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Social-Cognitive Processes Before Dog Acquisition Associated with Future Relationship Satisfaction of Dog Owners and Canine Behavior Problems

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ABSTRACT Making the right decision before acquiring a dog may help prevent the development of canine behavior problems and increase the likelihood of a satisfactory relationship. In this study, social-cognitive factors in decision-making were assessed in the phase *before* the acquisition of a dog (the motivational phase) to see whether they were associated with later canine behavior problems and satisfaction with the dog after formation of a relationship (the experience phase). Respondents ($n = 193$) filled in an online questionnaire several months before acquiring a dog and six and 18 months thereafter. Results indicate that the confidence of dog owners in their ability to train and care for a dog—assessed before acquisition—was associated with fewer canine behavior problems, more satisfaction with the dog, and lower perceived costs in the experience phase. Self-efficacy had no effect on consistency between planned and actual acquisition. People scoring high on social norms were more likely to adhere to their plans, while those who expected many advantages were less likely to do so. Moreover, several preparation activities were associated with consistency, with more frequent doubt in the motivational phase being related to greater inconsistency. People who frequently read books about owning dogs and who often talked about this with others were more likely to adhere to their initial plans. In contrast, those who often visited websites offering/selling dogs were less consistent, possibly due to impulse buying. In conclusion, the quality of the relationship with a dog seems partly related to human decision-making factors occurring before the dog has been acquired. Longitudinal studies of human–animal relationships could enhance knowledge concerning the social-cognitive processes underlying our relationships with animals, possibly providing starting points for interventions aimed at improving the welfare of both animals and humans.

Keywords: behavior problems, decision-making, (dis)advantages, dog satisfaction, human–animal interaction, impulse buying, self-efficacy



Dogs are the most popular companion animal in almost all European countries, the USA, and Australia (Global survey on pet ownership, 2016). Dog ownership has been associated with several benefits to human physical and psychological health, including increased physical activity, reduced stress, companionship, social support, and increased social interactions with people (O’Haire, 2010).

Unfortunately, not all human–dog relationships are healthy and pleasant. Problems associated with dogs (e.g., difficulties in training, soiling, and aggressive behavior, Greenebaum, 2006; O’Farrell, 1997) cause inconvenience and suffering for humans. A sub-optimal relationship might also cause suffering for the dog owing to maltreatment (e.g., neglect, Arluke, 2006), relinquishment to a shelter (Coe et al., 2014; Lambert, Coe, Niel, Dewey, & Sargeant, 2015), or disposal in other ways (e.g., through a trading website). These undesired situations are at least partly related to a mismatch between characteristics of the dog (e.g., size, age, breed, health, and behavior), the owner’s knowledge and capabilities concerning the dog’s needs, and the owner’s expectations of the relationship with the dog. Mismatches are more likely when dogs are acquired impulsively (Jagoe & Serpell, 1996).

Impulse buying involves an instantaneous, overpowering, and persistent desire to buy a product when exposed to it. Such purchases are unintended and non-reflective (Rook, 1987). Rook and Gardner (1993) define impulse buying as unplanned behavior involving quick decision-making and a tendency toward immediate acquisition of a product. Several factors have been associated with impulse buying (Muruganatham & Bhakat, 2013). For example, impulse buyers are more social and status-conscious, and they do not spend much time considering their purchases. When they feel a connection with a product, they simply must have it. Such connections can occur when the product is physically close, seen on a website, or associated with a person that one admires (de Veirman, Cauberghe, & Hudders, 2017). Impulse buying can be regarded as sub-optimal decision-making. The social-cognitive factors involved in decision-making are described in the Theory of Planned Behavior (Ajzen, 1991). In a previous study (Vink, Dijkstra, & Epstude, 2019), we demonstrate that certain aspects of the decision-making process at time zero (T0) are related to the actual acquisition of a dog (T1; yes/no). In the present study, we examine how aspects of the decision-making process at T0 are related to canine behavior problems and owner satisfaction, as measured in two follow-up questionnaires, six (T1) and 18 months (T2) after acquiring a dog. The variables addressed in the present study call for a different theoretical framework: the two-phase model of owner–dog relationship establishment.

Weighing advantages and disadvantages is central to making decisions (Dwyer, Bennett, & Coleman, 2006; Janis & Mann, 1977; Trope, Liberman, & Wakslak, 2007). To do this properly, a prospective dog owner needs knowledge about the general and specific needs of a dog. Failure to consider possible disadvantages of a dog (e.g., time investment and financial costs) could result in less satisfaction and more canine behavior problems once a relationship has developed. Self-efficacy is important as well. Those who are confident they can fulfill a task are likely to be more motivated and exhibit more perseverance with the task (Bandura, 1977; Berget, Ekeberg, & Braastad, 2008). People who believe they are able to handle and care for a dog are likely to invest more and be more successful in achieving and maintaining a satisfactory relationship with the dog. The human’s social environment also figures into the decision-making process. As social beings, people tend to be sensitive to the opinions of others,

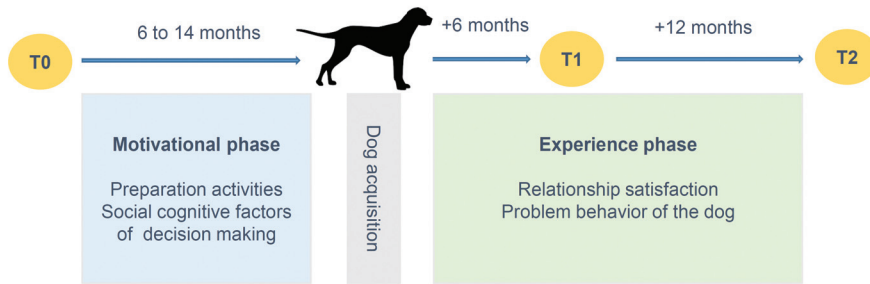


Figure 1. Two-phase model of owner–dog relationship establishment and the research design of the present study.

particularly those who are close and important to them (Ajzen, 1991). More specifically, the social norms of others could function as an extrinsic motivation to acquire a dog, possibly resulting in more canine behavior problems and disappointment with the dog.

The aforementioned social-cognitive factors can change in light of relevant information, as people prepare for their choices by gathering and contemplating information from various sources (Holland, 2019), including books, the internet, or other people. People who are uncertain about their decisions may engage in frequent preparation behavior. At some point, however, they may feel that they know enough about the type of dog they want, as well as about caring for and handling a dog. At this point, they may conclude the decision-making and stop searching and contemplating. In contrast, a strong desire or longing for a dog (or a particular breed) or frequently visiting websites offering dogs might increase the likelihood of impulse buying, which may lead to undesired consequences.

Aim of the Study

As concluded by Holland (2019) in a review of factors associated with dog acquisition, little is known about the underlying drivers of human behavior. In the present study, we addressed this issue by assessing social-cognitive factors involved in the decision-making and preparation activities of future dog owners before acquiring a dog, and examining whether these factors predict problems and satisfaction once they have developed a relationship with the dog they acquired. Inspired by Health Action Process Approach theory (HAPA, Schwarzer & Luszczynska, 2015), we proposed a two-phase model (see Figure 1) consisting of: 1) a motivational phase, in which information is gathered and a decision is made to acquire the dog; and 2) an experience phase, in which the relationship is experienced and, when needed, adjusted. The longitudinal design of our study allowed us to examine social-cognitive factors and preparation activities in the motivational phase and to relate them to consistency between planned and actual purchase, as well as to desired and undesired consequences in the future. These consequences are operationalized as satisfaction with the dog, perceived costs of the dog, canine behavior problems, and satisfaction with the decision to acquire the dog (all measured in the experience phase). Data from three waves of the longitudinal data—baseline (T0) and two follow-ups at six (T1) and 18 (T2) months after acquisition of the dog—were analyzed.

Methods

The Institutional Review Board of the University of Groningen Faculty of Behavioural and Social Sciences reviewed and approved the research (ppo-014-265). For additional information, see Vink and colleagues (2019).

Recruitment and Procedure

A call was published on several websites inviting people who were “planning to acquire a dog within one year” to complete an online questionnaire. Participants were informed that they would also be asked to complete another questionnaire six and 18 months after acquiring a dog. The call was placed on websites and Facebook sites of Dutch organizations that provide information about dogs and dog ownership. The researchers were assisted in contacting these organizations by the Dutch Royal Association for the Protection of Dogs [de Hondenbescherming], an organization dedicated to the welfare of dogs in the Netherlands. One Belgian organization posted the appeal on its website. We approached 92 pet shops in the Netherlands with the request to place flyers containing the same call on their counter; 82 agreed to do so.

The questionnaire was created on the Qualtrics platform. A link distributed to participants directed them to the online questionnaire, which contained a notice that, by continuing to the next page, participants automatically gave informed consent. The notice also stated that the results of the questionnaire would be processed anonymously. The questionnaire was administered in Dutch.

The present data comprise a baseline measurement and two follow-up measurements (six and 18 months after acquiring a dog). Of the 1,418 people who started the questionnaire at T0, 44.2% ($n = 627$) completed it. To time the second measurement (T1) at six months after acquisition of the dog, participants were contacted three times (between 6–14 months) after the baseline measurement, to ask whether they had acquired a dog. Respondents acquiring a dog within 14 months after the first questionnaire (T0) were invited to participate in the questionnaires at T1 and T2. Of those completing the baseline questionnaire, 44.2% ($n = 277$) completed the T1 questionnaire and 30.8% ($n = 233$) completed the T2 questionnaire. Ten people got a new dog between T1 and T2; eight discarded the dog they acquired after T0 and two lost their dog by death. To facilitate the interpretation of our results, we report only about participants who completed all three questionnaires for the same dog ($n = 183$).

Attrition Analyses

The dropout rates from T0 to T1 and from T1 to T2 were substantial. Of the 627 participants at T0, only 183 provided full data at both T1 and T2. Characteristics of these 183 participants were compared with those of the 444 participants who were not included in the study according to gender ($\chi^2_{(1,627)} = 0.059, p = 0.808$), educational level¹ (intermediate/low versus high: $\chi^2_{(1,627)} = 2.234, p = 0.135$), experience with dogs (previous/current versus never: $\chi^2_{(1,627)} = 0.464, p = 0.496$), age ($F_{(1,619)} = 7.108, p = 0.008$), advantages ($F_{(1,626)} = 0.129, p = 0.719$), disadvantages ($F_{(1,626)} = 1.100, p = 0.295$), social norm ($F_{(1,626)} = 3.340, p = 0.068$), and self-efficacy ($F_{(1,626)} = 2.192, p = 0.139$). Participants dropping out before T2 were slightly but significantly younger ($M = 39.9$ years, $SD = 13.9$ versus $M = 43.1$ years, $SD = 12.7$) than those completing all three questionnaires.

Predictive Variables (T0)

The participants completed a baseline questionnaire containing questions about gender, age, educational level, household composition, previous dog ownership, experience working with dogs, whether they had considered a puppy or an adult dog, where they wanted to acquire the dog (e.g., shelter, breeder), and which breed they wanted.

Preparation activities in which people could engage prior to acquiring the dog were assessed according to 14 questions on searching and contemplating. Examples include: “How often are you insecure about owning a dog?”; “How often do you think, ‘I want that too’ when you see

somebody walking a dog on the street?"; "How often do you feel the desire to acquire a dog?"; "How often do you think this is the right time to acquire a dog?"; "How often do you talk to others about the investments related to dog ownership?"; "How often do you read books about dogs?"; and "How often do you visit websites offering dogs?" Respondents used a 5-point scale to rate their engagement in these activities in the last month: "never" (1), "sometimes" (2), "regularly" (3), "often" (4), and "very often" (5). Although the reliability of the scale was good (Cronbach's α : 0.77; Cronbach's alpha is a measure of scale reliability where a Cronbach's alpha around 0.80 is considered good), we did not use the combined scale score, given the diverse nature of the activities. We did include all 14 activities together in an exploratory analysis.

Advantages of owning a dog were assessed according to 25 items about the expected positive effects of dog ownership, based on existing literature (Endenburg, 't Hart, & Bouw, 1994; McConnell, Brown, Shoda, Stayton, & Martin, 2011; Staats, Wallace, & Anderson, 2008), on 10 in-depth interviews, and observations of how dog owners talked about their dog(s). Examples include: "My dog will make sure that I have company" and "My dog will make sure that I get more exercise." *Disadvantages* of owning a dog were assessed according to 10 items about the expected negative effects of dog ownership, based on existing literature and previously mentioned interviews and observations. Examples include: "Because of the dog, I will have to plan my life more" and "Because of the dog, I will have more expenses." Items on advantages and disadvantages were rated along a 5-point scale: "completely disagree" (1), "disagree" (2), "neither disagree nor agree" (3), "agree" (4), "completely agree" (5). The average item scores were used in the analyses (Cronbach α : 0.92 for advantages and 0.73 for disadvantages). Higher scale scores indicate greater expected advantages or disadvantages.

Self-efficacy (Bandura, 1977) was assessed according to two items. Participants used a 10-point scale to indicate their certainty about their ability to 1) raise/train a dog and 2) care for a dog: "not certain at all" (1) to "very certain" (10). Average item scores were used in the analyses. The two items were highly correlated ($r = 0.71$), with higher scores indicating greater confidence in the ability to handle a dog satisfactorily.

Social norms assessed people's estimation of what others might think that they should do (Ajzen, 2002), based on three 5-point items: "My family/friends/neighbors think: "I definitely should not acquire a dog" (1) to "I definitely should acquire a dog" (5). Average item scores were used in the analyses (Cronbach's $\alpha = 0.74$), with higher scores indicating more positive opinions about the participant's dog-acquisition plan.

Outcome Variables (T1 and T2)

Behavior problems were assessed at T1 and at T2 according to 16 items, including "bad manners while eating," "aggression to other people," "aggression to other dogs," "inappropriate soiling," and "inappropriate biting" (a full list of the 16 behaviors is provided in the online supplemental file Table S1). Items were inspired by the C-BARQ (Hsu & Serpell, 2003) and the behavior-problem categories described by Neilson and Horwitz (2007). Respondents were asked about the frequency of each behavior: "never" (1), "sometimes" (2), "regularly" (3), "often" (4), and "very often" (5). In a subsequent question, they were asked whether they perceived the behavior as problematic: "no" (1), "sometimes" (2), "yes" (3). Behaviors that were sometimes, or always, perceived as problematic were considered behavior problems and included in the summation of the behavior-problem score, with higher scores indicating more behavior problems perceived by the owner. At T1, 9.2% of the participants did not perceive any behavior as problematic. At T2, this was 11.7%. The highest behavior-problem score was 13 at T1 and 12 at T2.

Satisfaction with the dog was assessed at T1 and T2 according to four items (Curb, Abramson, Grice, & Kennison, 2015), based on a 7-point scale: “completely disagree” (1) to “completely agree” (7). The items are: 1) “In general, I am very satisfied with my experiences with my dog,” 2) “There are moments when I regret my decision to acquire this dog,” 3) “There are several things I would like to change about my dog,” and 4) “I am satisfied with my dog the way he/she is.” Items 2 and 3 were recoded to ensure a similar valence for all of the items. Average item scores were used in the analyses (Cronbach α : 0.49 at T1 and 0.73 at T2), with higher scale scores indicating greater satisfaction with the dog.

Perceived costs were assessed at T1 and T2 according to the “Perceived Costs” subscale of the Monash Dog Owner Relationship Scale (MDORS, Dwyer et al., 2006). This scale consists of nine items scored on a 5-point scale: “completely disagree” (1) to “completely agree” (5). Examples include: “I often feel that caring for my dog is a heavy duty,” “My dog costs too much money,” “I often feel that having a dog is more effort than pleasure.” Average item scores were used in the analyses (Cronbach α : 0.86 at T1 and 0.87 at T2), with higher scale scores indicating higher costs of dog ownership, as perceived by participants.

Satisfaction with the decision to acquire the dog was assessed at T2 according to seven items rated on a 5-point scale: “completely disagree” (1) to “completely agree” (5). The seven items were inspired by the Decision Satisfaction Inventory (Brehaut et al., 2003), which is used to assess patients’ healthcare decisions: “I am satisfied with my decision,” “I am confident I made a deliberative decision,” “It would have been useful if I had asked for more advice before acquiring my dog,” “If I were to acquire another dog in the future, I would prepare myself differently,” “The decision to acquire my dog was the right decision for my current situation,” “The decision to acquire my dog did not play out as expected,” and “I sometimes have mixed feelings about the decision to acquire my dog.” Items 3, 4, 6, and 7 were recoded to ensure a similar valence for all of the items. Average item scores were used in the analyses (Cronbach α = 0.77), with higher scores indicating that the respondents were more satisfied with their decisions to acquire their dogs.

Statistical Analyses

We examined relationships between 1) preparation activities and 2) social-cognitive variables at T0 and a) inconsistency between plan and purchase (inconsistency no = 0/yes = 1) in logistic regression models, and b) desired and undesired outcomes at T1 and T2 in multivariate linear regression models. The result tables display both B (estimated regression coefficient) and beta (standardized regression coefficient) statistics. Analysis of Variance (ANOVA) and Pearson’s χ^2 (two-side) tests were used to identify significant differences between groups. Gender, age (continuous), and educational level (low/medium versus high) were included as covariates in all models. We used IBM SPSS 25.0 (Armonk, NY, USA) to analyze our data; p-values below 0.05 were considered statistically significant.

Results

Participants’ Characteristics

Participants who had acquired a dog 5–14 months after the baseline questionnaire (T0) and who were still in possession of the dog at T2 were included in the study. The final sample consisted of 183 participants, most of whom were female (87%), with an average age of 43 years ($SD = 12$; 21% were below 30 years; 36% between 30 and 45; an additional 36% were between 46 and 60 years and 7% were over 60 years); 59% had a high level of education. Respondents were mainly part of a couple without (at home living) children (45%) or part of a

family (35%); only 15% were single and 6% shared a household with other adults. The majority (76%) obtained a puppy and not an adult dog.

When asked who would make the final decision to acquire the dog, the majority of respondents who were part of a couple (82%) or part of a family (93%) answered “myself and others.” When asked who would bear primary responsibility for the dog, the majority again answered “myself and others” (couple: 76%; family: 79%). Regarding previous experience with dogs, 16% had never owned a dog before while 44% already owned one or more dogs at T0. About 80% of respondents did attend a dog-training course (mostly obedience training and/or puppy courses). Almost three-quarter (70%) did not work with dogs professionally.

Descriptive Statistics

Preparation Activities: Table 1 displays the means and standard deviations for all 14 preparation activities. Pearson’s correlations ranged from 0.00 to 0.65 (see online supplemental file Table S2a), with 30% being non-significant. Based on means (see Table 1), with scores around

Table 1. Means and standard deviations for variables assessed at baseline (T0) and at six months (T1) and 18 months (T2) after acquiring the dog.

Variable	<i>M (SD)</i>
<i>How Often Do You...</i>	
1. Think about acquiring a dog?	4.15 (0.86)
2. Speak to others about acquiring a dog?	3.73 (0.94)
3. Think this is the right moment to acquire a dog?	3.40 (1.05)
4. Feel the desire to acquire a dog?	3.91 (0.90)
5. Talk to others about the investments related to dog ownership?	2.86 (1.15)
6. Think “I want that too” when seeing somebody walking a dog?	2.88 (1.32)
7. Visit internet websites that offer dogs (e.g., breeders, animal shelters, trading websites)?	3.17 (1.29)
8. Long for a dog?	3.92 (0.95)
9. Read books about dogs?	2.97 (1.32)
10. Feel insecure about dog ownership?	1.75 (0.95)
11. Search the internet for information about dogs?	3.14 (1.24)
12. Doubt the decision to acquire a dog?	1.93 (1.06)
13. Think about the advantages of having a dog?	3.69 (0.92)
14. Think about the disadvantages of having a dog?	2.84 (1.08)
Self-efficacy T0	8.90 (0.10)
Social norm T0	3.95 (0.76)
Advantages T0	3.43 (0.55)
Disadvantages T0	3.58 (0.50)
Number of behavior problems T1	4.86 (3.21)
Number of behavior problems T2	4.16 (2.94)
Perceived costs T1	1.75 (0.55)
Perceived costs T2	1.77 (0.56)
Pet satisfaction T1	6.14 (0.81)
Pet satisfaction T2	6.11 (0.98)
Decision satisfaction T2	4.49 (0.58)

Note: Data presented in the table concern 183 participants.

4 corresponding to “often,” the data indicate that, before acquiring the dog, respondents often *thought* about acquiring the dog, felt a *desire* to acquire a dog, and *longed* for the dog. With scores around 2 corresponding to “sometimes,” the data indicate that, on average, participants only sometimes had doubts concerning whether it was the right decision to acquire a dog.

Socio-Cognitive Variables: Table 1 displays the means and standard deviations for the predictive variables at T0. Pearson’s correlations between the socio-cognitive variables range from 0.01 to 0.36 and are all in the expected direction (see online supplemental file Table S2a). The table also contains the means and standard deviations for the outcome variables at T1 and T2. Pearson’s correlations range from 0.19 to 0.60 and are all in the expected direction (see online supplemental file Table S2b). Correlations from the same variables measured at two different times (T1 and T2) are small to moderate: problems ($r = 0.59$), pet satisfaction ($r = 0.46$), and perceived costs ($r = 0.60$), suggesting changes in these variables over time.

Consistency Between Plan and Outcome

For all 183 participants we had information about the dog they acquired at T1: 51% acquired a female dog, 76% acquired a puppy, and the majority of dogs (59%) came from breeders. For the majority of the sample (88%, $n = 161$), we had some information about the plan at T0 and the actual purchase at T1 (regarding breed ($n = 125$), purchase source ($n = 161$), and age ($n = 151$; due to participants answering “I do not know yet” at T0). Most respondents (94%) purchased the breed they had planned, and most (91%) adhered to their plans to purchase either a puppy or an adult dog. Plans differed from actions regarding the *source* of the dog, with only 76% adhering to their plans. Fewer people who had planned to acquire a dog from a shelter did so, instead acquiring their dogs from trading websites or foreign dog-welfare organizations. This discrepancy between intending to adopt a dog from a shelter and actually purchasing the dog elsewhere is also reported in a study by Garrison and Weiss (2015).

For 106 participants (58%) we had information for all three aspects (breed, source, and age); for 48 participants (26%) there was information about two aspects; for 23 participants (13%) there was only about one aspect; and for six participants (3%) no information at T0 was available to determine consistency. We only included participants in our consistency analyses for whom we had information about at least two aspects ($n = 154$, 84% of the total sample). Of the 106 participants for which we have information about the three aspects of consistency between plan and actual purchase, 87% were consistent for all three aspects, while all 48 participants were inconsistent for one of the two. Participants who were included in the (in)consistency analyses did not differ with regard to gender, educational level, age, and experience with dogs from those who were excluded.

No differences were present between consistent and inconsistent participants with regard to the covariates gender ($\chi^2_{(1,154)} = 3.28$, $p = 0.070$), educational level ($\chi^2_{(1,154)} = 1.521$, $p = 0.217$), experience with dogs ($\chi^2_{(1,154)} = 2.753$, $p = 0.097$), and age ($F_{(1,152)} = 2.542$, $p = 0.113$). Also no differences were present between the socio-cognitive measures: advantages ($F_{(1,153)} = 1.657$, $p = 0.200$), disadvantages ($F_{(1,160)} = 0.001$, $p = 0.970$), social norm ($F_{(1,160)} = 3.274$, $p = 0.072$), and self-efficacy ($F_{(1,160)} = 0.014$, $p = 0.907$).

Predicting Decision Consistency

All 14 preparation activities were entered into the logistic regression model. Table 2 displays the results for the 14 predictors and their covariates. Participants exhibiting inconsistency between the initial plan (at T0) and the actual purchase engaged significantly more in two

Table 2. Results of the prediction of plan inconsistency (T1), by preparation activities (T0).

Predictor	<i>B</i>	<i>SE</i>	Wald χ^2	<i>p</i> -value	Exp(<i>B</i>)	95%CI for EXP(<i>B</i>)
Gender	-1,279	0.682	3.514	0.061	0.278	0.073–1.060
Age	0.02	0.019	1.156	0.282	1.020	0.984–1.058
Education	-0.136	0.46	0.088	0.767	0.872	0.354–2.151
1. Think about acquisition	-0.427	0.373	1.309	0.253	0.653	0.314–1.355
2. Speak about acquisition	-0.026	0.341	0.006	0.940	0.975	0.500–1.900
3. Doubt right moment	-0.357	0.262	1.859	0.173	0.700	0.419–1.169
4. Feel desire	0.478	0.326	2.153	0.142	1.613	0.852–3.056
5. Talk about investments	-0.452	0.22	4.203	0.040	0.636	0.413–0.980
6. "I want that too"	0.03	0.195	0.023	0.879	1.030	0.703–1.510
7. Visit websites offering dogs	0.547	0.211	6.733	0.009	1.729	1.143–2.614
8. Long for a dog	-0.036	0.33	0.012	0.914	0.965	0.506–1.841
9. Read books	-0.537	0.196	7.477	0.006	0.585	0.398–0.859
10. Feel insecure	-0.29	0.301	0.927	0.336	0.748	0.415–1.351
11. Search online information	0.015	0.247	0.004	0.951	1.015	0.626–1.648
12. Doubt decision	0.804	0.298	7.303	0.007	2.235	1.24– 4.006
13. Think about advantages	0.144	0.284	0.257	0.612	1.155	0.662–2.015
14. Think about disadvantages	-0.082	0.245	0.113	0.736	0.921	0.570–1.488

Note: Numbers in bold = significant (< 0.05). Numbers correspond to numbers and items in Table 1 ($n = 154$).

Table 3. Results of the prediction of plan inconsistency (T1), by socio-cognitive variables (T0).

Predictor	<i>B</i>	<i>SE</i>	Wald χ^2	<i>p</i> -value	Exp(<i>B</i>)	95% CI for EXP(<i>B</i>)
Gender	-1.062	0.591	3.227	0.072	0.364	0.109–1.112
Age	0.034	0.015	5.052	0.025	1.034	1.004–1.065
Education	0.540	0.389	1.931	0.165	1.716	0.801–3.677
Self-efficacy	0.141	0.190	0.548	0.459	1.151	0.793–1.670
Social Norm	-0.439	0.259	2.873	0.090	0.645	0.388–1.071
Advantages	0.568	0.357	2.532	0.112	1.764	0.877–3.549
Disadvantages	-0.207	0.345	0.361	0.548	0.813	0.414–1.598

Note: Number in bold = significant ($p < 0.05$, $n = 154$).

activities and significantly less in two other activities, compared with those adhering to their plans. Inconsistent people were more likely to visit websites offering dogs and to doubt their decision to acquire a dog. Inconsistent people spent less time reading books about dogs and dog acquisition and talked less to others about the investments related to dog ownership.

The four socio-cognitive variables were also entered into the logistic regression model together (results in Table 3) but none had a significant effect on inconsistency. Covariate age had a significant effect, with inconsistent participants tending to be older than those adhering to their plan.

Predicting Problems, Satisfaction, and Perceived Costs

Tables S3a–S3g (online supplemental file) present results of statistical regression models including *all* activities. Only two of the 14 activities were associated with future outcomes:

“talking about dogs” and “visiting websites that offer/sell dogs.” People who frequently talked to others about dog acquisition perceived *lower* costs at T1 ($\beta = -0.321, p = 0.003$; see Table S3b). People who frequently visited websites offering dogs perceived higher costs at T2 ($\beta = 0.177, p = 0.040$; see Table S3e) and were less satisfied with their dogs at T2 ($\beta = -0.246, p = 0.005$; see Table S3f). We included these three significant activities (and their covariates) in three separate models. According to the results, the activity “talking to others” was still significantly associated with perceived costs at T1 ($\beta = -0.246, p = 0.001$). This model explained 6.4% of the variance (R^2 unadjusted) in perceived costs, with 5.7% (R^2 change) being due to the preparation activity “talking to others.” “Visiting websites” was significantly associated with pet satisfaction at T2 ($\beta = -0.164, p = 0.029$). This model explained 3.0% of the variance (R^2 unadjusted) in pet satisfaction, with 2.6% (R^2 change) due to the preparation activity “visiting websites offering dogs.” The effect of “visiting websites” on perceived costs was no longer significant ($\beta = 0.096, p = 0.201$) when included as single predictor in a model with covariates.

The socio-cognitive factors assessed at T0 were related to behavior problems, perceived costs, and satisfaction with the dog at both T1 and T2. An overview of statistics from the regression models is provided in Tables S4a–S4g (online supplemental file). Self-efficacy at T0 was associated with six of the seven future outcomes. The more confident respondents were at T0 regarding their ability to raise and care for a dog, the fewer the problems they reported after living with their dogs for six (T1) ($\beta = -0.243, p = 0.003$; Table S4a) and 18 months (T2) ($\beta = -0.264, p = 0.001$; Table S4d). Respondents with high levels of self-efficacy perceived lower costs at T1 ($\beta = -0.218, p = 0.005$; Table S4b) and T2 ($\beta = -0.170, p = 0.034$; Table S4e), and they were more satisfied with their dogs at T1 ($\beta = 0.288, p < 0.001$; Table S4c) and T2 ($\beta = 0.188, p = 0.020$; Table S4f). In addition to self-efficacy, expecting relatively more disadvantages was significantly related to higher perceived costs at T1 ($\beta = 0.195, p = 0.007$; Table S4b) and less satisfaction with the dog at T1 ($\beta = -0.214, p = 0.003$; Table S4c).

Effects of Covariates in Analyses

In the analyses of both the preparation activities and the socio-cognitive factors, age and educational level were found to have significant effects on satisfaction with the decision to acquire the dog (see online Table S3g and S4g). Older people and those with high educational levels were more satisfied with their decisions. There was also a significant association between age and perceived costs after six months of living with the dog (T1); older participant’s perceived lower costs than younger participants did (see Table S4b).

Post-hoc Analyses

The effects remained almost unchanged after including the level of experience with dogs (never versus previous/current owners) as a covariate in the regression models.

Discussion

In a recent review, Holland (2019) concludes that more information is needed concerning the underlying processes driving behavior when humans acquire pets. Our results indicate that socio-cognitive factors and preparation processes in the period before acquiring a dog (the motivational phase) are related to desired and undesired consequences six and 18 months later. Overall, the data indicate that the experience phase of the owner–dog relationship may be determined partly during the motivational phase, with self-efficacy being the most consistent predictor of later consequences. Bandura (1977) defines self-efficacy as “the confidence one has to execute certain courses of action to deal with prospective situations.” In our study,

self-efficacy refers to the ability to train and care for a dog. Greater confidence was associated with fewer behavior problems, lower perceived costs, and greater future satisfaction. Greater confidence in one's ability to do what is needed enhances willingness to exert the required effort, possibly resulting in fewer problems with the dog, greater satisfaction, and lower perceived costs.

The results revealed few relationships between the other socio-cognitive factors (social norms and expected (dis)advantages) in the motivational phase with desired and undesired consequences. The motivation to acquire a dog centers on the expected advantages of dog ownership. If these expectations are high before acquiring a dog, actual dog ownership is more likely to fall short of these expectations, thus generating a disappointing reality. Our results provide no support for this assumption, as there were no associations between expected advantages and satisfaction or between costs and problems. At the same time, however, our results indicate that expecting more disadvantages is associated with less satisfaction and higher perceived costs after six months. This might indicate that disadvantages perceived beforehand indeed played out in the reality of dog ownership, thus indicating that their estimates were somewhat realistic. Another, related explanation might be that these people were less confident about their decisions. Our data did indeed indicate that participants expecting high levels of disadvantages were also likely to doubt their decisions concerning acquiring a dog and the proper time to do so. Moreover, these respondents often thought about the disadvantages of having a dog. Given that social norms are positively associated with these activities, participants perceiving many disadvantages before acquiring a dog had experienced some social pressure to acquire the dog.

In conclusion, of the socio-cognitive factors assessed in the motivational phase (before actually acquiring a dog), only self-efficacy was a robust predictor of desired and undesired consequences in the experience phase. Social norms and advantages/disadvantages had hardly any influence on the behavior of dog owners and the development of their relationships with their dogs in the experience phase. According to the Theory of Planned Behavior, self-efficacy (i.e., perceived behavioral control) is indeed the only socio-cognitive factor that is directly linked to the execution of behavior (Ajzen, 1991). The other factors (social norms and advantages/disadvantages) are conceptualized as influencing only the decision; not the later behavior.

The socio-cognitive factors (due primarily to self-efficacy) explained 8–13% of the variance, thus indicating that their potential influence is modest but possibly highly relevant (Rosenthal & Rubin, 1979). Low self-efficacy can be regarded as a risk factor for undesired future situations. Importantly, this factor can be assessed before acquisition of a dog, thereby allowing the prevention of canine behavior problems and disappointment with the relationship or the decision. Reducing behavior problems by even a small amount is of great importance. Interestingly, self-efficacy was not related to inconsistency between plans and actual purchase (which can be regarded as a proxy for impulse buying).

Only a few preparation activities were related to undesired consequences, explaining 3–5% of the variance. In the motivational stage, these activities apparently have little to do with what happens during the development of the owner–dog relationship in the experience phase. Some activities were nevertheless related to inconsistency between plans and actual purchase (a proxy for impulse buying). According to the data, more frequent doubt in the motivational phase was related to more inconsistency. Doubt may thus reflect an incomplete decision process, as complete decisions might protect against impulse buying. Furthermore, reading books about dogs and acquiring dogs increased adherence to initial plans, as did talking with

others about dog acquisition. Talking to others might reflect the association that we found between social norms and consistency. Gathering information by reading and talking to others might also reinforce confidence in one's ability to care for and train a dog. Talking to others about the decision to acquire a dog was related to lower perceived costs after six months. Talking to others might facilitate the decision process, and frequent engagement might reflect a more thorough decision process. In contrast, frequency of visiting websites offering dogs (e.g., breeders, shelters, private advertisements) was inversely related to plan consistency. People who visit these websites frequently might be more prone to impulse buying owing to a tendency to "fall in love" with a picture or a story of a dog, even though the dog does not resemble their initial plan (as shaped through a thorough consideration of the advantages and disadvantages of dog ownership). Such impulsive decisions could result in disappointment with the dog, as indicated by our data: frequent visitors to websites offering dogs perceived their dogs as more costly after 18 months. Unfortunately, we have no detailed information about the actual websites that were visited. Taken together, although preparation activities were related to the decision process, they had hardly any influence on the development of the owner–dog relationship.

Limitations

Our study had several limitations. Our sample was not entirely representative of the population of dog owners in the Netherlands (Facts and Figures on the Dutch Companion Animal Sector [*Feiten en cijfers Gezelschapsdierensector*], 2015). First, while most dogs in the Netherlands are owned by families with children, only one-third of our respondents were part of a family with children. Second, although most dogs are mongrels, almost three-quarters of our respondents owned purebred dogs. Also, highly educated women were over-represented in our sample. This is common in animal-related research, partly owing to the general tendency of women to have a more positive attitude toward animals than men (Herzog, Betchart, & Pittman, 1991). In addition, people with low or intermediate levels of education were under-represented in our sample. Another aspect that should be considered when interpreting our findings is that they may have been influenced by over-recruitment. Our aim to hear from "people planning to acquire a dog within one year" most probably led to the exclusion of people with negative scores on advantages, social norms, and self-efficacy regarding dogs, as well as those with little preparation activity. This may have led to less variance and, consequently, less covariance between variables. Finally, the fact that three-quarters of the sample obtained puppies might have influenced the results concerning behavior problems, given that some behaviors are more common among puppies than among adult dogs, and vice versa.

Conclusion

The longitudinal design of this study allowed for testing whether factors involved in the decision-making process concerning the acquisition of a dog (assessed before actual acquisition) could predict undesired consequences at a later stage. The results indeed indicated that factors in the motivational phase—particularly self-efficacy—were related to factors in the experience phase. Furthermore, preparing by reading books about dogs and talking to people about the decision to acquire a dog might promote "well-considered" decisions. Frequently visiting websites offering dogs could promote impulse buying, with negative consequences for the future dog–owner relationship. Further studies are needed on the process of impulse decision-making concerning pets and how early factors can lead to later problems. This could provide information that helps to prevent problems developing between owners and their dogs, and thus benefitting both humans and dogs.

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Conflicts of Interest

The authors declare no conflict of interest.

Note

1. In the Dutch educational system, a low level of education refers to vocational training, an intermediate level refers to advanced vocational training, and a high level refers to college/university level.

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