

## Conceptualising dog owner motivations: The Pet Care Competency model and role of ‘duty of care’

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### Abstract

The current literature on the behaviour, health, and management of companion dogs (*Canis lupus familiaris*) indicates that their welfare is often compromised. While there are many factors that have the potential to influence the welfare of companion dogs, carer behaviour is highly influential. Therefore, in order to improve the welfare of companion dogs, it is vital to understand the general and specific human factors that underpin carer behaviour. One such factor that has received little attention in the scientific literature is ‘duty of care’. This paper will firstly review several extant, empirically validated models of human behaviour including the Cognitive Hierarchy model, the Schwartz Theory of Basic Human Values, the Theory of Planned Behaviour, and Hemsworth and Coleman’s Animal-Carer model. Secondly, by combining aspects of moral obligation and care, a strong theoretical argument will be presented for the role of ‘duty of care’ as a fundamental motivational driver of animal-carer behaviour. Finally, by integrating ‘duty of care’ with the aforementioned existing models, a hypothesised model of Pet Care Competency is presented, providing a more detailed representation of animal carer motivations than previously documented. Drawing together this wide range of behavioural research and psychological theory, the Pet Care Competency model provides a strong conceptual framework for future empirical investigation. Once the relevant values, beliefs, and attitudes that underpin ‘duty of care’ and contribute most strongly to an individual’s Pet Care Competency are identified, this model can be utilised to inform behaviour change programmes that aim to improve carer behaviour and, consequently, dog welfare. By employing this model to identify and target the key elements of carer motivation, a more enduring outcome may be achieved than traditional knowledge-based interventions. This work has the potential to significantly improve the outcomes of animal welfare education and intervention programmes, warranting further exploration.

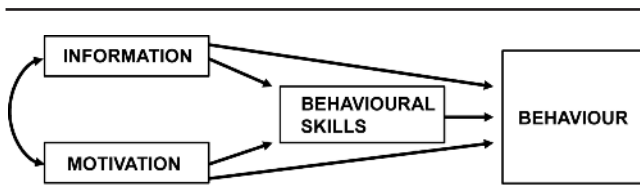
**Keywords:** animal welfare, attitudes, behaviour, dog, ‘duty of care’, Pet Care Competency

### Dog welfare and management

The practice of keeping animal companions is widespread throughout almost all human cultures (Serpell & Paul 1994). Indeed, 62% of households in Australia (Animal Medicines Australia 2016), 40% of households in the United Kingdom (Pet Food Manufacturers’ Association 2019), and 67% of households in the United States (American Pet Products Association 2019) accommodate a companion animal, the most popular being the domestic dog (*Canis lupus familiaris*). While the welfare of animals kept in commercial settings, such as food production, has become an issue of increasing societal concern (George *et al* 2016), the welfare of companion animals has received far less attention from both the general public and the scientific community (Hosey & Melfi 2014). Pets are typically perceived as having good welfare and most pet owners consider that they care for them appropriately (Rohlf *et al* 2010a; Howell *et al* 2016). However, the limited information that is available on dog behaviour, management, lifestyle-related diseases, relinquish-

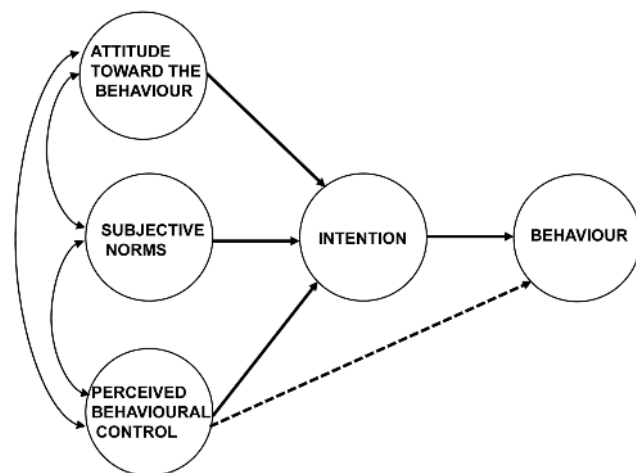
ment, cruelty, and neglect, suggests that pet dogs today face significant welfare challenges. For a comprehensive review of companion dog welfare, see Stafford (2007), Sonntag and Overall (2014), Sandøe *et al* (2016) or Hubrecht *et al* (2017). While many factors have the potential to influence the welfare of companion dogs, carer behaviour is likely to be the most influential (Stafford 2007). Dogs have been selectively bred for millennia to maximise their affinity with, and consequently their dependency on, humans (Serpell 2017). Modern ownership practices render pet dogs almost completely reliant on their human carers to provide for both their physical and psychological needs. By keeping them in a captive environment and controlling access to key resources, humans dictate almost every aspect of their lives. In many cases human carers control when and what dogs eat; their access to healthcare; opportunities for exercise, exploratory, and other natural behaviours; when and where they eliminate; what behaviours are deemed acceptable; and if, when, and with which individuals they can socialise or procreate.

Figure 1



Fisher and Fisher's Information-Motivation-Behavioural skills model (adapted from Fisher & Fisher 1992).

Figure 2



The Theory of Planned Behaviour (Ajzen 1991).

While the ways in which pet dogs are managed can vary dramatically (Kobelt *et al* 2003), in Australia, the majority are confined to backyards and left alone for long periods of time with little to do (Kobelt *et al* 2007; Howell *et al* 2016). Despite most developed countries having legislation that outlines basic care requirements, compliance is largely voluntary (Rohlf *et al* 2010a) and the day-to-day management decisions are left to the owner's discretion. It is these management decisions that can have a significant impact on the dog's behaviour, health, and welfare (Rohlf *et al* 2010a). Another key aspect of carer behaviour that is likely to have a significant impact on dog welfare is the direct interactions with the dog that contribute to the quality of the human-animal relationship. Research in shelters and laboratories has repeatedly shown that positive human interaction reduces stress and is essential for dog welfare (Wells 2004). Although very little work has been conducted in the home environment, one study by Kobelt *et al* (2007) suggests that the quality of the human-dog relationship (as characterised by the sum and nature of the interactions) may be more important for dog welfare than the dog's physical environment.

Owing to the importance of both carer management and interactive behaviours for the welfare of companion dogs, understanding the general and specific human factors that underpin these behaviours may provide the best opportunity to improve dog welfare.

## Knowledge and education

Mismanagement of companion animals is often thought to be the result of ignorance (Royal Society for the Prevention of Cruelty to Animals [RSPCA] Victoria 2016). In an attempt to improve pet management, many organisations turn to educational programmes and campaigns. These programmes aim to equip carers with the knowledge to adequately care for their pets, typically focusing on management practices, such as desexing and microchipping, as well as the day-to-day needs of pets (Agriculture Victoria 2017). This knowledge is clearly an important factor, as being aware of an animal's needs is necessary in order to fulfil those needs. While standardised training exists for stockpeople (Coleman & Hemsworth 2014), there is no such equivalent for companion animal carers. Consequently, the knowledge and skills of carers can vary dramatically. Although research in this area is scarce, a few studies have highlighted an apparent lack of carer knowledge in relation to critical topics, including reproduction (Welsh *et al* 2014), body condition (Rohlf *et al* 2010b; Howell *et al* 2016), body language (Kerswell *et al* 2009), and pain management (Heuberger *et al* 2016).

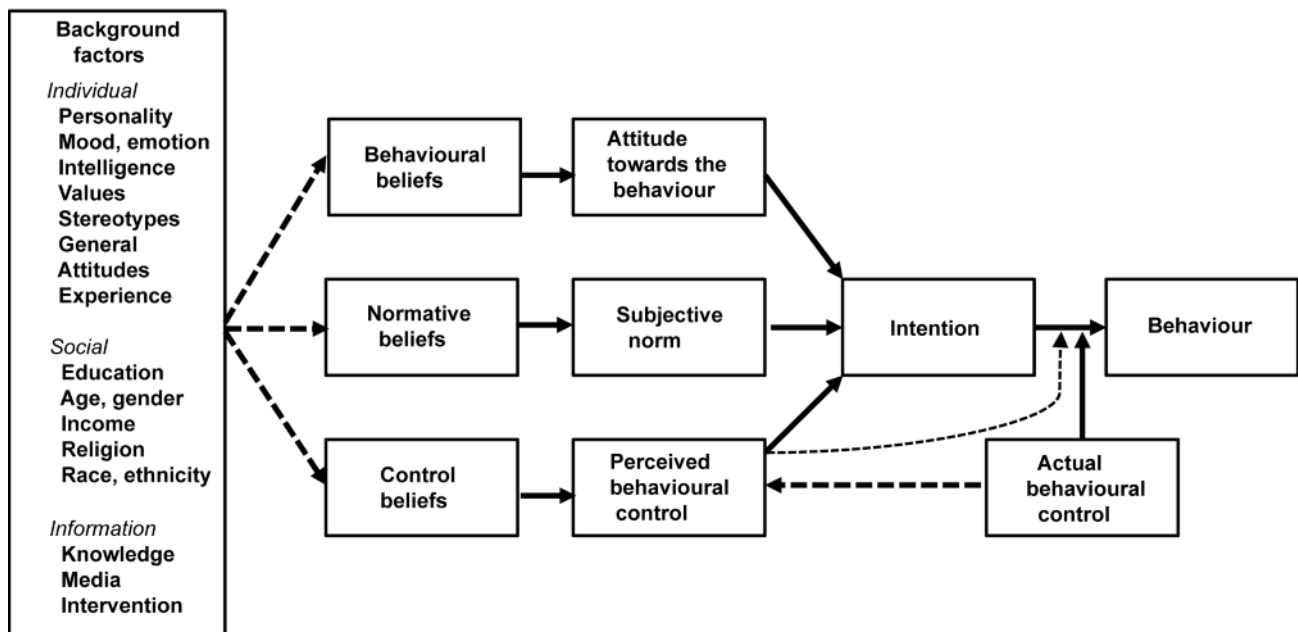
Fisher and Fisher (1992) proposed the Information-Motivation-Behavioural Skills model (IMB) (Figure 1) to account for the direct and indirect influence of both knowledge (information) and motivation on behaviour.

However, despite its intuitive appeal, empirical testing of this model has consistently found information to be a relatively poor predictor of behaviour in comparison to motivation (Marie & Barry 1997; Chan & Molassiotis 1999; Wallace 2002; Guerra *et al* 2005; Ajzen *et al* 2011). When a knowledge effect was found, it was either very small or had only an indirect effect as mediated by behavioural skills (Fisher *et al* 1994; Zhu *et al* 2013; Alexander *et al* 2017; Shrestha *et al* 2017). With regards to dog management, in 2008, Switzerland introduced mandatory practical and theoretical training for all dog owners, which was subsequently repealed in 2016 after a review found the measures had little influence on carer behaviour (Swiss Info 2016). As such, increasing carer knowledge about responsible dog care is unlikely to be sufficient alone to change owner behaviour. Importantly, owners must be sufficiently motivated to perform the behaviours in question. To articulate the motivational component of the IMB model, Fisher and Fisher (1992) originally utilised Fishbein and Ajzen's Theory of Reasoned Action, which has since been developed into the Theory of Planned Behaviour (TPB); one of the most influential and widely cited models of human behaviour (Ajzen 2011).

## Attitudes, intentions and behaviour: The Theory of Planned Behaviour (TPB)

The TPB employs a cognitive approach to predict volitional behaviour, linking specific behaviours with their underlying motivational factors. According to the TPB, the immediate

Figure 3



An expanded representation of the Theory of Planned Behaviour with the precursors to attitudes (from Albarracín *et al* 2005 [adapted by Hemsworth & Coleman 2011]).

determinants of behaviour are a person's intention to perform that behaviour and their perceived behavioural control (Figure 2) (Ajzen 1991).

Intention is considered to be a representation of an individual's motivation and is the product of three specific attitudinal elements: 'attitude towards the behaviour', 'subjective norms', and 'perceived behavioural control'. A person's attitude towards the behaviour is a personal evaluation of the behaviour and its outcomes as positive or negative. 'Subjective norms' refer to the individual's perception of social pressures from important others. Finally, perceived behavioural control reflects the perceived level of difficulty in performing the behaviour, having an influence on both behavioural intention and behaviour itself. Importantly, these attitudes are specific to the behaviour in question and the relative importance of each will vary across situations and with different target behaviours (Ajzen 1991).

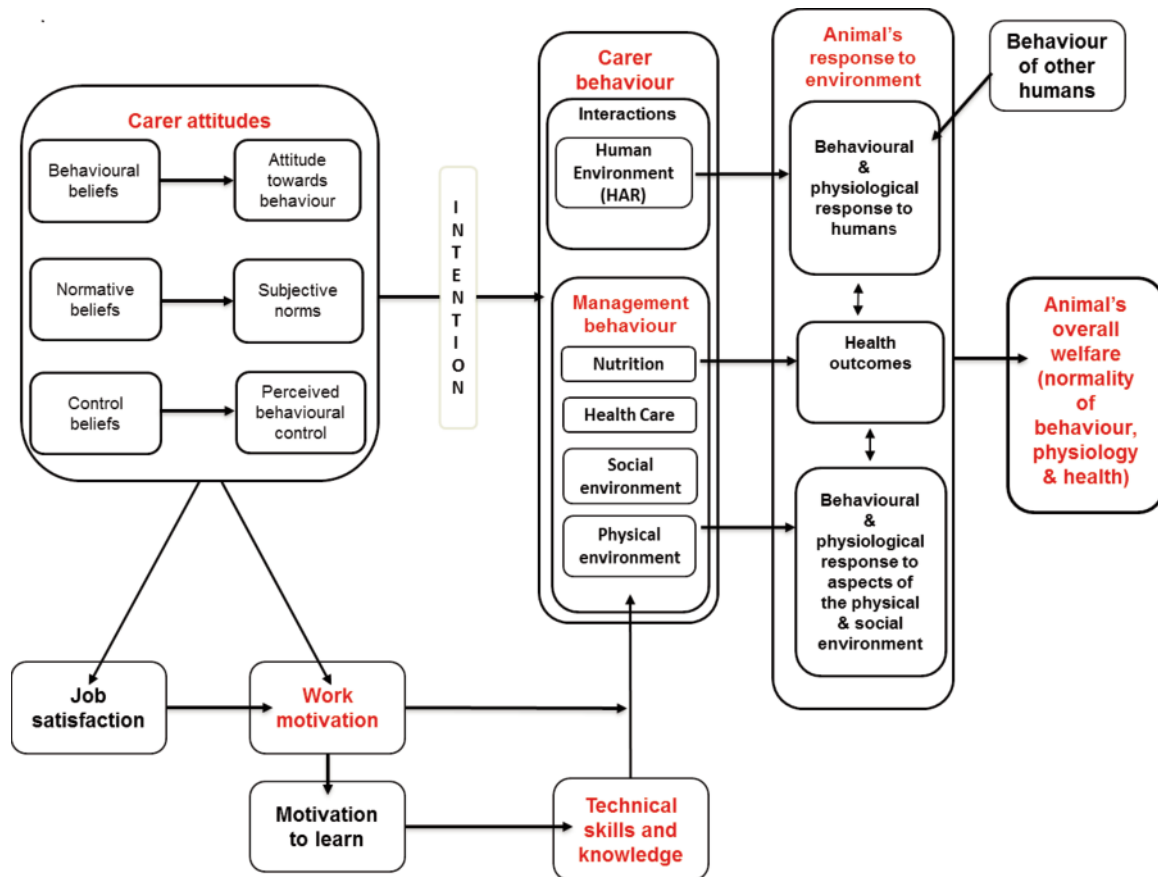
As demonstrated in Figure 3, the three attitudinal factors are, in turn, a direct product of their associated salient beliefs. Beliefs are personal perceptions of truth, or subjective facts, and serve as the basis of attitudinal evaluations. While attitudes are difficult to measure directly, they can be inferred from a person's responses to statements regarding these salient beliefs (Hemsworth & Coleman 2011). Hence, a person's intention to perform a specific management behaviour, like walking their dog, could in theory, be predicted accurately from their responses to belief statements that target these three types of beliefs, such as: 'daily walking exercise is important for dogs to be happy' (behavioural belief); 'my family would expect me to walk my dog daily' (normative belief); and 'I don't have the time to walk my dog daily' (control belief).

### Application of the Theory of Planned Behaviour

A substantial body of work has applied these principles in animal care settings and, through experimental approaches, have demonstrated causal relationships between the TPB elements, animal carer behaviour, and animal welfare outcomes (Hemsworth & Coleman 2011). The majority of this work has been conducted in the livestock industries with regard to animal handling. Various studies with pigs, laying hens, and dairy cattle have found that the attitudes of stockpeople reliably predict handling behaviour (Hemsworth & Coleman 2011). Negative attitudes towards interacting with these animals are correlated with negative handling behaviours (Hemsworth & Coleman 2011). Such negative handling leads to increased fear of humans which, in turn, through the physiological effects of chronic stress, causes suppression of growth, reproductive processes, and immune function (Hemsworth & Coleman 2011). Furthermore, positive attitudes are correlated with positive handling behaviours, low levels of fear, increased production (eggs and milk), growth, reproductive success, and stronger immune systems (Hemsworth & Coleman 2011). Cognitive-behavioural interventions have been used to manipulate these attitudinal factors yielding improvements in animal welfare and production, thus demonstrating the causal nature of these relationships (Hemsworth *et al* 1994, 2002; Coleman *et al* 2000; Coleman & Hemsworth 2014).

A handful of studies also support the important role of attitudes in companion animal management behaviours,

Figure 4



Hemsworth and Coleman's model of the animal-carer relationship (Hemsworth et al 2018).

such as registration, microchipping, desexing, and socialisation (Blackshaw & Day 1994; Rohlf et al 2010a). Hemsworth and Coleman's model of the animal-carer relationship (Figure 4) illustrates these important relationships between human attitudes and beliefs, human behaviour, and animal welfare outcomes.

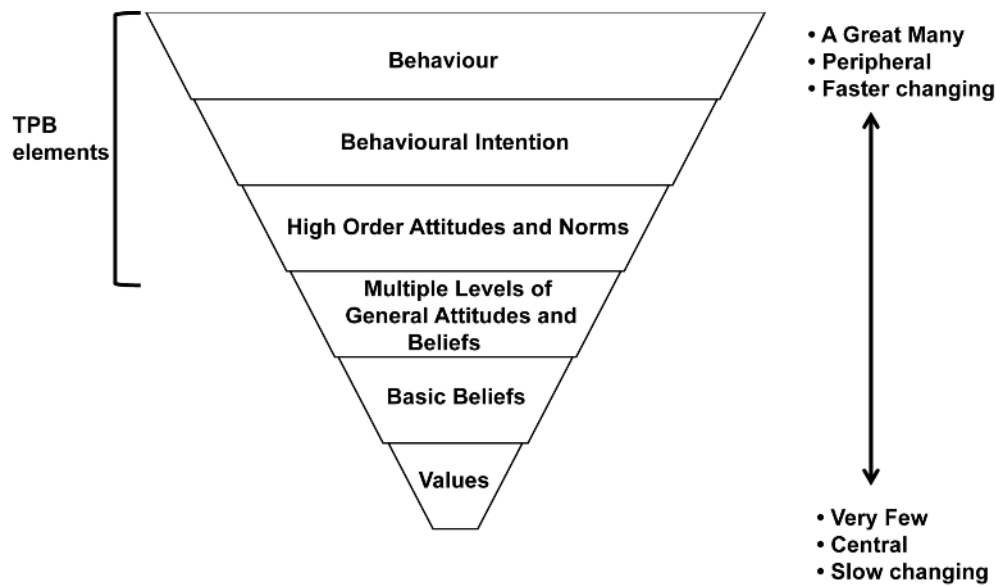
In all, the current evidence highlights the importance of attitudes and their salient beliefs in animal management and handling behaviour. However, given the wide range of behaviours involved in caring appropriately for one's companion animal, and consequently greater still numbers of associated attitudes and beliefs, it would be difficult to target all of these in a single intervention. If, however, there were broader factors that influence these beliefs and attitudes that could be targeted first, this could provide a means of influencing the suite of behaviours more efficiently. This raises the question of what, in the model, precedes beliefs, and therefore, attitudes and behaviour?

The TPB lists a range of background factors that are deemed to influence the behaviour-specific attitudes (Figure 3). Several of these background factors have been investigated and found to correlate with attitudes to animals, animal management, and animal behaviour. These include age

(Kubinyi et al 2009; Howell et al 2016), gender (Taylor & Signal 2005; Vitulli 2006; Kubinyi et al 2009; Degeling et al 2012), education (Dotson & Hyatt 2008), experience (Jagoe & Serpell 1996; Kobelt et al 2003; Bennett & Rohlf 2007), marital status (Marinelli et al 2007), culture (Serpell 2009; Blouin 2013), and various personality traits (Seabrook 1991; Ravel et al 1996; Furnham et al 2003; Hanna et al 2009). Although these are interesting findings and help to inform how attitudes develop, many of these demographic factors are unable to be changed. Hence, when the ultimate goal of understanding animal management behaviour is to alter this behaviour in some way, our focus should arguably be on the factors that are learned and open to intervention. According to the TPB, these would include values, emotions, and general attitudes.

Although these factors are acknowledged in the TPB, the sequential relationship of various cognitive elements is more clearly articulated by the Cognitive Hierarchy model (CHM), also known as the values-attitude-behaviour hierarchy (Homer & Kahle 1988). This theory identifies core values as the cognitive foundation from which increasingly specific beliefs and attitudes develop, ultimately leading to behaviour (Figure 5).

Figure 5



Homer and Kahle's Cognitive Hierarchy model (adapted from Fulton *et al* 1996).

### Values: The cognitive foundation of behaviour

Values are the overarching guiding principles in an individual's life and can be considered as trans-situational goals that motivate action in order to achieve those goals (Schwartz *et al* 2012). Unlike attitudes and beliefs, values are abstract, non-specific, and fairly stable in nature, though there is increasing experimental evidence that they can be intentionally changed through interventions (Fulton *et al* 1996; Schuster *et al* 2019). They are also considered to be relatively universal across cultures and few in number. The most prolific and influential voice on this topic, Schwartz, considered this to be because of their derivation from three basic requirements of human existence: i) the needs of individuals as biological organisms; ii) requisites of co-ordinated social interaction; and iii) the functioning and survival of groups (Schwartz 1994). From these three basic needs, Schwartz originally proposed ten motivationally distinct human values: Self-direction, Stimulation, Hedonism, Achievement, Power, Security, Conformity, Tradition, Benevolence, and Universalism (Schwartz 1992). These have since been expanded to include a number of subtypes for more accurate characterisation (Schwartz *et al* 2012). Table 1 lists and defines these 19 values in terms of their relevant motivational goal.

A central element of the Schwartz Theory of Basic Human Values is the structuring of values as a circular motivational continuum (Figure 6) (Schwartz *et al* 2012). This reflects the dynamic relationships between the different values and any actions in pursuit of them. Actions serving those values positioned next to each other are relatively compatible, while those opposite each other are typically conflicting. For example, actions of Benevolence and Universalism would generally be compatible as they are both concerned with the welfare of others, yet they may conflict with the pursuit of such self-focused values as achievement and power.

Schwartz's circular model also highlights that the motivational bases of values are continuous rather than discrete and can be further organised in terms of two bipolar motivational dimensions: self-enhancement vs self-transcendence and conservation vs openness to change (Figure 6).

Importantly, values serve as a set of standards or criteria for the evaluation of attitude objects (ie anything that can be evaluated: people, animals, behaviours, concepts) and the subsequent development of attitudes towards them (Schwartz 1992). If our beliefs about an attitude object are consistent with our values or serve to attain a value-based goal, we will evaluate that object positively and have a favourable attitude towards it. In this way, values have an indirect but important influence on behaviour through their effect on attitudes.

The role of values in guiding and influencing animal carer attitudes and behaviour has not been investigated. However, some research has examined values that underlie attitudes towards animals in other contexts, including wildlife conservation (Fulton *et al* 1996; Dietz *et al* 2017) and animal-derived food choices (Hayley *et al* 2015; Cembalo *et al* 2016). Those that utilise the Schwartz model have found that the values related to self-transcendence (Universalism and Benevolence) are associated with more favourable attitudes and actions with regard to animals and animal welfare (Cembalo *et al* 2016). Given that self-transcendence values represent concern for others, this is not surprising. Additionally, those who place higher value on Power and Security have more negative attitudes towards reducing meat consumption (Hayley *et al* 2015). This is likely a result of the inverse relationship Power and Security have with the self-transcendence and openness to change dimensions (Figure 6), as reducing meat consumption is often driven by concerns for others (animals and the environment) and involves significant lifestyle changes.

**Table 1** Schwartz's 19 basic human values (Schwartz *et al* 2012).

Value	Conceptual definition in terms of motivational goals
Self-Direction (thought)	Freedom to cultivate one's own ideas and abilities
Self-Direction (action)	Freedom to determine one's own actions
Stimulation	Excitement, novelty, and change
Hedonism	Pleasure and sensuous gratification
Achievement	Success according to social standards
Power (dominance)	Power through exercising control over people
Power (resources)	Power through control of material and social resources
Face	Security and power through maintaining one's public image and avoiding humiliation
Security (personal)	Safety in one's immediate environment
Security (societal)	Safety and stability in the wider society
Tradition	Maintaining and preserving cultural, family, or religious traditions
Conformity (rules)	Compliance with rules, laws, and formal obligations
Conformity (interpersonal)	Avoidance of upsetting or harming other people
Humility	Recognising one's insignificance in the larger scheme of things
Benevolence (dependability)	Being a reliable and trustworthy member of the in-group
Benevolence (caring)	Devotion to the welfare of in-group members
Universalism (concern)	Commitment to equality, justice, and protection for all people
Universalism (nature)	Preservation of the natural environment
Universalism (tolerance)	Acceptance and understanding of those who are different from oneself

With the exception of Universalism (nature), all of the currently identified values within the Schwartz framework are human-focused. While investigating values with regards to environmental decision-making, Dietz *et al* (2017) identified a 'concern for animals' value orientation. Critically, they found this to be distinct from other human- and nature-focused values commonly cited in this field of research. Indeed, connectedness with other animals has been described as a basic human need (Hosey & Melfi 2014). The Biophilia hypothesis, made popular by Edward O Wilson (Wilson & Kellert 2013), asserts that humans have an innate and biologically based attraction to other forms of life, including other animals (Coleman *et al* 2016). Hence, as values stem from basic human needs, it is likely that there are basic human values with regards to non-human animals that are absent from the dominant value theories. The identification of these may aid in explaining the range of attitudes people have towards animals and caring for them.

## General beliefs and attitudes

Immediately adjacent to values in Homer and Kahle's cognitive hierarchy are 'basic beliefs' and 'multiple levels of general attitudes and beliefs' (Figure 5). These general cognitive elements are the link between abstract basic values (Schwartz) and behaviour-specific attitudes (TPB). With regard to dog management behaviour, such general attitudes would logically include an individual's beliefs about and attitudes towards animals and dogs themselves.

### Beliefs about animal qualities

It is widely accepted that human attitudes towards animals are heavily influenced by various attributes of the animal itself. Perceived similarity to humans and the possession of attributes that humans value in themselves, are typically associated with increased empathy (Hills 1995) and more positive attitudes towards animals (Serpell 2004). One particularly important attribute is the cognitive capacities of animals. Greater belief in this correlates with greater empathy for those animals (Hills 1995) and reduced support for animal use (Knight *et al* 2004).

In general, dogs tend to be perceived quite favourably in this regard (Davis & Cheeke 1998; Howell *et al* 2013). Wilkins *et al* (2015) found that of 24 different species, people considered dogs to be the most likely to experience both primary (joy, fear, anger, and sadness) and secondary emotions (pride, guilt, and jealousy). In a survey of psychology students, both dog owners and non-dog owners considered that dogs have souls and can feel love and compassion (Vitulli 2006). Of a range of species, dogs have also been rated the most intelligent (Davis & Cheeke 1998), the most likely to have an afterlife (Royal *et al* 2016), and are thought to be able to understand how their owners are feeling (Vitulli 2006; Howell *et al* 2013; Maharaj & Haney 2015). Howell *et al* (2013) also reported that 45.7% of dog owners surveyed considered dogs to have the intelligence of a 3–5 year old human child. In the same survey, belief in canine cognitive ability was positively correlated with emotional owner-dog closeness (Howell *et al* 2013).

### The role of the dog

Another concept that frequently appears in the literature concerning attitudes towards dogs is the dog's role or status. Companion dogs are viewed in a range of different ways: as property, prized possessions, ornamental objects, playthings, status symbols, mutual benefactors, guardians, teachers, family members, companions, or surrogate children (Hens 2009; Hurn 2012; Sandøe *et al* 2016). Despite this wide range of attitudes that exist, Blouin (2013) identifies three fundamental patterns of attitudes towards companion dogs, which are referred to as the 'dominionist', 'protectionist', and 'humanist' orientations. While these attitude orientations are quite general in nature and, in reality, most people will hold a view based on a combination of them, they provide a useful framework for discussion of a complex topic.

Table 2 outlines how these different attitude orientations may influence various aspects of dog management and the carer-dog relationship. However, this is yet to be empirically tested. In Australia, there has been a significant shift in attitudes towards the role of dogs and it would appear that the

Figure 6

Circular motivational continuum of the 19 Schwartz values with bipolar organisational dimensions (adapted from Schwartz et al 2012).

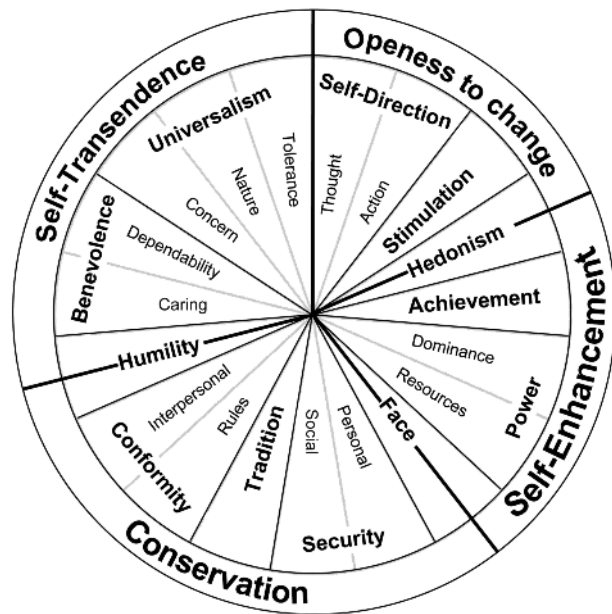


Table 2 Generalised dog owner attitude orientations (Blouin 2013).

Attitude/Behaviour	Humanistic	Protectionistic	Dominionistic
Status of own dog(s)	Elevated status. Equal to humans. Cherished pet, child	Elevated status. Equal or superior to humans	Below humans
Owner's view of self	Parent, friend	Caretaker, guardian, companion	Owner, boss
Role of dog(s) in household	Cherished child, best friend	Best friend, companion	Useful in some capacity, such as for protection, entertainment
Attitudes towards other animals	Concern is with own dog, may be partial to dogs in general but indifferent to other animals	Universal concern for welfare of animals	Different types of animals have different purposes. Indifferent about animal welfare
Animal advocacy involvement	Limited. May give to dog- or cat-related causes.	Often volunteer for, and/or give money to organisations and causes	Rare. May give to dog- or cat-related causes
Dog's 'home'	Usually inside. Sleeps in owner's bed or has bed of own	Varies. Inside or outside. Whatever is 'best' for dog	Often kept outside. Varies based on dog's role
Veterinary Visits	Often. More than once a year but even more for older dogs	Often. More than once a year but even more for older dogs	Rarely. Once a year or less
Relinquishment attitudes and practices	Would never relinquish current dog, but may have done in past, with less cherished pets	Would never relinquish. Consider such behaviour mistreatment	Likely to relinquish dog if dog becomes inconvenient or problems arise
Reaction to pet's death or impending death	Very difficult. May dissuade from having another dog in the future. Likely to attempt to delay pet's death	Very difficult. Have dog's interest in mind when dealing with end of replaced life situations	Difficult, but dog can be

majority of dog owners now employ some version of a humanistic or protectionistic orientation towards their dogs. Even within the last decade, the number of owners considering their dog to be 'part of the family' has increased from 59% in 2013 to 65% in 2016 (Animal Medicines Australia 2016). We have seen the emergence of the 'fur-baby' and dog owners are increasingly identi-

fying themselves as 'parents' (Greenebaum 2004; Maharaj & Haney 2015). This change in attitudes is also reflected by the recent boom in pet-related services and a 42% increase in pet-related expenditure between 2013–2016, now equalling \$A12.2 billion a year (Animal Medicines Australia 2016). A further 24% of Australians consider their dogs to be 'companions', while 6% are 'fun

for the children', and 2% are 'ornamental'. So, although the majority of dogs are considered to be members of the family, there remains a range of attitudes within the Australian dog-owning community.

While there has been a reasonable amount of work looking at attitudes towards dogs, there remains a dearth of information regarding how this actually affects carer behaviour and animal welfare. Although the evidence outlined here suggests that people generally have more favourable attitudes towards pet dogs than other animals, individual beliefs and attitudes are often complex, inconsistent, and can vary significantly (O'Farrell 1997; Serpell 2017). It is these differing individual attitudes and beliefs that are likely to influence and help explain variations in management behaviour and direct human-dog interactions that contribute to the human-animal relationship. Furthermore, there has been little work looking at other potentially important factors, specifically those that inform attitudes about caring for one's animals, not just about the animals themselves. Here, we suggest that one such concept that is often referred to in animal protection discourse and is fundamental to our relations with other animals, yet has received no attention in the scientific literature, is 'duty of care'.

### **'Duty of care': What is it?**

'Duty of care' is a concept that has currency in legal, philosophical, ethical, and general animal protection discourse. First, we will briefly outline existing understandings of the term before presenting a new conceptualisation of 'duty of care' as a distinct motivational construct.

'Duty of care' as a legal concept is not unique to animal welfare legislation, having derived from tort law of human-related negligence (Nash 2013). It places positive duties on a person to act as a 'reasonable person' would in the given circumstances to safeguard the well-being of others whom our actions impact upon. By placing a 'duty of care' on persons in charge of an animal, failure to provide the prescribed level of care (typically based on the Five Freedoms) is, in itself, an offence and can be investigated before harm has been caused. Since 'duty of care' first appeared in the British Agriculture (Miscellaneous Provisions) Act 1968, the idea that humans have certain obligations to care for other animals has been incorporated into animal protection legislation around the world (Eadie 2011).

Philosophical and ethical considerations of human duties to non-human animals have been a topic of controversy for centuries. For many years, mainstream ethical discourse (influenced heavily by philosophers, such as René Descartes and Immanuel Kant) maintained that humans have no direct duties to non-human animals owing to the latter's lack of moral status (Sanders 1999). Animals were denied ethical consideration or entry into the 'moral community' for a number of reasons including their supposed lack of autonomy, rationality, or consciousness. Judeo-Christian views further informed a hierarchical view of the world whereby all other animals existed to serve humans (Eadie 2011). However, there has been a gradual shift in societal attitudes towards the treatment of animals,

with it now being generally accepted that we have some degree of obligation to some animals (Broom 2010).

The term 'duty of care' is also commonly used in various areas of animal protection, such as animal welfare science, policy, and the general language used by animal protection organisations. However, it is typically mentioned in passing, as more or less a given from which discussion of other aspects of management or treatment derive. Rarely is it scrutinised or defined in a consistent and comprehensive way. Hence, returning to the essence of what the phrase means is a helpful exercise.

The term 'duty of care', in itself, is the product of two distinct concepts: duty and care. A duty is a moral (or legal) obligation grounded in deontological or so-called 'duty-based' ethics. The legal element was covered previously. Where a duty exists, there is a commitment or compulsion to some form of action in order to fulfil one's obligations, although refraining from action is also considered an action in itself, for instance in refraining from doing harm. In the case of 'duty of care' to animals, that action is for a person to care for animals they are in charge of. NB a person is typically considered 'in charge' of an animal if they are the owner of the animal or it is in their custody. Care is a multi-faceted concept including both overt acts of providing for another's welfare and internal processes of concerned attention sometimes described in terms of virtues or moral emotions (Engster 2007). Thus, in this context, 'duty of care' can be defined as the moral obligation of a person to provide appropriate care for the physical and psychological needs of animals they are responsible for, thus facilitating a good state of welfare. We will now briefly discuss the concepts of moral obligation and care, with regard to their role in providing an intrinsic motivation for behaviour.

### **Moral obligations**

In moral and social psychology, moral obligations (duties; but also referred to as 'personal norms' or 'moral norms') are considered a distinct psychological construct and have been investigated for their unique contribution to motivating behaviour. Indeed, moral obligations were recognised by Ajzen (1991) as a significant addition to the Theory of Planned Behaviour constructs, improving their predictive power in situations that could be considered of moral issue, ie concerning the welfare of others or society (Haidt 2003). Studies on a range of behaviours, including lying and cheating (Beck & Ajzen 1991), volunteering (Bang *et al* 2014), donating (Knowles *et al* 2012), digital piracy (Cronan & Al-Rafee 2008; Yoon 2011), food choice and consumption (Raats *et al* 1993; Sparks & Shepherd 2002; Olsen *et al* 2010), and pro-environmental behaviours (van der Werff *et al* 2013; Chen & Tung 2014; Culiberg 2014; Han 2015; Chen 2016; Sia & Jose 2019), have provided empirical evidence for the role of moral obligations as a valuable extension to the TPB.

Another way of distinguishing which behaviours would be motivated by moral obligations is presented by van der Werff *et al* (2013), with an intuitive distinction between enjoyment- and obligation-based intrinsic motivation. For



behaviours that are enjoyable, the enjoyment itself provides the intrinsic motivation, while for those that are not enjoyable, we will be more likely to do them if we feel obligated to do so. For many people, most animal management behaviours are probably not overly enjoyable in themselves, eg taking the animal to the veterinarian, feeding them, providing enrichment items, picking up faeces, flea and worm treatments etc. Hence, obligation-based motivation is likely to be especially important for these behaviours.

As to how moral obligations motivate behaviour, Tomasello (2019) describes obligations as having a peremptory and coercive quality, combined with a sense of guilt when one fails to fulfil their obligation. The anticipation of guilt (a negative and uncomfortable emotion), can serve to motivate action in order to avoid this guilt, a negative personal consequence (Tangney *et al* 2007). However, there are also positive affective experiences associated with fulfilling one's obligations, such as moral pride, a feeling of achievement, or contributing to something greater, that serve as positive reinforcers (Pelletier *et al* 1998; Tangney *et al* 2007; van der Werff *et al* 2013).

While moral obligations or duties to animals are widely discussed in animal ethics, the only empirical investigation of their role in motivating animal carer behaviour has been a rather peripheral study by Brown and Rhodes (2006) examining the potential of dog ownership as a strategy to increase human physical activity. They found that while the TPB constructs accounted for 13% of the variance in walking behaviours, participants' sense of obligation to walk their dogs accounted for an additional 11% of the variance. This demonstrates the potentially important role of moral obligations in motivating pet owner behaviour, warranting further investigation with other behaviours and their relationship with animal welfare outcomes.

## Care

The concept of care has wide-ranging meanings and applications in a number of disciplines (Held 2006; Engster 2007). As mentioned previously, it has practical or active dimensions as well as internal motivational dimensions (Engster 2007). In the active sense, to provide care for or take care of another is to perform specific actions which serve to aid or look after them. Additionally, as identified by psychologist and founder of the Ethics of Care, Carol Gilligan (1982; p 62):

The ideal of care is thus an activity of relationship, of seeing and responding to need

This is especially pertinent to our relationships with companion animals in being able to recognise and respond appropriately to their needs. This is often discussed with regard to empathy, being able to 'put yourself in another's shoes' and understand or feel how they are feeling (Cuff *et al* 2016). Indeed, empathy for animals has received a great deal of attention in the literature and fields such as humane education (Komorosky & O'Neal 2015; Young *et al* 2018). However, with empathy comes the risk of unwittingly imposing our own preconceptions and shortcomings on our understanding of the other's experience and needs

(Sevenhuijsen 2018). This misunderstanding of needs, projection of our own biases, or even excessive anthropomorphism could jeopardise animal welfare particularly because, unlike other humans, animals cannot correct us if our assumptions are wrong. For example, providing treats to a dog which is extremely food motivated would instill in a highly empathic owner feelings of happiness and reward, thereby motivating the owner to provide treats more often. However, this could lead to negative outcomes for the dog's weight and welfare if not combined with the appropriate attention towards the animal's long-term needs as opposed to short-term pleasures. Consequently, while empathy is undoubtedly an important factor, we would argue a more specific and reflective form of attention, which has been described as care, is required for appropriate management. In this way, care is a combination of cognitive and affective processes which motivate behaviours that ultimately seek to optimise the welfare of another.

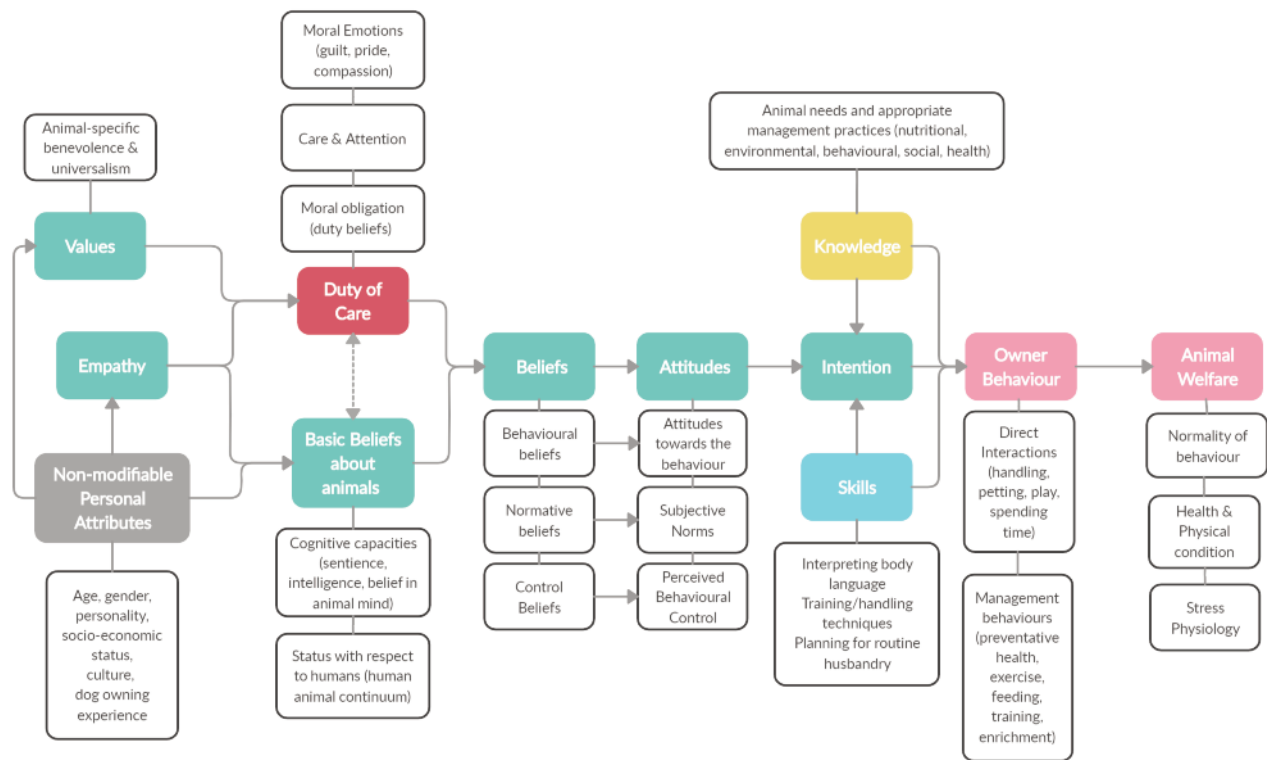
As such, we propose 'duty of care' is a potentially powerful and unique motivator with both cognitive and affective dimensions, representing the marriage of moral obligations and attentive care.

## Bringing it together: The Pet Care Competency model

Having defined 'duty of care' as a distinct motivational construct above, we can begin to examine where it would theoretically sit within the broader picture of owner motivations (Figure 5). Ajzen traditionally positioned moral obligations in parallel with the other TPB constructs (Beck & Ajzen 1991). However, we consider that it is possible that 'duty of care' is a more generalised antecedent to the behaviour-specific attitudes and beliefs of the TPB, informing a range of care-related behaviours. If this is indeed found to be the case (through empirical investigation), this would be of practical relevance for interventions to be able to target 'duty of care', causing a flow-on effect to a range of behaviours. In turn, we would expect 'duty of care' to be underpinned by the broader basic human values, which may include currently unidentified animal-related values as discussed earlier, empathy, and various stable (not open to intervention) background factors. Additionally, an individual's personal beliefs and feelings about what we owe animals ('duty of care') are likely to be informed by basic beliefs about animals themselves. However, there may well be more universal aspects of 'duty of care' that are not mediated by beliefs about animals. This is an empirical question and requires further investigation to elucidate the potentially complex relationships between these concepts.

Each of the aforementioned elements are articulated in the various psychological models discussed in this paper. Hence, by integrating 'duty of care' with the Cognitive Hierarchy model, the Schwartz Theory of Basic Human Values, the Theory of Planned Behaviour, and Hemsworth and Coleman's Animal-Carer model, a hypothesised model of what we call Pet Care Competency has been constructed (Figure 7). While 'competency' is sometimes thought to mean skills or knowledge alone, it is also used, particularly

Figure 7



Hypothesised Pet Care Competency model.

in care-related fields (eg nursing, counselling, and medicine), to describe the complex combination of skills, knowledge, attitudes, values and behaviours that are required for a person to fulfil their given role (Bidell 2005; Takase & Teraoka 2011; Fukada 2018). In this way, Pet Care Competency encapsulates the (currently hypothesised) range of factors required to fulfil the 'role' of a successful pet carer, appropriately providing for the needs of the animal to maintain a good state of welfare.

Drawing together these discrete psychological models with 'duty of care', the Pet Care Competency model aims to articulate an integrated pathway from the most fundamental cognitive element (values) through to carer behaviour itself and, finally, animal welfare outcomes. Importantly, 'duty of care' is positioned as a novel motivator serving as an intermediary between abstract values and basic beliefs, and highly specific behaviour-based attitudes. Consequently, this model constitutes a more holistic representation of the potential drivers of animal care- and management related-behaviours than has previously been documented. It also provides a theoretically sound conceptual framework for empirical testing of the model and investigation of the role of 'duty of care' in companion animal care and management. Such testing would initially require the development or refinement of psychometrically sound tools (questionnaires) to measure the various aspects of the model. Observational studies could then be employed to examine the relationships between model elements and their ability to predict human

behaviours and animal welfare outcomes. Ultimately, to demonstrate causal relationships, an intervention would be required to alter the model elements before measuring the impact on human behaviour and animal welfare.

### Animal welfare implications

As the welfare of domestic dogs, and indeed all animals kept by humans, is largely reliant on carer behaviour, it is imperative to understand what motivates people to behave in the ways that they do. In this paper, we have conceptualised 'duty of care' as a combination of moral obligation and care, providing a powerful intrinsic motivation to care for animals through a hierarchy of increasingly specific beliefs and attitudes. The conceptual argument presented herein, culminating in the hypothesised Pet Care Competency model, provides a strong theoretical basis for further exploration of dog owner motivations and the role of 'duty of care'. While some elements of the model have been well established in other settings (TPB and its relationship with animal outcomes), the relationships between the more fundamental motivators like values, empathy, basic beliefs, and 'duty of care', must be validated through empirical investigation. Once the relevant psychological components (specific values, beliefs, attitudes, emotions) that underpin 'duty of care' and contribute most strongly to an individual's Pet Care Competency are identified, these may be targeted in behaviour change programmes, which traditionally focus on knowledge acquisition and, sometimes, higher

order beliefs and attitudes. From the literature reviewed here, we would expect these to include values of self-transcendence (Benevolence and Universalism), empathy for animals, beliefs about animal mind and status, and beliefs about our duties or obligations to animals. Arguably, if a behaviour change programme targeted these more fundamental aspects of motivation in addition to the relevant behaviour-specific beliefs and attitudes, a more enduring outcome may be achieved. This is because a more holistic constellation of the relevant cognitive and affective elements of carer behaviour has been targeted. Furthermore, if universal values and 'duty of care' do underpin species- and behaviour-specific beliefs, targeting these may be an efficient first step in preparing individuals and the community for a range of more specific campaigns. This process may serve to prime individuals in a way that would enable them to better process and accept species- and behaviour-specific messages, consequently improving their efficacy. This work has the potential to significantly improve the outcomes of education and intervention programmes, thus improving animal welfare.

## References

- Agriculture Victoria** 2017 *Making Victoria better for pets*. <http://bit.ly/35IbYp5>
- Ajzen I** 1991 The Theory of Planned Behavior. *Organizational Behavior & Human Decision* 50: 179-211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Ajzen I** 2011 The theory of planned behaviour: Reactions and reflections. *Psychology & Health* 26: 1113-1127. <https://doi.org/10.1080/08870446.2011.613995>
- Ajzen I, Joyce N, Sheikh S and Cote NG** 2011 Knowledge and the prediction of behavior: The role of information accuracy in the Theory of Planned Behavior. *Basic & Applied Social Psychology* 33: 101-117. <https://doi.org/10.1080/01973533.2011.568834>
- Albarracin D, Johnson BT and Zanna MP** 2005 *The Handbook of Attitudes*. Lawrence Erlbaum Associates: Mahwah, NJ, USA
- Alexander DS, Hogan SL, Jordan JM, DeVellis RF and Carpenter DM** 2017 Examining whether the information-motivation-behavioral skills model predicts medication adherence for patients with a rare disease. *Patient Preference & Adherence* 11: 75-83. <https://doi.org/10.2147/PPA.S115272>
- American Pet Products Association** 2019 *2019-2020 APPA National Pet Owners Survey Statistics: Pet Ownership & Annual Expenses*. [https://www.americanpetproducts.org/press\\_industry-trends.asp](https://www.americanpetproducts.org/press_industry-trends.asp)
- Animal Medicines Australia** 2016 *Pet Ownership in Australia*. [http://animalmedicinesaustralia.org.au/wp-content/uploads/2016/11/AMA\\_Pet-Ownership-in-Australia-2016-Report\\_sml.pdf](http://animalmedicinesaustralia.org.au/wp-content/uploads/2016/11/AMA_Pet-Ownership-in-Australia-2016-Report_sml.pdf)
- Bang H, Odio MA and Reio T** 2014 The moderating role of brand reputation and moral obligation: An application of the theory of planned behavior. *Journal of Management Development* 33: 282-298. <https://doi.org/10.1108/JMD-12-2010-0102>
- Beck L and Ajzen I** 1991 Predicting dishonest actions using the Theory of Planned Behavior. *Journal of Research in Personality* 25: 285-301. [https://doi.org/10.1016/0092-6566\(91\)90021-H](https://doi.org/10.1016/0092-6566(91)90021-H)
- Bennett PC and Rohlf VI** 2007 Owner-companion dog interactions: Relationships between demographic variables, potentially problematic behaviours, training engagement and shared activities. *Applied Animal Behaviour Science* 102: 65-84. <https://doi.org/10.1016/j.applanim.2006.03.009>
- Bidell MP** 2005 The Sexual Orientation Counselor Competency Scale: Assessing attitudes, skills, and knowledge of counsellors working with lesbian, gay, and bisexual clients. *Counselor Education and Supervision* 44: 267-279. <https://doi.org/10.1002/j.1556-6978.2005.tb01755.x>
- Blackshaw JK and Day C** 1994 Attitudes of dog owners to neutering pets: demographic data and effects of owner attitudes. *Australian Veterinary Journal* 71: 113-116. <https://doi.org/10.1111/j.1751-0813.1994.tb03351.x>
- Blouin DD** 2013 Are dogs children, companions, or just animals? Understanding variations in people's orientations toward animals. *Anthrozoös* 26: 279-294. <https://doi.org/10.2752/175303713X13636846944402>
- British Agriculture (Miscellaneous Provisions) Act** 1968 <https://www.legislation.gov.uk/ukpga/1968/34/contents>
- Broom DM** 2010 Cognitive ability and awareness in domestic animals and decisions about obligations to animals. *Applied Animal Behaviour Science* 126: 1-11. <https://doi.org/10.1016/j.applanim.2010.05.001>
- Brown SG and Rhodes RE** 2006 Relationships among dog ownership and leisure-time walking in western Canadian adults. *American Journal of Preventive Medicine* 30: 131-136. <https://doi.org/10.1016/j.amepre.2005.10.007>
- Cembalo L, Caracciolo F, Lombardi A, Giudice T, Grunert KG and Cicia G** 2016 Determinants of individual attitudes toward animal welfare-friendly food products. *Journal of Agricultural & Environmental Ethics* 29: 237-254. <https://doi.org/10.1007/s10806-015-9598-z>
- Chan YM and Molassiotis A** 1999 The relationship between diabetes knowledge and compliance among Chinese with non-insulin dependent diabetes mellitus in Hong Kong. *Journal of Advanced Nursing* 30: 431-438. <https://doi.org/10.1046/j.1365-2648.1999.01098.x>
- Chen M-F** 2016 Extending the theory of planned behavior model to explain people's energy savings and carbon reduction behavioral intentions to mitigate climate change in Taiwan—moral obligation matters. *Journal of Cleaner Production* 112: 1746-1753. <https://doi.org/10.1016/j.jclepro.2015.07.043>
- Chen M-F and Tung P-J** 2014 Developing an extended Theory of Planned Behavior model to predict consumers' intention to visit green hotels. *International Journal of Hospitality Management* 36: 221-230. <https://doi.org/10.1016/j.ijhm.2013.09.006>
- Coleman GJ and Hemsworth PH** 2014 Training to improve stockperson beliefs and behaviour towards livestock enhances welfare and productivity. *Revue Scientifique et Technique (International Office Of Epizootics)* 33: 131-137. <https://doi.org/10.20506/rst.33.1.2257>
- Coleman GJ, Hemsworth PH, Hay M and Cox M** 2000 Modifying stockperson attitudes and behaviour towards pigs at a large commercial farm. *Applied Animal Behaviour Science* 66: 11-20. [https://doi.org/10.1016/S0168-1591\(99\)00073-8](https://doi.org/10.1016/S0168-1591(99)00073-8)

- Coleman JA, Green B, Garthe RC, Worthington JEL, Barker SB and Ingram KM** 2016 The Coleman Dog Attitude Scale (C-DAS): Development, refinement, validation, and reliability. *Applied Animal Behaviour Science* 176: 77-86. <https://doi.org/10.1016/j.applanim.2016.01.003>
- Cronan TP and Al-Rafee S** 2008 Factors that influence the intention to pirate software and media. *Journal of Business Ethics* 78: 527-545. <https://doi.org/10.1007/s10551-007-9366-8>
- Cuff BMP, Brown SJ, Taylor L and Howat DJ** 2016 Empathy: A review of the concept. *Emotion Review* 8: 144-153. <https://doi.org/10.1177/1754073914558466>
- Culiberg B** 2014 Towards an understanding of consumer recycling from an ethical perspective. *International Journal of Consumer Studies* 38: 90-97. <https://doi.org/10.1111/ijcs.12068>
- Davis SL and Cheeke PR** 1998 Do domestic animals have minds and the ability to think? A provisional sample of opinions on the question. *Journal of Animal Science* 76: 2072-2079. <https://doi.org/10.2527/1998.7682072x>
- Degeling C, Burton L and McCormack GR** 2012 An investigation of the association between socio-demographic factors, dog-exercise requirements, and the amount of walking dogs receive. *Canadian Journal of Veterinary Research* 76: 235-240
- Dietz T, Allen S and McCright AM** 2017 Integrating concern for animals into personal values. *Anthrozoös* 30: 109-122. <https://doi.org/10.1080/08927936.2017.1270597>
- Dotson MJ and Hyatt EM** 2008 Understanding dog-human companionship. *Journal of Business Research* 61: 457-466. <https://doi.org/10.1016/j.jbusres.2007.07.019>
- Eadie EN** 2011 Educational themes related to reduction in animal suffering. In: Eadie EN (ed) *Education for Animal Welfare* pp 3-36. Springer: Berlin, Germany. [https://doi.org/10.1007/978-3-642-16814-7\\_2](https://doi.org/10.1007/978-3-642-16814-7_2)
- Engster D** 2007 The nature of caring and the obligation to care. In: Engster D (ed) *The Heart of Justice: Care Ethics and Political Theory* pp 21-66. Oxford University Press: Oxford, UK. <https://doi.org/10.1093/acprof:oso/9780199214358.003.0002>
- Fisher JD and Fisher WA** 1992 Changing AIDS-risk behaviour. *Psychological Bulletin* 111: 455-474. <https://doi.org/10.1037/0033-2909.111.3.455>
- Fisher JD, Fisher WA, Williams SS and Malloy TE** 1994 Empirical tests of an information-motivation-behavioral skills model of AIDS-preventive behavior with gay men and heterosexual university students. *Health Psychology: Official Journal Of The Division Of Health Psychology, American Psychological Association* 13: 238-250. <https://doi.org/10.1037/0278-6133.13.3.238>
- Fukada M** 2018 Nursing competency: Definition, structure and development. *Yonago Acta Medica* 61: 001-007. <https://doi.org/10.33160/yam.2018.03.001>
- Fulton D, Manfredo M and Lipscomb J** 1996 Wildlife value orientations: A conceptual and measurement approach. *Human Dimensions of Wildlife* 1: 24-47. <https://doi.org/10.1080/10871209609359060>
- Furnham A, McManus C and Scott D** 2003 Personality, empathy and attitudes to animal welfare. *Anthrozoös* 16: 135-146. <https://doi.org/10.2752/089279303786992260>
- George KA, Slagle KM, Wilson RS, Moeller SJ and Bruskotter JT** 2016 Changes in attitudes toward animals in the United States from 1978 to 2014. *Biological Conservation* 201: 237-242. <https://doi.org/10.1016/j.biocon.2016.07.013>
- Gilligan C** 1982 *In a Different Voice: Psychological Theory and Women's Development*. Harvard University Press: Cambridge, MA, USA
- Greenebaum J** 2004 It's a dog's life: Elevating status from pet to 'fur baby' at yappy hour. *Society & Animals* 12: 117-135. <https://doi.org/10.1163/1568530041446544>
- Guerra CE, Dominguez F and Shea JA** 2005 Literacy and knowledge, attitudes, and behavior about colorectal cancer screening. *Journal of Health Communication* 10: 651-663. <https://doi.org/10.1080/10810730500267720>
- Haidt J** 2003 The moral emotions. In: Davidson RJ and Goldsmith HH (eds) *Handbook of Affective Sciences* pp 852-870. Oxford University Press: Oxford, UK
- Han H** 2015 Travelers' pro-environmental behaviour in a green lodging context: Converging value-belief-norm theory and the theory of planned behavior. *Tourism Management* 47: 164-177. <https://doi.org/10.1016/j.tourman.2014.09.014>
- Hanna D, Sneddon IA and Beattie VE** 2009 The relationship between the stockperson's personality and attitudes and the productivity of dairy cows. *Animal* 3: 737-743. <https://doi.org/10.1017/S1751731109003991>
- Hayley A, Zinkiewicz L and Hardiman K** 2015 Research report: Values, attitudes, and frequency of meat consumption. Predicting meat-reduced diet in Australians. *Appetite* 84: 98-106. <https://doi.org/10.1016/j.appet.2014.10.002>
- Held V** 2006 *The Ethics of Care: Personal, Political, and Global*. Oxford University Press: Oxford, UK
- Hemsworth PH and Coleman GJ** 2011 *Human-Livestock Interactions: The Stockperson and the Productivity and Welfare of Intensively Farmed Animals*. CABI: Wallingford, Oxon, UK. <https://doi.org/10.1079/9781845936730.0000>
- Hemsworth PH, Coleman GJ and Barnett JL** 1994 Improving the attitude and behaviour of stockpersons towards pigs and the consequences on the behaviour and reproductive performance of commercial pigs. *Applied Animal Behaviour Science* 39: 349-362. [https://doi.org/10.1016/0168-1591\(94\)90168-6](https://doi.org/10.1016/0168-1591(94)90168-6)
- Hemsworth PH, Coleman GJ, Barnett JL, Borg S and Dowling S** 2002 The effects of cognitive behavioral intervention on the attitude and behavior of stockpersons and the behavior and productivity of commercial dairy cows. *Journal of Animal Science* 80: 68-78. <https://doi.org/10.2527/2002.80168x>
- Hemsworth PH, Sherwen SL and Coleman GJ** 2018 Human contact. In: Appleby MC (ed) *Animal Welfare, Third Edition* pp 294-314. CAB International: Oxon, UK. <https://doi.org/10.1079/9781786390202.0294>
- Hens K** 2009 Ethical responsibilities towards dogs: An inquiry into the dog-human relationship. *Journal of Agricultural and Environmental Ethics* 22: 3-14. <https://doi.org/10.1007/s10806-008-9120-y>
- Heuberger R, Petty M and Huntingford J** 2016 Topical review: Companion animal owner perceptions, knowledge, and beliefs regarding pain management in end-of-life care. *Topics in Companion Animal Medicine* 31: 152-159. <https://doi.org/10.1053/j.tcam.2017.02.001>
- Hills A** 1995 Empathy and belief in the mental experience of animals. *Anthrozoös* 8: 132-142. <https://doi.org/10.2752/089279395787156347>
- Homer PM and Kahle LR** 1988 A structural equation test of the value - attitude - behavior hierarchy. *Journal of Personality & Social Psychology* 54: 638-646. <https://doi.org/10.1037/0022-3514.54.4.638>

- Hosey G and Melfi V** 2014 Human-animal interactions, relationships and bonds: A review and analysis of the literature. *International Journal of Comparative Psychology* 27: 1-26
- Howell TJ, Mornement K and Bennett PC** 2016 Research: Pet dog management practices among a representative sample of owners in Victoria, Australia. *Journal of Veterinary Behavior: Clinical Applications and Research* 12: 4-12. <https://doi.org/10.1016/j.jveb.2015.12.005>
- Howell TJ, Toukhsati S, Conduit R and Bennett P** 2013 Research: The perceptions of dog intelligence and cognitive skills (PoDIaCS) survey. *Journal of Veterinary Behavior: Clinical Applications and Research* 8: 418-424. <https://doi.org/10.1016/j.jveb.2013.05.005>
- Hubrecht R, Wickens S and Kirkwood JK** 2017 The welfare of dogs in human care. In: Serpell JA (ed) *The Domestic Dog: Its Evolution, Behavior and Interactions with People, Second Edition* pp 272-299. Cambridge University Press: Cambridge, UK. <https://doi.org/10.1017/9781139161800.014>
- Hurn S** 2012 *Humans and Other Animals: Cross-Cultural Perspectives on Human-Animal Interactions*. Pluto Press: New York, USA
- Jagoe A and Serpell JA** 1996 Owner characteristics and interactions and the prevalence of canine behaviour problems. *Applied Animal Behaviour Science* 37: 31-42. [https://doi.org/10.1016/0168-1591\(95\)01008-4](https://doi.org/10.1016/0168-1591(95)01008-4)
- Kerswell KJ, Bennett P, Butler KL and Hemsworth PH** 2009 Self-reported comprehension ratings of dog behavior by puppy owners. *Anthrozoös* 22: 183-193. <https://doi.org/10.2752/175303709X434202>
- Knight S, Vrij A, Cherryman J and Nunkoosing K** 2004 Attitudes towards animal use and belief in animal mind. *Anthrozoös* 17: 43-62. <https://doi.org/10.2752/089279304786991945>
- Knowles SR, Hyde MK and White KM** 2012 Predictors of young people's charitable intentions to donate money: An extended theory of planned behavior perspective. *Journal of Applied Social Psychology* 42: 2096-2110. <https://doi.org/10.1111/j.1559-1816.2012.00932.x>
- Kobelt AJ, Hemsworth PH, Barnett JL and Coleman GJ** 2003 A survey of dog ownership in suburban Australia: Conditions and behaviour problems. *Applied Animal Behaviour Science* 82: 137-148. [https://doi.org/10.1016/S0168-1591\(03\)00062-5](https://doi.org/10.1016/S0168-1591(03)00062-5)
- Kobelt AJ, Hemsworth PH, Barnett JL, Coleman GJ and Butler KL** 2007 The behaviour of Labrador retrievers in suburban backyards: The relationships between the backyard environment and dog behaviour. *Applied Animal Behaviour Science* 106: 70-84. <https://doi.org/10.1016/j.applanim.2006.07.006>
- Komorosky D and O'Neal KK** 2015 The development of empathy and prosocial behavior through humane education, restorative justice, and animal-assisted programs. *Contemporary Justice Review* 18: 395-406. <https://doi.org/10.1080/10282580.2015.1093684>
- Kubinyi E, Turcsán B and Miklósi Á** 2009 Dog and owner demographic characteristics and dog personality trait associations. *Behavioural Processes* 81: 392-401. <https://doi.org/10.1016/j.beproc.2009.04.004>
- Maharaj N and Haney CJ** 2015 A qualitative investigation of the significance of companion dogs. *Western Journal of Nursing Research* 37: 1175-1193. <https://doi.org/10.1177/0193945914545176>
- Marie H-L and Barry EC** 1997 A social psychological perspective on the role of knowledge about AIDS in AIDS prevention. *Current Directions in Psychological Science* 6: 23-26. <https://doi.org/10.1111/1467-8721.ep11512614>
- Marinelli L, Adamelli S, Normando S and Bono G** 2007 Quality of life of the pet dog: Influence of owner and dog's characteristics. *Applied Animal Behaviour Science* 108: 143-156. <https://doi.org/10.1016/j.applanim.2006.11.018>
- Nash HA** 2013 Duty of care. *Salem Press Encyclopedia*. <https://online.salemexpress.com>
- O'Farrell V** 1997 Owner attitudes and dog behaviour problems. *Applied Animal Behaviour Science* 52: 205-213. [https://doi.org/10.1016/S0168-1591\(96\)01123-9](https://doi.org/10.1016/S0168-1591(96)01123-9)
- Olsen NV, Sijtsema SJ and Hall G** 2010 Predicting consumers' intention to consume ready-to-eat meals. The role of moral attitude. *Appetite* 55: 534-539. <https://doi.org/10.1016/j.appet.2010.08.016>
- Pelletier LG, Tuson KM, Green-Demers I, Noels K and Beaton AM** 1998 Why are you doing things for the environment? The Motivation Toward the Environment Scale (MTES). *Journal of Applied Social Psychology* 28: 437-468. <https://doi.org/10.1111/j.1559-1816.1998.tb01714.x>
- Pet Food Manufacturers' Association** 2019 *Pet Population 2019*. <https://www.pfma.org.uk/pet-population-2019>
- Raats M, Shepherd R and Sparks P** 1993 Attitudes, obligations and perceived control: Predicting milk selection. *Appetite* 20: 239-241. <https://doi.org/10.1006/appe.1993.1027>
- Ravel A, D'Allaire S and Bigras-Poulin M** 1996 Influence of management, housing and personality of the stockperson on preweaning performances on independent and integrated swine farms in Québec. *Preventive Veterinary Medicine* 29: 37-57. [https://doi.org/10.1016/S0167-5877\(96\)01053-7](https://doi.org/10.1016/S0167-5877(96)01053-7)
- Rohlf VI, Bennett PC, Toukhsati S and Coleman G** 2010 Why do even committed dog owners fail to comply with some responsible ownership practices? *Anthrozoös* 23: 143-155. <https://doi.org/10.2752/175303710X12682332909972>
- Rohlf VI, Toukhsati S, Coleman GJ and Bennett PC** 2010 Dog obesity: Can dog caregivers' (owners') feeding and exercise intentions and behaviors be predicted from attitudes? *Journal of Applied Animal Welfare Science* 13: 213-236. <https://doi.org/10.1080/10888705.2010.483871>
- Royal KD, Kedrowicz AA and Snyder AM** 2016 Do all dogs go to heaven? Investigating the association between demographic characteristics and beliefs about animal afterlife. *Anthrozoös* 29: 409-420. <https://doi.org/10.1080/08927936.2016.1189748>
- RSPCA Victoria** 2016 *Annual Report 15/16*. [http://rpscavic.org/documents/About%20us/Annual%20Report/2016/RSPCAVIC\\_15-16\\_AnnualReport.pdf](http://rpscavic.org/documents/About%20us/Annual%20Report/2016/RSPCAVIC_15-16_AnnualReport.pdf)
- Sanders CR** 1999 Animal abilities and human-animal interaction. In: Sanders CR (ed) *Understanding Dogs* pp 111-148. Temple University Press: Philadelphia, PA, USA
- Sandøe P, Corr S and Palmer C** 2016 Companion animal welfare. In: Sandøe P, Corr S and Palmer C (eds) *Companion Animal Ethics* pp 58-72. Wiley: Chichester, UK
- Schuster C, Pinkowski L and Fischer D** 2019 Intra-individual value change in adulthood: A systematic literature review of longitudinal studies assessing Schwartz's Value Orientations. *Zeitschrift für Psychologie* 227: 42-52. <https://doi.org/10.1027/2151-2604/a000355>

- Schwartz SH** 1992 Universals in the content and structure of values: Theoretical advances and empirical tests in 20 Countries. *Advances in Experimental Social Psychology* 25: 1-65. [https://doi.org/10.1016/S0065-2601\(08\)60281-6](https://doi.org/10.1016/S0065-2601(08)60281-6)
- Schwartz SH** 1994 Are there universal aspects in the structure and contents of human values? *Journal of Social Issues* 50: 19-45. <https://doi.org/10.1111/j.1540-4560.1994.tb01196.x>
- Schwartz SH, Cieciuch J, Vecchione M, Davidov E, Fischer R, Beierlein C, Ramos A, Verkasalo M, Lonnqvist J-E, Demirutku K, Dirilen-Gumus O and Konty M** 2012 Refining the theory of basic individual values. *Journal of Personality and Social Psychology* 103: 663-688. <https://doi.org/10.1037/a0029393>
- Seabrook MF** 1991 The influence of the personality of the stock-person on the behaviour of pigs. *Applied Animal Behaviour Science* 30: 187-188. [https://doi.org/10.1016/0168-1591\(91\)90114-D](https://doi.org/10.1016/0168-1591(91)90114-D)
- Serpell JA** 2004 Factors influencing human attitudes to animals and their welfare. *Animal Welfare* 13: 145-151
- Serpell JA** 2009 Having our dogs and eating them too: Why animals are a social issue. *Journal of Social Issues* 65: 633-644. <https://doi.org/10.1111/j.1540-4560.2009.01617.x>
- Serpell J** 2017 *The Domestic Dog: Its Evolution, Behavior, and Interactions with People, Second Edition*. Cambridge University Press: Cambridge, UK. <https://doi.org/10.1017/9781139161800>
- Serpell J and Paul E** 1994 Pets and the development of positive attitudes to animals. In: Manning A and Serpell JA (eds) *Animals and Human Society: Changing Perspectives*. Routledge: London, UK
- Sevenhuijsen S** 2018 Care and attention. *South African Journal of Higher Education* 32: 19-30. <https://doi.org/10.20853/32-6-2711>
- Shrestha R, Altice FL, Huedo-Medina TB, Karki P and Copenhagen M** 2017 Willingness to use pre-exposure prophylaxis (PrEP): An empirical test of the Information-Motivation-Behavioral Skills (IMB) model among high-risk drug users in treatment. *AIDS and Behavior* 21: 1299-1308. <https://doi.org/10.1007/s10461-016-1650-0>
- Sia SK and Jose A** 2019 Attitude and subjective norm as personal moral obligation mediated predictors of intention to build eco-friendly house. *Management of Environmental Quality: An International Journal* 30: 678-694. <https://doi.org/10.1108/MEQ-02-2019-0038>
- Sonntag Q and Overall KL** 2014 Key determinants of dog and cat welfare: behaviour, breeding and household lifestyle. *Revue Scientifique et Technique (International Office Of Epizootics)* 33: 213-220. <https://doi.org/10.20506/rst.33.1.2270>
- Sparks P and Shepherd R** 2002 The role of moral judgements within expectancy-value-based attitude-behavior models. *Ethics & Behavior* 12: 299-321. [https://doi.org/10.1207/S15327019EB1204\\_01](https://doi.org/10.1207/S15327019EB1204_01)
- Stafford KJ** 2007 *The Welfare of Dogs*. Springer: Dordrecht, The Netherlands. <https://doi.org/10.1007/1-4020-4362-7>
- Swiss Info** 2016 *No more obligatory courses for dog owners*. [https://www.swissinfo.ch/eng/pet-ownership\\_no-more-obligatory-courses-for-dog-owners/42459536](https://www.swissinfo.ch/eng/pet-ownership_no-more-obligatory-courses-for-dog-owners/42459536)
- Takase M and Teraoka S** 2011 Development of the holistic nursing competence scale. *Nursing & Health Sciences* 13: 396-403. <https://doi.org/10.1111/j.1442-2018.2011.00631.x>
- Tangney JP, Stuewig J and Mashek DJ** 2007 Moral emotions and moral behavior. *Annual Review of Psychology* 58: 345-372. <https://doi.org/10.1146/annurev.psych.56.091103.070145>
- Taylor N and Signal TD** 2005 Empathy and attitudes to animals. *Anthrozoös* 18: 18-27. <https://doi.org/10.2752/089279305785594342>
- Tomasello M** 2019 The moral psychology of obligation. *Behavioral and Brain Sciences* 28: 1-33. <https://doi.org/10.1017/S0140525X19001742>
- van der Werff E, Steg L and Keizer K** 2013 It is a moral issue: The relationship between environmental self-identity, obligation-based intrinsic motivation and pro-environmental behaviour. *Global Environmental Change* 23: 1258-1265. <https://doi.org/10.1016/j.gloenvcha.2013.07.018>
- Vitulli WF** 2006 Attitudes toward empathy in domestic dogs and cats. *Psychological Reports* 99: 981-991. <https://doi.org/10.2466/PRO.99.3.981-991>
- Wallace LS** 2002 Osteoporosis prevention in college women: application of the expanded health belief model. *American Journal of Health Behavior* 26: 163-172. <https://doi.org/10.5993/AJHB.26.3.1>
- Wells DL** 2004 A review of environmental enrichment for kennelled dogs, *Canis familiaris*. *Applied Animal Behaviour Science* 85: 307-317. <https://doi.org/10.1016/j.applanim.2003.11.005>
- Welsh CP, Gruffydd-Jones TJ, Roberts MA and Murray JK** 2014 Poor owner knowledge of feline reproduction contributes to the high proportion of accidental litters born to UK pet cats. *The Veterinary Record* 174: 118-118. <https://doi.org/10.1136/vr.101909>
- Wilkins AM, McCrae LS and McBride EA** 2015 Factors affecting the human attribution of emotions toward animals. *Anthrozoös* 28: 357-369. <https://doi.org/10.1080/08927936.2015.1052270>
- Wilson EO and Kellert SR** 2013 *The Biophilia Hypothesis*. Shearwater: Washington, DC, USA
- Yoon C** 2011 Theory of Planned Behavior and ethics theory in digital piracy: An integrated model. *Journal of Business Ethics* 100: 405-417. <https://doi.org/10.1007/s10551-010-0687-7>
- Young A, Khalil KA and Wharton J** 2018 Empathy for animals: A review of the existing literature. *Curator: The Museum Journal* 61: 327-343. <https://doi.org/10.1111/cura.12257>
- Zhu C, Cai Y, Ma J, Li N, Zhu J, He Y, Redmon P and Qiao Y** 2013 Predictors of intention to smoke among junior high school students in Shanghai, China: An empirical test of the Information-Motivation-Behavioral Skills (IMB) Model. *PLoS One* 8: 1-7. <https://doi.org/10.1371/journal.pone.0080482>