. The table reveals that the majority of dogs owned within the sample were perceived to have excellent or very good health and mobility. Dogs were widely perceived to be healthy and mobile, while few owners perceived their dogs to be unhealthy and have difficulties with mobility. In general, the reported frequencies were similar between health and mobility. Table 3 illustrates information regarding the reported health of the dogs.

Table 3
Reported Frequencies of Health and Mobility of Dogs for First Through Fourth Dogs

Reported Health	Dog								Total	
	First		Second		Third		Fourth			
	Health	Mobility	Health	Mobility	Health	Mobility	Health	Mobility	Health	Mobility
Excellent	45	55	18	17	6	8	4	4	73	84
Very Good	32	20	1	3	5	3	1	2	39	28
Good	5	8	1	2	0	0	1	0	7	10
Fair	6	6	2	0	0	0	0	0	8	6
Poor	4	3	1	1	0	0	0	0	5	4
	92	92	23	23	11	11	6	6	132	132

Seasonal Differences in Dog-Walking

The vast majority of dog owners reported some dog-walking (88%). Dog owners walked an average of 5.2 days in a typical week during the warmer months (*SD*=2.47), while they walked an average of 4.8 days in a typical week in the winter months. A paired samples *t*-test revealed that the average number of days walked during the warmer months was not significantly greater than the number of days walked in the cooler months ($t_{(90)}$=1.94, p>.002).

In addition, dog owners walked an average of approximately 247 (*SD*=176.75) minutes during a typical week in the more temperate months. The time spent dog-walking during a typical week in the winter months was significantly lower, with an average of 186 minutes (*SD*=142.22) ($t_{(92)}$=4.906, p<.002). Both of these values were higher than the recommended level of physical activity, however, there was a large variability in the values.

Approximately 51% of the sample who dog-walked indicated that they did so at a moderate intensity during the winter months. Almost 32% reported dog-walking at a mild intensity, while 7.4% dog-walked at a vigorous pace (a remaining 9.6% did not report

intensity, including those who do not walk their dog(s)). Intensity was similar in the summer; 53% dog-walked at a moderate pace, while 26.6% reported a mild intensity and 6.4 reported a vigorous intensity. Again, 10% of participants did not report intensity for the summer months, which included the individuals who did not report any dog-walking activity.

Differences Between Infrequent and Regular Dog-Walkers

In order to examine differences between individuals who do not walk or infrequently walk their dogs and those who regularly walk their dogs (those who meet the recommended levels of physical activity through dog-walking), individuals who walked less than 120 minutes a week were categorized as 'infrequent dog-walkers' (n=27), while individuals who walked more than 150 minutes a week were categorized as 'regular dog-walkers' (n=55). The categorization was based on the mean of the total number of minutes individuals walked during the winter and more temperate months combined. Further investigation with descriptive statistics revealed that regular dog-walkers walked an average of 6.6 days per week in the summer and 6.3 days per week in the winter. In contrast, infrequent dog-walkers walked an average of 2.6 days per week in the summer and 1.8 days per week in the winter. These results further support the need to examine group differences.

Differences in health and well-being. To examine if measures of health and well-being differed between individuals who walked their dogs regularly and those who did not, a series of independent samples *t*-tests were employed. In cases where the homogeneity of variance assumption was not met for the *t*-test, Mann-Whitney *U* tests were used. Regular dog-walkers had significantly better scores on the physical

functioning and general health domains at the $p<.05$ level; however, the difference was no longer significant once the Bonferroni correction was applied. A Mann-Whitney *U* test revealed that regular dog-walkers had significantly higher scores on the role-physical domain, but similar to the general health and physical functioning domains, the difference are no longer significant after the Bonferroni correction. Table 4 summarizes the results of the tests.

Table 4
Summary of Results from t-tests Comparing Regular and Infrequent Dog-Walkers on the Eight Domains of the SF-36v2.

SF-36v2 Domain	**Dog-Walkers**				**Result**	
	Regular		Infrequent			
	$\bar{x}$(SD)	n	$\bar{x}$(SD)	n	*t/U˜*	*p*
Role-Physical	87.04(20.31)	54	71.76(30.29)	27	462.50˜	.005*
General Health	75.71(14.12)	55	67.35(18.47)	27	2.270	.026*
Physical Functioning	84.20(19.23)	55	73.26(23.96)	27	2.229	.029*
Bodily Pain	73.00(19.85)	55	62.65(29.67)	26	-1.878	.064
Vitality	67.50(17.86)	55	61.30(18.37)	26	-1.446	.152
Social Functioning	93.40(14.99)	55	87.98(21.93)	26	-1.304	.196
Role-Emotional	91.21(17.30)	55	85.80(22.39)	27	-1.205	.232
Mental Health	81.72(12.22)	55	80.00(15.75)	26	-0.540	.591

*Note. S*cores on the SF-36v2 domains could range from 0 to 100.
**p<.05*

Table 4 also highlights that there were no significant differences (at the $p<.05$ or $p<.002$ level) between regular dogs-walkers and infrequent dog-walkers on the bodily pain, vitality, social functioning, role-emotional, and mental health domains.

Differences in motivation. To examine if regular dog-walkers and infrequent dog-walkers differed on types of motivation, independent *t*-tests were conducted. Again,

when the homogeneity of variance assumption was not met, Mann-Whitney *U* statistics were calculated. The results revealed that regular dog-walkers had significantly higher levels of intrinsic motivation than infrequent dog-walkers. Regular dog-walkers also obtained higher levels of integrated and identified regulation, as well as lower levels of amotivation than infrequent dog-walkers. Table 5 displays the results of the tests.

Table 5
Summary of Results from t-tests Comparing Regular and Infrequent Dog-Walkers on the Six Types of Motivation from the BREQ-2.

Type of Motivation	**Dog-Walkers**		**Result**	
	Regular[a] $\bar{x}$(SD)	Infrequent[b] $\bar{x}$(SD)	*t/U˜*	*p*
Intrinsic	3.641(.495)	2.907(.981)	355.50˜	.000**
Integrated	2.791(1.122)	1.66(1.323)	-4.050	.000**
Identified	3.505(.574)	2.29(1.025)	186.00˜	.000**
Amotivation	.032(.137)	.380(.789)	530.50˜	.001**
Introjected	1.594(.959)	1.198(1.03)	-1.713	.091
External Regulation	.250(.525)	.296(.495)	.382	.703

Note. Possible range for scores on all subscales, except introjected, was 0 to 4. The introjected subscale could range from 0 to 3.
[a]n=55. [b]n=27.
*p<.05. **p<.002

Table 5 also illustrates that regular dog-walkers and infrequent dog-walkers did not differ on levels of external and introjected regulation. Overall, individuals who reported walking their dogs regularly had higher levels of self-determined motivation and lower levels of amotivation than those who infrequently walked.

Predicting Dog-Walking Behaviour

To examine what types of motivation might predict dog-walking behaviour, a backwards regression was conducted. Each type of motivation was entered into the regression; however, only identified regulation was a significant predictor of dog walking behaviour. The final regression model indicated that 22% of the variance in dog-walking behaviour was explained by identified regulation (R^2=.220, $F_{(1,89)}$=25.133, p<.002).

Qualitative Responses

To supplement the quantitative results, a preliminary investigation of factors that facilitate motivation was conducted. To focus the analysis, the basic psychological needs were treated as sensitizing concepts.

Autonomy. To feel autonomous, individuals must feel that they are able to exert choice in relation to the performance of a behaviour or that the decision to engage in an activity is derived from within (Deci & Ryan, 2000; Ryan & Deci, 2002). In other words, individuals who value and enjoy an activity are more likely to have higher levels of autonomy, since they would engage in this activity as a result of their own accord. After analyzing transcripts, it appears that regular dog-walkers felt a sense of autonomy in dog-walking behaviour. Individuals appreciated the benefits associated with dog-walking and felt it was a valuable activity, which they enjoyed participating in. Below are selections that highlight participants' thoughts that indicate autonomy.

> "It's something I enjoy doing- walking. And it's nice to have a furry guy beside you."- P4

> "Oh sure. Absolutely. It gives you quality time with your pet. You know one on one time with your pet (although she does run off on us). She goes and does her own exploring and then we do our own exploring…"-P1

> "I guess if I think of comparing with a dog to walking without a dog, I much prefer walking with a dog...It's just an enjoyable event that I partake in whenever it's necessary, whenever it's desired. "-P2

> "Yeah I would say it's probably good for everybody. Good for the dog, good for you."-P6

> "It fits my lifestyle, my personal lifestyle, it fits with my works schedule. But certainly it's a way to, you know those mornings when the alarm goes off and you really don't feel like getting up, it's just that one more motivating factor to- okay just get up, you know?"-P3

> "I walk for the pleasure- we walk (I think I can say we there) we walk for the pleasure of walking with them. It's really pleasant to, especially to do a neighbourhood walk or to get out to the bush walking. To the extent that we are able to walk together it's a really nice social time for us, as well in terms of the relationship, it's a really good thing."-P7

> "Well he's such a character for start and I love walking myself, so it's an excuse for me to get out. He pushes me to go out walking. I see things that I perhaps might not see if I was not with him. And he's a real pleasure to be around. Yeah it's a really enjoyable experience."-P5

Competence. To feel competent, individuals need to feel that they are capable and successful in realizing the tasks they do (Ryan & Deci, 2002) or, in other words, there is some sort of positive feedback from participating in an activity. Quotations from participants reflect that dog-walking does, in some cases, make individuals feel that they have achieved something. Also, most of the participants discussed how it was their role as an owner to walk their dog(s) and it was evident that they felt their dog(s) enjoyed and needed this activity, regardless of season. The following quotations are some examples of competence within the context of dog-walking.

> "I suppose in a way it does because I've gone out and I've walked the dog. I mean I could have easily said no were not going. So I've gotten off my butt and I've actually walked and gone out. Yeah I guess there is a sense of accomplishment there- you know, I've done something."-P1

> "Cause in one way, yeah successful because it's a goal you set. You got this dog and you know you've got to take it for walks; it's part of the operating cost of having a dog. So yeah, you take your dog and you know you have to so that I guess is successful because you've achieved what you wanted to."-P2

> "There's a sense of pleasure when you've done that golf course when it's minus 25- not pleasure, achievement. There's no pleasure at minus 25 with a wind chill. So a sense of achievement when I've gone all the way around and got back. And he comes in here and he's pumped. You know, we've had a good walk- I'm pleased we have done it."-P5

> "There's a feeling of accomplishment in everything you do. Every different thing that you do with your dog. Every bit of communication you have with your dog. It's an alien species that you are relating to. That's satisfying!"-P7

Relatedness. Finally, relatedness makes individuals feel that they are a part of a group or that they have meaningful relationships with others (Ryan & Deci, 2002). The group of regular dog-walkers interviewed portrayed feelings of relatedness to their dogs, to their friends, to their significant other, and to informal contacts in the community. Although each participant relayed different examples of connection to his or her dog, spouse, friends, and community, it was evident that owners felt companionship with his or her dog during and outside of dog-walking and that dog-walking brought them into contact with others. The following quotations provide examples of relatedness.

> "…pets give you a purpose, maybe for life. If you're alone, if you're lonely, if you're depressed. I went through really bad depression; it was just unbelievable and she was always right there. The dogs were always right there. You know, 'come on mom it's not that bad'."-P1

> "With a dog you have a companion with you almost, you know. She's, in my case, she's a very loyal dog and she listens. Yeah it's just having a companion- it's almost as if you're not doing it on your own. And it's always nicer to do things with a companion and she is."-P2

> "And then my dog is my companion so I feel like I'm spending time with my dog. I feel very guilty if I got up in the morning and then went out, like came to work, and didn't have that time with him."-P3

“It’s actually a perfect fit because I don’t do that strenuous stuff anymore so it’s something. It’s a little bit of exercise. I would do it anyway, but it’s nicer to have someone on the leash.”-P4

“Can’t help [interacting with other people] when you’ve got a dog (laughs). Oh yeah. A lot of the people I know, you see the same people all the time that are out there, you know.”-P6

“So it’s actually been, in an interesting way, a way of integrating into the neighbourhood. We don’t necessarily know each other’s names but we know all the dogs’ names. So it’s also a positive social thing in terms of the connection to the community or the neighbourhood.”-P8

Discussion

Characteristics of Older Dog Owners

The results from this study add to current literature examining dog-walking in older cohorts. The majority of the sample was female, which is similar to research in other samples of dog owners (Hoerster et al., 2011; Reeves et al, 2011). Many of the participants fell between 55 and 69 years of age, despite efforts to recruit a more diverse sample of individuals aged 55 and older. It is possible that, perhaps even to a small degree, housing restrictions influenced recruitment of individuals 70 and older, due to possible downsizing of housing or needs that require extra assistance. Additionally, discussion with individuals during data collection suggested that some individuals did not want to acquire another dog due to advancing age. Many previous dog owners explained that they did not want to own another dog because they were concerned that they would not be able to care for a dog as they aged or were worried that they may pass away. Individuals were concerned about what would happen to their dogs in these two situations.

Approximately 70% of participants had achieved a college or trade school education or higher. Similar results were found in studies conducted in California, Michigan, and Japan. The first study noted that 50% of a sample of dog owners were educated at the college level or possessed an advanced degree, while an additional 38.4% had completed some college (Hoerster et al., 2011). Results from a sample of dog owners in Michigan found that almost 67% of dog-walkers and 53% of dog owners who did not walk had completed some college or were college graduates (Reeves et al., 2011), while data from the study in Japan illustrated approximately 70% of their sample

of dog owners had obtained 2 years of college or equivalent or were college graduates or greater (Oka & Shibata, 2009). In addition, the vast majority of the participants (approximately 90%) lived in a detached home, consistent with another study that found that approximately 80% of dog owners lived in a single-family dwelling (owned or rented). It was evident from the results that a large proportion of the participants were from a higher socioeconomic status. Although it is difficult to discern how education and dog ownership interact, it is possible that these individuals, who appear to be at a higher socioeconomic status, have more disposable income, time, and amenities that would facilitate dog ownership. For example, the high percentage of older dog owners who lived in detached homes may be attributed to the space required to enable dog ownership. On the other hand, it is possible that this large percentage of home owners reflected the restrictions on dog ownership in various apartment and assisted living facilities, which was supported by anecdotal evidence suggesting that these restrictions could be a barrier to dog ownership into older adulthood. Although it is not clear exactly how the above factors interact with dog ownership in older adulthood and further investigation could examine these features more carefully, the demographic results helped paint of picture of this sample of dog owners and how they compared to others from previous studies. To understand dog-walking behaviour within this sample, and due to the climate in Northwestern Ontario, analysis of seasonal dog-walking activity was conducted.

Dog-Walking Behaviour in Older Adulthood

Dog-walking activity appeared relatively stable in terms of the number of days walked each week. In the summer months, regular dog-walkers walked an average of

6.6 days, while they walked an average of 6.3 days in the winter. Individuals who infrequently walked their dog(s) walked an average of 2.6 days in the summer and 1.8 days in the winter. These results support that regular dog-walkers accumulated dog-walking activity consistently over the course of the week, instead of engaging in a few longer sessions. In addition, just over 50% of individuals reported dog-walking at a moderate level in both summer and winter, while approximately 6 to 7% of individuals reported vigorous levels in both seasons. The majority of individuals perceived that their dog-walking sessions were completed at an intensity advised by WHO (2011a) to yield health and fitness benefits. Although a proportion of individuals reported walking at a mild intensity, it is still valuable that they were still engaging in some form of physical activity. According to WHO (2011b), “doing some physical activity is better than none” (para. 8). It was evident that infrequent dog-walkers did not walk consistently throughout the week, so a primary focus going forward could be engaging individuals who do not dog-walk or those who do so rarely, rather than those who are dog-walking, even if it is at a mild intensity.

Dog owners within this study dog-walked an average of 247-minutes per week during the more temperate months and 186-minutes a week during the winter months. Both of these mean values of dog-walking meet WHOs (2011a) guidelines for physical activity, in terms of duration. Regardless of a significant decrease from the summer to winter months, these dog owners walked large amounts. The dog-walking values obtained were slightly lower than dog owners in a sample collected from British Columbia, who walked an average of 300-minutes a week (Brown & Rhodes, 2006). It is difficult to make a comparison, however, because total walking time was collected and,

even though they alluded to a total number of minutes specific to dog-walking, these data were not presented in the article. Dog-walking in the present study was similar, however, to values found in a Californian study. Dog owners walked approximately 140-minutes a week when the whole sample was considered and 186-minutes when solely dog-walkers were included (Hoerster et al., 2011). From these findings, it appears the older dog owners in this sample had similar to slightly higher levels of dog-walking than those found in the Californian sample. The older dog owners walked a great deal throughout the week, which was a positive finding, considering the current level of inactivity in Canada. Given the climate differences between summer and winter months in Canada, closer examination was necessary at the seasonal level.

To get a better sense of dog-walking throughout the year, in a climate that has very distinct summer and winter seasons, the current study differentiated between minutes walked in the more temperate and winter months. Again, there was a significant decrease in dog-walking behaviour from summer to winter months, but both values were high enough to satisfy the advised level of physical activity. In a study conducted in Calgary, results illustrated that dog owners walked 253-minutes for recreation during the winter and walked 213-minutes weekly in the summer, while individuals who did not own dogs decreased from summer to winter months. A comparison to the values obtained from the older dog owners in this study was difficult, however, because the current study simply measured dog-walking behaviour, while the study conducted in Calgary looked at all walking for recreation (which included dog-walking). Despite a decrease in dog-walking during the winter months, it was evident that dog-walking was a way for dog owners to maintain levels of physical activity throughout the year. During

the interviews, many of the participants indicated that they walked consistently with their dogs because of the routine, the role of being an owner, and the benefits to both parties. A systematic review by Tucker and Gilliland (2007) highlighted that there is a seasonal influence on physical activity; specifically, cool and wet months can limit or create a barrier to physical activity. It appeared that owning a dog helped older dog owners to overcome a barrier and promoted year-long physical activity. Furthermore, a very large proportion of the sample engaged in some level of dog-walking.

Evidence from this study revealed that 88% of the sample walked their dogs, which was comparable to another study that found 89% of their sample reported some level of dog-walking (Ham & Epping, 2006). It was evident that the majority of these older dog owners walked their dog to some degree, which is a critical point to consider. Regardless of the number of minutes each week these dog owners completed, the vast majority took some time during their week to get outside and be active with their dogs. The large proportion of individuals who walk their dogs was encouraging because it is more challenging to get individuals to initiate physical activity, than to encourage further participation. Additional examination into individuals who walked infrequently and those who walked more regularly was warranted, however, to determine factors that differentiate these two groups.

Motivation Differences between Infrequent and Regular Dog-Walkers.

One of the main objectives of the study was to understand dog-walking in later life through the lens of the Self Determination Theory (SDT); specifically, the purpose of the study was to investigate motivational differences between infrequent dog-walkers and regular dog-walkers. Evidence indicated that regular dog-walkers had significantly

higher levels of intrinsic, integrated, and identified forms of motivation, while they had significantly lower levels of amotivation. In other words, regular dog-walkers had higher levels of motivation that reflected enjoyment and value of, as well as interest in, dog-walking. The motivational differences were congruent with what one would expect based on the SDT. For instance, regular dog-walkers had significantly higher levels of all forms of self-determined motivation, which establishes that these forms of motivation did underlie regular dog-walking. The SDT outlined that the level of self-determination influences engagement in a behaviour and the maintenance of that behaviour (Stephan, Boiché, & Le Scanff, 2010); therefore, an activity that is perceived as enjoyable is more likely to draw an individual to initiate and maintain it (Kilpatrick, Hebert, & Jacobsen, 2002). Similar results were reported by Kirkland, Karlin, Babkes Stellino, and Pulos (2011), which illustrated that older adult exercisers had significantly higher levels of intrinsic motivation and self-determined extrinsic motivation than older adult non-exercisers. intrinsic and self-determined extrinsic. Although they used the Exercise Motivations Inventory-2 to measure motivation, Dacey, Baltzell, and Zaichkowsky (2008) found that intrinsic motivation and self-deteremined extrinsic motivation were able to differentiate individuals who were inactive, those who were active, and those who deemed exercise maintainers. Additionally, individuals who regularly walked their dogs had lower levels of amotivation, which is logical since amotivation is not oriented towards action (Deci & Ryan, 2000; 2008a; Ryan & Deci, 2000a; 2000b; 2007). Individuals who did not dog-walk regularly (or at all) had higher levels of amotivation, which may reflect their lack of action or intention to dog-walk.

Results from the regression analysis supplemented the previous findings. The regression revealed that identified regulation was a significant predictor of dog-walking behaviour, which indicated that individuals recognized the value or significance of dog-walking (Ryan & Deci, 2000a). The influence of this specific regulation is logical and supported by the participants who completed the qualitative interviews who suggested that one of the reasons they engaged in dog-walking was due to benefits for themselves and their dog(s). The qualitative findings highlighted that owners recognized the importance of dog-walking activity, which ultimately influenced their behaviour. The quantitative and qualitative data supported that the older dog-walkers were autonomous in their decision to dog-walk, yet the decision was mediated by the associated values. To explore and better understand factors that may promote these self-determined forms of motivation, which ultimately relates to increased dog-walking behaviour, pilot interviews were conducted. Data from the interviews supplemented the quantitative results, by exploring whether the factors proposed to influence and promote self-determined motivation were present in regular dog-walkers.

Qualitative Investigation into the Basic Psychological Needs

Given the findings that regular dog-walkers had higher levels of self-determined forms of motivation and lower levels of amotivation than those who dog-walked infrequently, it would be desirable to develop theoretically-informed interventions to increase self-determination for dog-walking. Since the SDT proposed that the three basic psychological needs are related to optimal functioning and help support/promote self-determined motivation (Ryan & Deci, 2002), qualitative investigation to explore these factors within a group of regular dog-walkers helped determine if needs are

relevant to and being satisfied for these individuals. Although the results were preliminary, pilot investigation focusing on the needs was necessary as a jumping off point in the exploration of basic psychological needs satisfaction in dog-walking.

It was evident that regular dog-walkers, in general, presented ideas and feelings that indicated they felt autonomous, competent, and related. Although further investigation is necessary to support these findings, these preliminary results did illustrate that regular dog-walkers greatly enjoyed the activity. Being autonomous in an activity means that individuals see the value of their participation. Participants expressed emphatically that owning a dog influenced them to walk and that it was an activity they believed was good for themselves and their dogs. In addition, some of the individuals reported feelings of goal achievement or satisfaction that they had accomplished something. Also, many individuals felt that their dog(s) enjoyed walking and indicated that it was important to ensure their dogs were walked for their health and well-being. Positive feedback from one's dog and feeling a sense of achievement could reinforce competence towards dog-walking. Finally, participants relayed that dog-walking was a way to connect with their dog, to spend time with a friend or family member, or to interact with other individuals in the community. Although participants enjoyed walking with or encountering others during their walks, they did express that they were content to walk alone with their dogs and felt their dogs acted as a companion on their walks.

It is necessary to point out that since the basic psychological needs drove the data analysis, it is possible that additional themes were present. Given the scope of the current study, these themes were not explored. Future investigation could address other

themes and determine other ideas put forth by regular dog-walkers. In addition, various steps to ensure credibility and rigor were not completed. When conducting qualitative investigation, it is important to consider ways to ensure the data reflects participants' ideas and that data is thoroughly reviewed and analyzed. To help ensure due diligence in future investigation of basic psychological need satisfaction in dog-walking, methods such as utilizing individuals to discuss ideas and to critically review the process, spending a longer period engrossed in the context, as well as performing member checks of transcripts should be considered (Rossman & Rallis, 2012). The pilot data established that regular dog-walkers did discuss ideas to indicate that needs were satisfied through dog-walking, which could help inform interventions to increase dog-walking. Questionnaire data would not allow the same level of depth or interaction with individuals that is afforded through qualitative investigation, which is critical when moving toward interventions that aim to change physical activity behaviour. Discussion with regular dog-walkers allowed for further understanding of dog-walking behaviour, but speaking to non dog-walkers or infrequent dog-walkers is a necessary extension of this study. Interventions that consider and accommodate what is important to these individuals is critical to promoting self-determined motivation to dog-walking; however, without the qualitative approach, factors relevant to the participants may be missed. Overall, it seems that further investigation into basic psychological need satisfaction and factors that influence motivation in dog-walking is warranted.

Health differences between infrequent and regular dog-walkers. Another objective of the study was to examine the differences on health domains of the SF-36v2, between regular and infrequent dog walkers. Preliminary analysis revealed that

regular dog-walkers had significantly better scores on the physical functioning, general health, and role-physical domains**.** The results were no longer significant, however, once the *p*-level was adjusted for the Bonferroni method. One of the issues when applying the Bonferroni method is the low power, in return for a rather simple way of controlling for multiple tests and comparisons (Bender & Lange, 2001). Although it helps to prevent making type I errors, it does exacerbate the occurrence of type II error. One must consider the practical implications of the results, in addition to the statistical significance. In this situation, the suggestion that individuals who meet the recommended levels of physical activity through dog-walking may have better levels of physical functioning, general health, and lower reports of role limitations may encourage individuals who walk less frequently to increase their activity. Reporting the results at the $p<.05$ level in this situation, may outweigh the consequences that can be attributed to committing a type I error in other situations (such as trials for medication).

In a previous study, dog-walkers were found to have a lower risk of reporting diabetes, hypertension, hypercholesterolemia, and were less likely to meet the criteria for depression when compared non-dog owners (Lentino, Visek, McDonnell, & DiPetro, 2012). Supplementing questionnaire data with other measures of health or including a measure to understand perceived health benefits from dog-walking helped health would be useful. Regular dog-walkers noted in the interviews that they believed there were health and well-being benefits associated with engaging in this activity. Perhaps perceiving there are benefits to ones' health is as important as statistically significant differences. In addition, the two groups did not differ on any of the domains related to mental health, however, it is possible that benefits to mental health occur at levels lower

than 150-minutes per week. If individuals who accumulated under 120 minutes a week experienced benefits to mental, no significant differences would be present. Again, dog-walking engaged the older dog owners in an activity that took them outdoors into the fresh air, where they were engaged in physical activity, were exposed to vitamin D, and interactions with others. In this case, even low levels of dog-walking may help dog owners to feel better. Regardless, the results do not indicate causation; therefore, further investigation to help discern if dog-walking contributes to health and well-being or whether individuals with better health are more likely (or able) to walk their dogs is necessary.

Conclusion and Future Directions

The results from this study illustrated that individuals who regularly walked their dogs reported significantly higher levels of self-determined forms of motivation (intrinsic, integrated, and identified) and lower levels of amotivation, than those who do not walk their dogs or did so infrequently. Additionally, identified regulation was found to be a significant predictor of dog-walking behaviour. These results provided valuable information about the application of the SDT to the context of dog-walking in older adulthood. To the best of the researcher's knowledge, theoretical investigation using the SDT in the examination of motivation to dog-walk within a group of older dog owners has not yet appeared in the literature. The differences observed in self-determined motivation and amotivation between the two groups supported what one would expect based on the theory, as well as previous investigation into motivation in physical activity. In other words, individuals who engage in greater levels of physical activity should have higher levels of self-determined forms of motivation, than individuals who do not engage in physical activity or do so at lower levels; a finding that has been supported in a sample of older adults (Kirkland, Karlin, Babkes Stellino, & Pulos, 2011).

In addition to support for the application of the SDT to dog-walking in a sample of older adults, the results supplied beneficial information for practical application. The knowledge that these two groups differed in levels of self-determined motivation indicated an avenue to be explored when trying to increase dog-walking behaviour. The results suggested that promoting intrinsic motivation and self-determined extrinsic motivation (integrated and identified regulation), may help encourage individuals who dog-walk less frequently to become more regular dog-walkers. Since identified

regulation was found to significantly predict dog-walking behaviour, it was highlighted that recognizing the value of this behaviour was of particular importance to dog-walking in older adulthood. Promoting the values associated with dog-walking will be an important area to address when encouraging individuals who do not dog walk to initiate this activity. Looking at factors proposed to promote these forms of motivation (basic psychological needs), then, was a necessary stepping-stone toward intervention. The pilot interviews were advantageous inclusions given the previous findings, since the researcher was able to learn from regular dog-walkers whether the basic psychological needs were satisfied, as well as how they applied to the dog-walking context.

The pilot interviews provided preliminary support that autonomy, competence, and relatedness were satisfied for regular dog-walkers. The researcher learned from the participants about the bond that they have with their dog, that dog-walking served as an activity to engage in with one's partner or family, and that informal contacts were encountered within the community while dog-walking. Additionally, some regular dog-walkers felt a sense of satisfaction or accomplishment after their walks, or were motivated because they knew their dogs enjoyed and benefited from the physical activity. Dog-walking was viewed as a valuable activity to engage in to help promote health and well-being of both owner and dog, a way to relax, and method to maintain a physical activity routine during the summer and winter. Although further qualitative investigation will expand on these findings, this approach afforded depth to the quantitative data by providing an initial understanding of factors that could be used to support the types of motivation that lead to maintained dog-walking behaviour.

In addition to further clarifying basic need satisfaction in older adult regular dog-walkers, interviewing infrequent dog-walkers is a logical next step in the pursuit of understanding motivation and dog-walking behaviour. The results of this study highlighted that older dog owners, on average, walked a great deal during the summer and winter months. There were, however, individuals who did not dog-walk or did so less frequently. Dog-walking should be looked at as a tool to promote consistent physical activity for dog owners throughout the aging process. In other words, it is not the intent to encourage older adults to acquire a dog solely based on the goal to increase physical activity. Increasing dog-walking of infrequent dog-walkers will help promote dog-walking behaviour that satisfies or exceeds the recommended levels of physical activity, which ultimately influences health and well-being for both the human and dog.

The health and well-being measures in this study did not show statistically significant differences after the Bonferroni correction was applied. Although researchers must consider the consequences of committing both type I and type II errors, the absence of statistical significance could be attributed to the other physical activities participants engaged in. The focus of this study was dog-walking behaviour, but participants also engaged in other physical activities, which would contribute to health and well-being. Further investigation within a larger and more diverse sample of older dog-walkers, which utilizes other measures, such as blood glucose, blood pressure, or functional ability, would complement questionnaire data. Although the two groups did not differ significantly on the health domains of the SF-36v2, the results do not diminish

the value of promoting higher levels of dog-walking behaviour, but indicate further investigation is warranted.

Utilizing the information gained from the current study and following up with further investigation will help cater theoretical intervention to those who dog-walk less frequently. Encouraging dog-walking at a level that meets the 150-minute per week guideline may provide an individual a primary mode of activity, or act as an adjunct to other physical activity. Walking is a beneficial form of activity to promote throughout older adulthood, as it is cost effective, easy to of implement, and provides a low-impact way to be active, while getting out into nature. Walking one's dog provides the additional advantage of having a companion present who also benefits from physical activity. Since WHO (2011a) notes that older adults can experience further health benefits when they engage in activity for 300-minutes per week, it will be beneficial to pursue further research that will help promote dog-walking as a consistent and sustainable form of physical activity into older adulthood. Dog-walking can offer older adults a primary form of physical activity to achieve 150-minutes of activity each week, or is a supplemental form of activity to contribute to higher levels of activity, to ensure levels of activity are met as individuals age.

References

Abbott, R. D., White, L. R., Ross, G. W., Masaki, K. H., Curb, J. D., & Petrovitch, H. (2004). Walking and dementia in physically capable elderly men. *Journal of the American Medical Association, 292*(12), 1447-1453.

Bender, R., & Lange, S. (2001). Adjusting for multiple testing- When and how? *Journal of Clinical Epidemiology, 54*, 343-349.

Blumer, H. (1954). What is wrong with social theory? *American Sociological Review, 19*(1), 3-10.

Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101.

Brown, S. G., & Rhodes, R. E. (2006). Relationships among dog ownership and leisure-time walking in Western Canadian adults. *American Journal of Preventive Medicine, 30*(2), 131-136.

Cavanaugh, J. C., Blanchard-Fields, F., & Norris, J. E. (2008). *Adult development and aging* (1st Canadian Ed.). Toronto, ON: Thomson Nelson.

Charmaz, K. (2003). Qualitative interviewing and grounded theory analysis. In J. Holstein & J. Gubrium (Eds.), *Inside interviewing: New lenses, new concerns*. Thousand Oaks, CA: Sage Publications.

Christian, H., Giles-Corti, B., & Knuiman, M. (2010). "I'm just a'-walking the dog": Correlates of regular dog walking. *Family & Community Health, 33*, 44-52.

Coleman, K. J., Rosenburg, D. E., Conway, T. L., Sallis, J. F., Saelens, B. E., Frank, L. D., et al. (2008). Physical activity, weight status, and neighborhood characteristics of dog walkers. *Preventive Medicine, 47*, 309-312.

Colley, R. C., Garriguet, D., Janssen, I., Craig, C. L., Clarke, J., & Tremblay, M. S. (2011). Physical activity of Canadian adults: Accelerometer results from the 2007 to 2009 Canadian Health Measure Survey. Retrieved from http://www.statcan.gc.ca/pub/82-003-x/2011001/article/11396-eng.htm.

Creswell, J. W. (2003). Research design: Qualitative, quantitative, and mixed method approaches (2nd ed.). Thousand Oaks, CA: Sage Publications.

Creswell, J. W., Plano Clark, V. L., Gutmann, M. L., & Hanson, W. E. (2003). Advanced mixed methods research designs. In A. Tashakorri & C. Teddlie (Eds.), *Handbook of mixed methods in social & behavioral research* (pp. 209-240). Thousand Oaks, CA: Sage Publications.

CSEP (2011). Glossary of terms. Retrieved from http://www.csep.ca

Cutt, H., Giles-Corti, B., & Knuiman, M. (2008). Encouraging physical activity through dog walking: Why don't some owners walk with their dog? *Preventive Medicine, 46*, 120-126.

Cutt, H., Giles-Corti, B., Knuiman, M., & Burke, V. (2007). Dog ownership, health and physical activity: A critical review of the literature. *Health & Place, 13*, 261-272.

Cutt, H., Giles-Corti, B., Knuiman, M., & Pikora, P. (2008). Physical activity behavior of dog owners: Development and reliability of the Dogs and Physical Activity (DAPA) tool. *Journal of Physical Activity and Health, 5*(Suppl 1), s73-89.

Cutt, H. E., Giles-Corti, B., Wood, L. J., Knuiman, M. W., & Burke, V. (2008). Barriers and motivators for owners walking their dog: Results from qualitative research. *Health Promotion Journal of Australia, 19*(2), 118-124.

Dacey, M., Baltzell, A., & Zaichkowsky, L. (2008). Older adults' intrinsic and extrinsic motivation toward physical activity. *American Journal of Health Behavior, 32*, 570-582.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior.* New York, NY: Plenum Press.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. Psychological Inquiry, 11(4), 227-268. · DOI: 10.1207/S15327965PLI1104_01

Deci, E. L., & Ryan, R. M. (2008a). Facilitating optimal motivation and psychological well-being across life's domains. *Canadian Psychology*, 49, 14-23. DOI: 10.1037/0708-5591.49.1.14

Deci, E. L., & Ryan, R. M. (2008b). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology, 49*, 182-185. DOI: 10.1037/a0012801

Diekhoff, G. M. (1992). *Statistics for the social and behavioral sciences: Univariate, bivariate, multivariate*. USA: William C Brown Pub.

Duncan, L. R., Hall, C. R., Wilson, P. M., & Jenny, O. Exercise motivation: A cross-sectional analysis examining its relationships with frequency, intensity, and duration of exercise. *International Journal of Behavioral Nutrition and Physical Activity, 7*(7), 1-9. doi:10.1186/1479-5868-7-7

Frank, J.S., & Patla, A. E. (2003). Balance and mobility changes in older adults: Implications for preserving community mobility. *American Journal of Preventive Medicine, 25(3Sii)*, 157-163.

Frederick, C. M., & Ryan, R. M. (1993). Differences in motivation for sport and exercise and their relations with participation and mental health. *Journal of Sport Behavior, 16*, 124-145.

George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update* (4th ed.). Boston: Allyn & Bacon.

Godin, G., Shephard, R. J.. (1997) Godin Leisure-Time Exercise Questionnaire. *Medicine and Science in Sports and Exercise, 29*, (June Supplement), S36-S38.

Hall, C. R., Rodgers, W. M., Wilson, P. M., & Norman, P. (2010). Imagery use and self-determined motivations in a community sample of exercisers and non-exercisers. *Journal of Applied Social Psychology, 40*, 135-152.

Ham, S. A., & Epping, J. (2006). Dog walking and physical activity in the United States. *Preventing Chronic Disease: Public Health Research, Practice, and Policy, 3*(2), 1-7.

Haywood, K. M., & Getchell, N. (2005). Development of human locomotion. In *Life span motor development* (4th ed., pp. 83-110). Windsor, ON: Human Kinetics.

Hoerster, K. D., Mayer, J. A., Sallis, J. F., Pizza, N., Talley, S., Pichon, L. C. & Butler, D. A. (2011). Dog walking: Its association with physical activity guideline adherence and its correlates. *Preventive Medicine, 52*, 33-38.

Jagger, C., Arthur, A. J., Spiers, N. A., & Clarke, M. (2001). Patterns of onset of disability in activities of daily living with age. *Journal of the American Geriatrics Society, 4*, 404-409.

Kilpatrick, M., Hebert, E., & Jacobsen, D. (2002). Physical activity motivation: A practitioner's guide to Self-Determination Theory. *Journal of Physical Education, Recreation, and Dance, 73*(4), 36-41.

King, D. (2008). Neighborhood and individual factors in activity in older adults: Results from the Neighborhood and Senior Health Study. *Journal of Aging and Physical Activity, 16*, 144-170.

King, A. C., Taylor, B., & Haskell, W. L. (1993). Effects of differing intensities and formats of 12 months of exercise training on psychological outcomes in older adults. *Health Psychology, 12*(4), 292-300.

Kirkland, R. A., Karlin, N. J., Babkes Stellino, M., & Pulos, S. (2011). Basic psychological needs satisfaction, motivation, and exercise in older adults. *Activities, Adaptation, & Aging, 35*(3), 181-196.

LaCroix, A. Z., Leveille, S. G., Hecht, J. A. Grothaus, L. C., & Wagner, E. H. (1996). Does walking decrease the risk of cardiovascular disease hospitalizations and death in older adults? *Journal of the American Geriatrics Society, 44*(2), 113-120.

Lail, P., McCormack, G. R., & Rock, M. (2011). Does dog-ownership influence seasonal patterns of neighbourhood-based walking among adults? A longitudinal study. *BMC Public Health, 11*, 148-154.

Lee, I. M., & Buchner, D. M. (2008). The importance of walking to public health. *Medicine & Sciences in Sports & Exercise, 40*, S512-S518.

Lentino, C., Vesik, A. J., McDonnell, K., & DiPetro, L. (2012). Dog-Walking is associated with a favorable risk profile independent of moderate to high volume of physical activity. *Journal of Physical Activity and Health, 9*(3), 414-420.

Loewenthal, K. M. (2001). Data and analysis. In *An introduction to psychological tests and scales* (2nd ed., pp. 53-67). Philadelphia, PA: Taylor & Francis.

Markland, D. (2000). Behavioural Regulations in Exercise-2. Retrieved from http://pages.bangor.ac.uk/~pes004/exercise_motivation/breq/breq.htm

Markland, D., & Tobin, V. (2004). A modification to the Behavioural Regulation in Exercise Questionnaire to include an assessment of amotivation. *Journal of Sport & Exercise Psychology, 26*, 191-196.

McNicholas, J., & Collis, G.M. (2000) Dogs as catalysts for social interactions: Robustness of the effect. *British Journal of Psychology, 91*, 61-70.

McNicholas, J., Gilbey, A., Rennie, A., Ahmedzai, S., Dono, J., & Ormerod, E. (2005). Pet ownership and human health: A brief review of evidence and issues. *British Medical Journal, 331*, 1252-1254.

McPherson, B. D., & Wister, A. (2008). *Aging as a social process: Canadian perspectives* (5th ed.). Don Mills, ON: Oxford.

Merchant, A. T., Dehghan, M., & Akhtar-Danesh, N. (2007). Seasonal variation in the leisure-time physical activity among Canadians. *Canadian Journal of Public Health, 98*(3), 203-208.

Motooka, M., Koike, H., Yokoyama, T., & Kennedy, N. L. (2006). Effect of dog-walking on autonomic nervous activity in senior citizens. *The Medical Journal of Australia, 184*(2), 60-63.

Mullan, E., Markland, D., & Ingledew, D.K. (1997). A graded conceptualisation of self-determination in the regulation of exercise behaviour: Development of a measure using confirmatory factor analytic procedures. *Personality and Individual Differences*, *23*, 745-752.

Newman, A. B., Simonsick, E. M., Naydeck, B. L., Boudreau, R. M., Kritchevsky, S. B., Nevitt, M. C., … Harris, T. B. (2006). Association of long-distance corridor walk performance with mortality, cardiovascular disease, mobility limitation, and disability. *Journal of the American Medical Association, 295*(17), 2018-2026.

Oka, K., & Shibata, A. (2009). Dog ownership and health-related physical activity among Japanese adults. *Journal of Physical Activity and Health, 6*, 412-418.

Pancha, N.A., Ford, J.H., Andrew, B., & Dobson, A. (2005). Relations between companion animals and self-reported health in older women: Cause, effect or artifact. *International Journal of Behavioral Medicine, 12*, 103-110.

Parslow, R.A., Jorm, A.F., Christensen, H., Rodgers, B., & Jacomb, P. (2005). Pet ownership and health of older adults: Findings from a survey of 2,551 community-based Australians aged 60-64. *Gerontology, 51,* 40-47.

QualityMetric Incorporated. (2002). SF-36v2® Health Survey Standard, Canada (English).

Raina, P., Waltner-Toews, D., Bonnett, B., Woodward, C., & Abernathy, T. (1999). Influence of companion animals on the physical and psychological health of older people: An analysis of a one-year longitudinal study. *Journal of the American Geriatric Society, 47*, 323-329.

Reeves, M. J., Rafferty, A. P., Miller, C. E., & Lyon-Callo, S. K. (2011). The impact of dog walking on leisure-time physical activity: Results from a population-based survey. *Journal of Physical Activity and Health, 8*, 436-444.

Rooks, D. S., Kiel, D. P., Parsons, C., & Hayes, W. C. (1997). Self-paced resistance training and walking exercise in community-dwelling older adults: Effects of neuromotor performance. *52a*(3), M161-M168.

Rossman, G. B., & Rallis, S. F. (2011). Learning in the field: An introduction to qualitative research (3rd ed). Thousand Oaks, Ca.: Sage Publications

Richard, L., Gauvin, L., Gosselin, C., & Laforest, S. (2008). Staying connected: Neighbourhood correlates of social participation among older adults living in an urban environment in Montreal, Quebec. *Health Promotion International, 24*(1), 46-57.

Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality, 63*, 397-427.

Ryan, R. M., & Deci, E. L. (2000a). Intrinsic and extrinsic motivation: Classic definitions and new directions*. Contemporary Educational Psychology, 2*5, 54-67. DOI:10.1006/ceps.1999.1020

Ryan, R. M., & Deci, E. L. (2000b). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55,* 68-78. DOI: 10.1037110003-066X.55.1.68

Ryan, R. M., & Deci, E. L. (2002). Overview of self-determination theory: An organismic dialectical perspective. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3-33). Rochester, NY: University of Rochester Press.

Ryan, R. M., & Deci, E. L. (2007). Active human nature: Self-determination theory and the promotion and maintenance of sport, exercise, and health. In M. Haggar & N. Chatzisarantis (Eds.), *Intrinsic motivation and self-determination in exercise and sport* (pp. 1-20). Windsor, ON: Human Kinetics.

Ryan, R. M., Frederick, C. M., Lepes, D., Rubio, N., & Sheldon, K. M. (1997). Intrinsic motivation and exercise adherence. *International Journal of Sport Psychology, 28*, 335-354.

Schofield, G., Mummery, K., & Steele, R. (2005). Dog ownership and human health-related physical activity: An epidemiological study. *Health Promotion Journal of Australia, 16*, 15-19.

Serpell, J. (1991). Beneficial effects of pet ownership on some aspects of human health and behaviour. *Journal of the Royal Society of Medicine, 84*, 717-720.

Siegel, J.M. (1990). Stressful life events and use of physician services among the elderly: The moderating role of pet ownership. *Journal of Personality and Social Psychology, 58*, 1081-1086.

Simonsick, E. M., Guralink, J. M., Volpato, S., Balfour, J., & Fried, L.P. (2005). Just get out the door! Importance of walking outside the home for maintaining mobility: Findings from the Women's Health and Aging Study. *Journal of the American Geriatric Society, 53*, 193-203.

Standage, M., Sebire, S. J., & Loney, T. (2008). Does exercise motivation predict engagement in objectively assessed bouts of moderate-intensity exercise?: A Self-Determination perspective. *Journal of Sport and Exercise Psychology, 30*, 337-352.

Starkweather, A. R. (2007). The effects of perceived stress and IL-6 levels among older adults. *Biological Research for Nursing, 8*(3), 186-194.

Statistics Canada. (2011). Physical activity during leisure time, 2010. *Health Facts Sheets* (85-625-X). Retrieved from http://www.statcan.gc.ca/pub/82-625-x/2011001/article/11467-eng.htm

Stephan, Y., Boiché, J., & Le Scanff, C. (2010). Motivation and physical activity behaviors among older women: A self-determination perspective. *Psychology of Women Quarterly, 34*, 339-348.

Thorpe, R. J., Kreisle, R. A., Glickman, L. T., Simonsick, E. M., Newman, A. B. & Kritchevsky, S. (2006). Physical activity and pet ownership in year 3 of the Health ABC Study. *Journal of Aging and Physical Activity, 14*, 154-168.

Thorpe, R. J., Simonsick, E. M., Brach, J. S., Ayonayon, H., Satterfield, S., Harris, T. B., et al. (2006). Dog ownership, walking behavior, and maintained mobility in late life. *Journal of the American Geriatric Society, 54*, 1419-1424.

Trochim, W. M. K. (2005). Sampling. In *Research methods: The concise knowledge base* (pp. 26-46). Toronto, ON: Thomson.

Tucker, P., & Gilliland, J. (2007). The effect of season and weather on physical activity: A systematic review. *Public Health, 121*(12), 909-922.

Vlachopoulos, S. P., & Michailidou, S. (2006). Development and initial validation of a measure of autonomy, competence, and relatedness in exercise: The basic psychological needs in exercise scale. *Measurement in Physical Education & Exercise Science, 103*, 179-201.

Vincent, W. J. (2005). Statistic in kinesiology (3rd Ed.). Windsor, ON: Human Kinetics.

Ware, J. E. (2000). SF-36 health survey update. *SPINE, 25*(24), 3130-3139.

Ware, J. E., Jr., Kosinski, M., Bjorner, J. B., Turner-Bowker, D. M., Gandek, B., & Maruish, M. E. (2008). *SF-36v2® Health Survey: Administration guide for clinical trial investigators.* Lincoln, RI: QualityMetric Incorporated.

Wells, D. L. (2007). Domestic dogs and human health: An overview. *British Journal of Health Psychology, 12*, 45-156.

Weuve, J., Kang, J. H., Manson, J. E., Breteler, M. M. B., Ware, J. H., & Grodstein, F. (2004). Physical activity, including walking, and cognitive function in older women. *Journal of the American Medical Association, 292*(12), 1454-1461.

Wilson, P. M., Longely, K., Muon, S., Rodgers, W. M., & Murray, T. C. (2006). Examining the contributions of perceived psychological need satisfaction to well-being in exercise. *Journal of Applied Biobehavioral Research, 11*, 243-264.

Wilson, P. M., Mack, D. E., Blanchard, C.M., & Gray, C. E. (2009). The role of perceived psychological need satisfaction in exercise-related affect. *Hellenic Journal of Psychology, 6*, 183-206.

Wilson, P. M., Mack, D. E., & Grattan, K. P. (2008). Understanding motivation for exercise: A self-determination theory perspective. *Canadian Psychology, 49*, 250-256.

Wilson, P. M., Mack, D. E., Muon, S., & LeBlanc, M. E. (2007). What role does psychological need satisfaction in motivating exercise participation? In Liam A Chiang (Ed.), Motivation of exercise and physical activity.

Wilson, P. M., Rodgers, W. M., Blanchard, C. M., & Gessell, J. (2003). The relationship between psychological needs, self-determined motivation, exercise attitudes, and physical fitness. *Journal of Applied Social Psychology, 33*, 2373-2392.

Wilson, P. M., Rodgers, W. M., Liotz, C. C., & Scime, G. (2006). "It's who I am…really!" The importance of integrated regulation in exercise contexts. *Journal of Applied Biobehavioural Research, 11*(2). 79-104.

Wilson, P. M., & Rogers, W. T. (2008). Examining relationships between perceived psychological need satisfaction and behavioural regulations in exercise. *Journal of Applied Biobehavioral Research, 13*, 119-142.

Wilson, P. M., Rogers, W. T., Rodgers, W. M., & Wild, T. C. (2006). The Psychological Need Satisfaction in Exercise Scale. *Journal of Sport & Exercise Psychology, 28*, 231-251.

Winefield, H.R., Black, A., & Chur-Hansen, A. (2008). Health effects of and attachment to companion animals in an older population. *International Journal of Behavioral Medicine, 15*, 303-310.

Wood, L. J., Giles-Corti, B., Bulsara, M. K., & Bosch, D. A. (2007). More than a furry companion: The ripple effect of companion animals on neighborhood interactions and sense of community. *Society and Animals, 15*, 43-56.

World Health Organization. (2011a). Physical activity and older adults. Retrieved from the World Health Organization website: http://www.who.int/dietphysicalactivity/factsheet_olderadults/en/index.html

World Health Organization. (2011b). Global recommendations on physical activity for health. Retrieved from the World Health Organization website: http://www.who.int/dietphysicalactivity/pa/en/

Appendix A- Facilities Letter

Lakehead
UNIVERSITY

School of Kinesiology

Tel: (807) 343-8544
Fax: (807) 343-8944

April 2012

Dear {individual's name in charge of granting entrance to facility}:

My name is Ashley Hope and I am a student in the Master of Science in Kinesiology with specialization in Gerontology program, at Lakehead University. In order to complete my Master's degree, I am conducting a research project entitled, "*Exploring the Relationship between Motivation and Dog-Walking Behaviour: What Motivates Older Adults?,*" to examine the relationships between dog-walking, motivation, and health and well-being in a group of older dog walkers.

I am approaching you to ask for permission to recruit potential participants within your facility. I am hoping to set up a table to distribute information and collect data from individuals who visit your establishment. Please find attached a copy of the poster that will be used during recruitment. If you are interested in viewing the questionnaires used in the study, I can provide copies for your viewing.

Your support in my research is greatly appreciated and is helpful in realizing my goals as a Master's Student. Please contact me if you have any additional questions.

Yours truly,

Ashley Hope
Graduate student Researcher
(807) 620-0159
ahope1@lakeheadu.ca

Dr. Joey Farrell
Faculty Supervisor
(807) 346-7754
jfarrell@lakeheadu.ca

Appendix B- Recruitment Poster

Dog Owners

Looking for DOG OWNERS to participate
in a research study entitled:

What Motivates Older Adults to Walk with their Dogs?

Participation is requested from dog owners:

- Aged **55 and older**
- Able to walk independently or with a cane/walker

Interested individuals will complete questionnaires that will take approx. **20 minutes** looking at dog-walking, motivation, and health & well-being

For more information, or to participate, contact:
ASHLEY HOPE
Master's Student in Kinesiology/Gerontology
Phone: 620-0159 or E-mail: ahope1@lakeheadu.ca

Appendix C- Phase One Information Letter

Lakehead
UNIVERSITY

School of Kinesiology

Tel: (807) 343-8544
Fax: (807) 343-8944

April 2012

Dear Potential Participant,

I warmly welcome your participation a research study to be carried out by myself, Ashley Hope, a student in the Master of Science in Kinesiology with specialization in Gerontology program, at Lakehead University. The investigation, "*Exploring the Relationship between Motivation and Dog-Walking Behaviour: What Motivates Older Adults?",* which received support from the Ontario Ministry of Health and Long-Term Care through the Ontario Research Coalition of Research Institutes/Centres on Health & Aging, will help us to better understand dog-walking, motivation, and health and well-being of dog owners over age 55.

Your participation is requested as you are a dog-owner who is 55 years of age or older. To participate, you must have owned your dog(s) for a minimum of 8 months and be able to walk independently (alone or with a cane or walker and without help from another person). If you choose to participate, you will be provided with a set of questionnaires to answer, which will take approximately 20 minutes. The questionnaires gather information about yourself and your dog, a questionnaire about your motivation, one that focuses on health and well-being, and another to find out about your dog-walking and physical activity practices. You may also provide your contact information, if you are interested, to potentially participate in an interview at a later date to further explore dog-walking and motivation.

There are no foreseeable risks associated with your participation in this study; however participation is voluntary and, at any point during the study, you may decline to answer any question, refuse to participate, or withdraw, without any penalty or consequence. Although there are no direct benefits associated with your participation, the process of this investigation is beneficial to further understanding the relationship between dog-walking, health and wellbeing, and motivation.

Confidentiality and anonymity will be maintained to the highest degree. Your identity and identifying features will not be included in the findings of this study. In addition, all data collected will be coded with a participant number to remove identity from these items, which will be kept separately from your consent form. My thesis committee and myself will have access to the data collected during the course of this study, which will be securely stored in a locked filing cabinet or password protected computer at Lakehead University. The data, upon completion, will be stored for a minimum of five years with Dr. Joey Farrell in the School of Kinesiology in accordance with the Lakehead University ethics policy.

If the information gathered in this study is published in a peer-reviewed journal or presented at a conference, participant anonymity and confidentiality will be maintained. Upon completion of the study, you are welcome to a summary of the research results, which you may obtain from myself, the graduate student researcher.

If you wish to pursue participation in this study, please complete the attached consent form. If you have any questions or concerns at any point during this investigation, please do not hesitate to contact either myself or my faculty advisor. This project has been approved by the Lakehead University Research Ethics Board and, if you have any questions or concerns regarding the ethics, you may contact the Research Ethics Board at (807) 343-8283 or via email at research@lakeheadu.ca.

Thank-you for your cooperation,

Yours truly,

Ashley Hope
Graduate Student Researcher
(807) 620-0159
ahope1@lakeheadu.ca

Dr. Joey Farrell
Faculty Supervisor
(807) 346-7754
jfarrell@lakeheadu.ca

Appendix D- Phase One Consent Form

Lakehead
UNIVERSITY

School of Kinesiology

Tel: (807) 343-8544
Fax: (807) 343-8944

I _____ have read and understand the information letter and agree to participate in the study, *"Exploring the Relationship between Motivation and Dog-Walking Behaviour: What Motivates Older Adults to Walk with their Dogs?,"* being conducted by Ashley Hope, a Masters Student in the School of Kinesiology at Lakehead University under the supervision of Dr. Joey Farrell.

I have read and understand:

- That there is minimal risk to my participation and that my participation will benefit further understanding of relationships between dog-walking, motivation, and health and well-being.

- That my participation is completely voluntary and that I may withdraw or decline to answer questions at any point in this study.

- That I will be asked to complete a package of questionnaires that will take approximately 20 minutes of my time.

- That any data collected will be securely stored for a minimum of 5 years with Dr. Joey Farrell in the School of Kinesiology, at Lakehead University.

- That if I choose, I may contact the researcher by phone or e-mail, to obtain a summary of the findings from this study.

- That any information presented in the academic community will maintain my anonymity and confidentiality.

- That, if I choose, I may provide my contact information for potential participation in a follow-up interview

_____

Signature of Participant Date

Contact Information for possible follow-up interview:

Name:	Home Phone:	E-mail:

Appendix E- Phase Two Information Letter

Lakehead
UNIVERSITY

School of Kinesiology

Tel: (807) 343-8544
Fax: (807) 343-8944

June 2012

Dear Potential Participant,

I warmly welcome your participation in the second phase of a research study to be carried out by myself, Ashley Hope, a student in the Master of Science in Kinesiology with specialization in Gerontology program, at Lakehead University. The investigation, *"Exploring the Relationship between Motivation and Dog-Walking Behaviour: What Motivates Older Adults to Walk with their Dogs?",* received support from the Ontario Ministry of Health and Long-Term Care through the Ontario Research Coalition of Research Institutes/Centres on Health & Aging. The second phase consists of a one-on-one, semi-structured interview to explore factors that facilitate motivation to dog-walk. Your participation will further illuminate factors that influence individuals to walk with their dogs.

Your participation has been requested as are a dog-walker who is 55 years of age or older, living in Thunder Bay and you participated in the first phase of this study. If you complete the consent form agreeing to continue with the interview, the interview will require approximately one-hour of your time. The interview will be tape-recorded for data collection purposes. In addition, I will take notes throughout the interview, to help with data collection. The questions posed will touch on how your dog or dog-walking facilitates your motivation to walk. Following the interview, I will transcribe the information provided in the interview and, once this is complete, you will be able to review the transcription, to ensure it is consistent with what you related to me in the interview and will allow you the opportunity to add or change any information. Also, if you are willing, I would appreciate it if I could contact you if I have any further questions or clarifications.

There are no foreseeable risks associated with your participation in this study; however participation is voluntary and, at any point during the study, you may decline to answer any question, refuse to participate, or withdraw, without any penalty or consequence. Although there are no direct benefits associated with your participation, the process of this investigation is beneficial to further understanding the motivation to walk with one's dog.

Confidentiality and anonymity will be maintained to the highest degree. Your identity and identifying features will not be included in the findings of this study. In addition, all data collected will be coded with a participant number to remove identity from these items, which will be kept separately from your consent form. The graduate student researcher and her thesis committee will have access to the data collected during the course of this study, which will be securely stored in a locked filing cabinet or

password protected computer at Lakehead University. The data, upon completion, will be stored for a minimum of five years with Dr. Joey Farrell in the School of Kinesiology in accordance with the Lakehead University ethics policy.

If the information gathered in this study is published in a peer-reviewed journal or presented at a conference, participant anonymity and confidentiality will be maintained. Upon completion of the study, you are welcome to a summary of the research results, which you may obtain by contacting the graduate student researcher.

If you wish to continue with participation in this study, please complete the attached consent form. If you have any questions or concerns at any point regarding this investigation, please do not hesitate to contact either the graduate student researcher or her faculty advisor. This project has been approved by the Lakehead University Research Ethics Board and, if you have any questions or concerns regarding the ethics, you may contact the Research Ethics Board at (807) 343-8283 or via email at research@lakeheadu.ca.

Thank-you for your cooperation,

Yours truly,

Ashley Hope
Graduate student Researcher
(807) 620-0159
ahope1@lakeheadu.ca

Dr. Joey Farrell
Faculty Supervisor
(807) 346-7754
jfarrell@lakeheadu.ca

Appendix F- Phase Two Consent Form

Lakehead
UNIVERSITY

School of Kinesiology

Tel: (807) 343-8544
Fax: (807) 343-8944

I _____ have read and understand the information letter and agree to participate in the study, *"Exploring the Relationship between Motivation and Dog-Walking Behaviour: What Motivates Older Adults to Walk with their Dogs?,"* being conducted by Ashley Hope, a Masters Student in the School of Kinesiology at Lakehead University under the supervision of Dr. Joey Farrell.

I have read and understand:

- That there is minimal risk to my participation and that my participation will benefit further understanding of factors that influence motivation to dog-walk.
- That my participation is completely voluntary and that I may withdraw or decline to answer questions at any point in this study.
- That I am being asked to complete a one-on-one, semi-structured interview that will take approximately one hour of my time.
- That I agree to be tape-recorded during the interview and that I will be given the opportunity to review the transcript of my interview information afterwards.
- That I may be contacted if the researcher has any further questions or clarifications.
- That any data collected will be securely stored for a minimum of 5 years with Dr. Joey Farrell in the School of Kinesiology, at Lakehead University.
- That if I choose, I may contact the researcher by phone or e-mail, to obtain a summary of the findings from this study.
- That any information presented in the academic community will maintain my anonymity and confidentiality.

_____

Signature of Participant Date

Appendix G- BREQ-2

MODIFIED EXERCISE REGULATIONS QUESTIONNAIRE (BREQ-2)

WHY DO YOU ENGAGE IN DOG-WALKING?

We are interested in the reasons underlying peoples' decisions to engage, or not engage in dog-walking. Using the scale below, please indicate to what extent each of the following items is true for you. Please note that there are no right or wrong answers and no trick questions. We simply want to know how you personally feel about dog-walking. Your responses will be held in confidence and only used for our research purposes.

		Not true for me		Sometimes true for me		Very true for me
1	I walk my dog because other people say I should	0	1	2	3	4
2	I feel guilty when I don't walk my dog	0	1	2	3	4
3	I value the benefits of walking my dog	0	1	2	3	4
4	I walk my dog because it's fun	0	1	2	3	4
5	I don't see why I should have to walk my dog	0	1	2	3	4
6	I take part in dog-walking because my friends/family/partner say I should	0	1	2	3	4
7	I feel ashamed when I miss a walk with my dog	0	1	2	3	4
8	It's important to me to walk my dog regularly	0	1	2	3	4
9	I can't see why I should bother walking my dog	0	1	2	3	4
10	I enjoy my dog-walking sessions	0	1	2	3	4
11	I walk my dog because others will not be pleased with me if I don't	0	1	2	3	4
12	I don't see the point in walking my dog	0	1	2	3	4

		Not true for me		Sometimes true for me		Very true for me
13	I feel like a failure when I haven't walked my dog in a while	0	1	2	3	4
14	I think it is important to make the effort to walk my dog regularly	0	1	2	3	4
15	I find walking my dog a pleasurable activity	0	1	2	3	4
16	I feel under pressure from my friends/ family/partner to walk my dog.	0	1	2	3	4
17	I get restless if I don't walk my dog regularly	0	1	2	3	4
18	I get pleasure and satisfaction from walking my dog	0	1	2	3	4
19	I think walking my dog is a waste of time	0	1	2	3	4
20	I walk my dog because it is consistent with my life goals	0	1	2	3	4
21	I consider walking my dog to be a part of my identity	0	1	2	3	4
22	I consider walking my dog a fundamental part of who I am	0	1	2	3	4
23	I consider walking my dog consistent with my values	0	1	2	3	4

Thank you for taking part in our research

Scale Adapted from:
David Markland PhD, C.Psychol
School of Sport, Health & Exercise Sciences
University of Wales, Bangor
d.a.markland@bangor.ac.uk
Tel: 01248 382756
April 2000

Appendix H- Dog Walking and Physical Activity Behaviour Inventory

Dog-Walking and Physical Activity Inventory

The following questionnaire will ask you to provide information about your dog-walking and physical activity practices. Please answer the questions based on the activities you complete.

Dog-walking

Defined as the activity of you walking your dog, while your dog is on-leash or off-leash. Activities such as tossing a ball or time standing at a dog park are not included in this definition.

In part one, questions will ask about your dog-walking activity. The days, numbered from 1 to 7, allow you to check how many days in a normal week you dog-walk in a normal week in the spring/summer and winter, plus the total time on these days you would spend in an activity. Lastly, you will be asked to circle the level intensity that best reflects the majority of your dog-walks.

In part two, you will be asked to list the physical activities you do in a normal week in the spring/summer and winter. For each physical activity, you will be asked to list how many times a week you participate in each, how long an average session is, and the intensity of each activity.

Please Turn Over ⇨

Part One: Dog-Walking Activity

For the following questions, please provide information about your **dog-walking** activity during a ***NORMAL*** week in the ***WINTER months*** in Thunder Bay.

1. Please *check (✓) the number of boxes that represent how many days*, during a normal winter week, you walk with your dog for more than 10 minutes (1 box checked = 1 day, while 7 boxes checked = 7 days). In the box below each checked box, please provide *how long, in total, you would walk with your dog*.

Example:

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Winter	✓	✓	✓	✓			
	Total Time in Minutes						
	65 minutes total	120 minutes total	20 minutes total	20 minutes total			

Please complete:

	Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**	**Day 6**	**Day 7**
Winter *Colder weather*							
	Total Time in Minutes						

2. Please circle the level of intensity that best represents the majority of your dog-walking sessions.

Mild (stroll)	Moderate (brisk walk)	Vigorous (speed walk)

3. Please provide any other information you would like to about your dog-walking activity in the winter months.

_____

_____

_____

_____

For the following questions, please provide information below about your **dog-walking** activity during a ***NORMAL*** week during the ***SPRING/SUMMER months*** in Thunder Bay.

1. Please *check (✓) the number of boxes that represent how many days*, during a normal spring/summer week, you walk with your dog for more than 10 minutes (1 box checked = 1 day, while 7 boxes checked = 7 days). In the box below each checked box, please provide *how long, in total, you would walk with your dog*.

Example:

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Spring/ Summer	✓	✓	✓				
	Total Time in Minutes						
	20 minutes total	180 minutes total	45 minutes total				

Please complete:

	Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**	**Day 6**	**Day 7**
Spring/ Summer *Warmer weather*							
	Total Time in Minutes						

2. Please circle the level of intensity that best represents the majority of your dog-walking sessions.

Mild (stroll)	Moderate (brisk walk)	Vigorous (speed walk)

3. Please provide any other information you would like to about your dog-walking activity in the spring/summer months.

_____

_____

_____

_____

Please Turn Over ⇨

Part Two: Other Forms of Physical Activity

Please complete the following information based on your participation in other forms of physical activity (**excluding dog-walking**). Please list each activity you do, in each season, the number of times you complete this activity in an average winter or spring/summer week, the length of these sessions, and the intensity of the activity.

WINTER

List of Other Activities	# Times You Do this Activity in an Average Week	Length of an Average Session	**Intensity of the Activity** **Mild**-*Normal breathing; does not cause you to sweat* **Moderate**-*Slight increase in breathing; begin to sweat lightly* **Vigorous**-*Rapid breathing; causes you to sweat*
Winter Months			
1.			Mild Mod Vig
2.			Mild Mod Vig
3.			Mild Mod Vig
4.			Mild Mod Vig
5.			Mild Mod Vig
6.			Mild Mod Vig
7.			Mild Mod Vig
8.			Mild Mod Vig
9.			Mild Mod Vig
10.			Mild Mod Vig

SPRING/SUMMER

List of Other Activities	# Times You Do this Activity in an Average Week	Length of an Average Session	**Intensity of the Activity** **Mild**-*Normal breathing; does not cause you to sweat* **Moderate**-*Slight increase in breathing; begin to sweat lightly* **Vigorous**-*Rapid breathing; causes you to sweat*
Spring/Summer Months			
1.			Mild Mod Vig
2.			Mild Mod Vig
3.			Mild Mod Vig
4.			Mild Mod Vig
5.			Mild Mod Vig
6.			Mild Mod Vig
7.			Mild Mod Vig
8.			Mild Mod Vig
9.			Mild Mod Vig

3. Please provide any other information you would like to about your participation in other forms of physical activity anytime of year.

_____

_____

_____

_____

Appendix I- SF-36v2

Your Health and Well-Being

This survey asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities. ***Thank you for completing this survey!***

For each of the following questions, please mark an ☒ in the one box that best describes your answer.

1. In general, would you say your health is:

Excellent	Very good	Good	Fair	Poor
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

2. <u>Compared to one year ago</u>, how would you rate your health in general <u>now</u>?

Much better now than one year ago	Somewhat better now than one year ago	About the same as one year ago	Somewhat worse now than one year ago	Much worse now than one year ago
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

(SF-36v2® Health Survey Standard, Canada (English))

3. The following questions are about activities you might do during a typical day. Does <u>your health now limit you</u> in these activities? If so, how much?

		Yes, limited a lot	Yes, limited a little	No, not limited at all
a	<u>Vigorous activities</u>, such as running, lifting heavy objects, participating in strenuous sports	☐ 1	☐ 2	☐ 3
b	<u>Moderate activities</u>, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	☐ 1	☐ 2	☐ 3
c	Lifting or carrying groceries	☐ 1	☐ 2	☐ 3
d	Climbing <u>several</u> flights of stairs	☐ 1	☐ 2	☐ 3
e	Climbing <u>one</u> flight of stairs	☐ 1	☐ 2	☐ 3
f	Bending, kneeling, or stooping	☐ 1	☐ 2	☐ 3
g	Walking <u>more than a kilometre</u>	☐ 1	☐ 2	☐ 3
h	Walking <u>several hundred metres</u>	☐ 1	☐ 2	☐ 3
i	Walking <u>one hundred metres</u>	☐ 1	☐ 2	☐ 3
j	Bathing or dressing yourself	☐ 1	☐ 2	☐ 3

4. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a Cut down on the amount of time you spent on work or other activities	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b Accomplished less than you would like	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
c Were limited in the kind of work or other activities	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
d Had difficulty performing the work or other activities (for example, it took extra effort)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

5. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a Cut down on the amount of time you spent on work or other activities	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b Accomplished less than you would like	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
c Did work or other activities less carefully than usual	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

6. During the <u>past 4 weeks</u>, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbours, or groups?

Not at all	Slightly	Moderately	Quite a bit	Extremely
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

7. How much <u>bodily</u> pain have you had during the <u>past 4 weeks</u>?

None	Very mild	Mild	Moderate	Severe	Very severe
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6

8. During the <u>past 4 weeks</u>, how much did <u>pain</u> interfere with your normal work (including both work outside the home and housework)?

Not at all	A little bit	Moderately	Quite a bit	Extremely
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

9. These questions are about how you feel and how things have been with you <u>during the past 4 weeks</u>. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the <u>past 4 weeks</u>…

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a Did you feel full of life?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b Have you been very nervous?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
c Have you felt so down in the dumps that nothing could cheer you up?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
d Have you felt calm and peaceful?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
e Did you have a lot of energy?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
f Have you felt downhearted and depressed?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
g Did you feel worn out?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
h Have you been happy?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
i Did you feel tired?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

10. During the <u>past 4 weeks</u>, how much of the time has your <u>physical health or emotional problems</u> interfered with your social activities (like visiting with friends, relatives, etc.)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

11. How TRUE or FALSE is <u>each</u> of the following statements for you?

	Definitely true	Mostly true	Don't know	Mostly false	Definitely false
a I seem to get sick a little easier than other people	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b I am as healthy as anybody I know	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
c I expect my health to get worse	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
d My health is excellent	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Thank you for completing these questions!

Appendix J- Demographic Information

Demographic Information

1. ▢ Female ▢ Male

2. Please check the box that best describes the age category you fall into.

▢ 50-54
▢ 55-59
▢ 60-64
▢ 65-69
▢ 70-74
▢ 75-79
▢ 80-84
▢ 85 +

3. Please check the box that best describes the level of education you have completed.

▢ Some high school
▢ Completed high school
▢ College
▢ Trade/vocational school
▢ Undergraduate degree
▢ Graduate degree
▢ Professional degree

4. Please check the box that best describes your current housing situation.

▢ Detached home
▢ Townhouse
▢ Apartment/ Condominium
▢ Assisted-living facility

5. Please check the box that best reflects the area where you live.

▢ Within the City
▢ In a rural area

6. Please check the box that best reflects your current marital status.

▢ Single
▢ Married
▢ Separated/Divorced
▢ Widowed
▢ Common-Law Partnership

7. Please check the box that best describes YOUR health.

▢ Excellent
▢ Very Good
▢ Good
▢ Fair
▢ Poor

8. Please check the box that best describes YOUR mobility (ability to walk).

▢ Excellent
▢ Very Good
▢ Good
▢ Fair
▢ Poor

Please answer the following questions about your dog(s).

9. How many dogs do you own? _____

10. What size is (are) your dog(s)?

Dog 1.	Small	Medium	Large
Dog 2.	Small	Medium	Large
Dog 3.	Small	Medium	Large
Dog 4.	Small	Medium	Large

11. What age is (are) your dog(s)?

Dog 1. _____
Dog 2. _____
Dog 3. _____
Dog 4. _____

12. What energy level(s) is (are) your dog(s)?

Dog 1.	Low	Medium	High
Dog 2.	Low	Medium	High
Dog 3.	Low	Medium	High
Dog 4.	Low	Medium	High

13. Briefly describe your dog ownership history (i.e. how long have you owned a dog, what age did you first acquire a dog, have you owned a dog throughout your life or during specific periods).

_____

_____

_____

14. Please check the box that best describes you DOG'S health.

Dog 1.	Excellent	Very good	Good	Fair	Poor
Dog 2.	Excellent	Very good	Good	Fair	Poor
Dog 3.	Excellent	Very good	Good	Fair	Poor
Dog 4.	Excellent	Very good	Good	Fair	Poor

15. Please check the box that best describes your DOG'S mobility (ability to move around)

Dog 1.	Excellent	Very good	Good	Fair	Poor
Dog 2.	Excellent	Very good	Good	Fair	Poor
Dog 3.	Excellent	Very good	Good	Fair	Poor
Dog 4.	Excellent	Very good	Good	Fair	Poor

Appendix K- Interview Protocol

Interview Protocol

Project: *Exploring the Relationship between Motivation and Dog-Walking Behaviour: What Motivates Older Adults to Walk with their Dogs?*

Time of Interview:

Date:

Interviewer: Ashley Hope

Interviewee #:

Questions:

1. What does dog-walking look like for you?
2. Do you think owning a dog influences you to walk?
3. If you didn't have a dog, do you think you would still walk? Would you walk as much?
4. What do you think influences your motivation to walk with your dog?
5. How do you think walking with your dog differs from walking without your dog(s)?
6. When you are walking your dog, do you walk alone or with other people?
7. Do you feel that walking your dog is a valuable activity?
8. Does walking your dog give you a sense of satisfaction that you have been successful?
9. Is there anything else you would like to add?

Thank participant for participating in the study. Reiterate that confidentiality will be held to the highest degree.

Adapted from:
(Asmussen & Creswell, 1995) in:
Creswell, J. W. (2008). Collecting qualitative data. In *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (3rd ed., pp. 234). Upper Saddle River, NJ: Pearson.