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Highlights

- Thirty-three experts reached consensus on 55 desirable features for AAI dogs.
- Desirable features related to resilience, emotional balance, collaboration and communication.
- The top ranked feature was “Ability to adapt”.

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Research

The successful therapy dog: an insight through a Delphi consultation survey among Italian experts

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Abstract

Animal assisted interventions (AAI) refer to planned and structured interactions between humans and animals managed by a multidisciplinary team. The domestic dog (*Canis familiaris*) is the most involved species in this kind of programs. Even though, it is agreed worldwide that these animals should fulfil some requirements, their selection is still based on general principles and each organization gives its own interpretation. Some selection protocols were set up in the past, but they found little application in practice among professionals. Therefore, a deeper understanding of the phenomenon is needed. Our study aims to build consensus about features that make a therapy dog successful in AAI settings among Italian professionals that work in the AAI field. A three-round Delphi process was set up to get closer to this goal. All Delphi exercises were conducted using online questionnaires distributed to professionals. As a first step, respondents were asked to answer an open-ended question, asking what defining features a therapy dog should have to be eligible in most dog-assisted intervention programs, while in subsequent rounds participants rated to what extent characteristics resulting from round 1 are desirable/undesirable for a therapy dog.

Thirty-three professionals responded to all rounds. The Delphi study allowed us to identify 55 defining features of a therapy dog. Among them, 16 features resulted “very desirable”

with expert consensus and they all relate to dog resilience, dog emotional balance, dog willingness to collaborate with both handler and users/patient and dog communication skills. Moreover, we noticed that respondents often assign human qualities onto the animal showing anthropomorphism attitude. We concluded that a selection of therapy dog should not consider only exclusion criteria and role-playing, but their communication skills, willingness to engage, resilience and emotional balance should also be assessed. Further studies are needed to investigate the link between our results and the successful and reliable involvement of dogs in most settings of animal assisted interventions. However, our findings provided a baseline for future research that started from the professionals' point of view with a participatory approach.

Keywords

Delphi, therapy dog, animal assisted intervention, behavior

Introduction

Animal assisted interventions (AAIs) is an umbrella term including animal assisted therapy (AAT), animal assisted education (AAE) and animal assisted activities (AAA). They are classified according to their purpose and they are managed by a multidisciplinary team to achieve therapeutic, educational or recreational gains in humans through the planned and structured involvement of animals (IAHAIO, 2018).

At present, one of the species most represented in AAIs are dogs (called therapy dogs) (De Santis et al., 2018), thanks to their outstanding interspecific social ability and their easy adaptation to various human environments (Miklósi and Topál, 2013). There is a growing body of scientific publications about the positive effects of dog-assisted interventions on health and wellbeing of various kinds of patients and users (Kamioka et al., 2014; Bert et al., 2016; Yakimicki et al., 2019). However, very few papers investigated the dog side (Marinelli et al., 2009; Glenk et al., 2013, 2014; Glenk, 2017; de Carvalho et al., 2019).

Both international organizations (e.g. IAHAIO, AVMA) (IAHAIO, 2018; AVMA, 2014), national ones (e.g. AKC) (<https://www.akc.org/sports/title-recognition-program/therapy-dog-program/therapy-dog-organizations/>) and, in some countries, even public authorities (e.g. Italian National Guidelines for AAI; the Austrian Richtlinien Therapiehund) have noted that therapy dogs should fulfil specific requirements (Italian Ministry of Health, 2015; *Richtlinien Bundesministers für Arbeit, Soziales und Konsumentenschutz*, 2015). Nevertheless, in most

European Countries as well as in the U.S. formalized procedures for their selection and screening are still based on general principles (e.g., absence of behavioral pathologies, of aggressive behavior or fear, positive social attitude towards strangers) and each organization interprets dog requirements from their own perspectives (Spruin and Mozova, 2018; Serpell et al., 2020). The scientific community has made some efforts to propose validated selection protocols for therapy dogs (Mongillo et al., 2015), but there has been poor application in practice. Apparently, the phenomenon needs a deeper understanding.

Why using Delphi methods?

Our study aims to build consensus about features that make a therapy dog successful in AAI settings among Italian professionals who work in the AAI field according to National Guidelines (Ministry of Health, 2015). To get closer to this goal we set up a Delphi study. In this study we chose Delphi (Dalkey and Helmer, 1963) over other techniques because, when knowledge about a phenomenon is incomplete, expert judgment can be a valuable tool to promote a deeper understanding (Skulmoski et al., 2007). Consensus of expert opinion can be helpful to explore areas where a lack of clarity exist and fulfil the gaps left by the scarcity of specific information (Donohoe & Needham, 2009).

Delphi is a multistage interactive process, which consists of a series of questionnaires sent out to a group of experts (called panel) in a number of rounds. The first round is used to obtain input on the research question; the subsequent ones include controlled feedback and the questionnaires used in them are developed based on results from the previous rounds (Skulmoski et al., 2007). Controlled feedback, provided to respondents anonymously, gives them the opportunity to change opinion and reconsider aspects that they may have thought unimportant and minimizes socio-emotive difficulties that may exist in group communication (e.g., social pressure, tendency to defend a stand once taken), ensuring all respondents an equal voice (Gallagher et al., 1996).

Currently, relevant professionals involved in AAI are in different fields and/or occupations (training, assessment and management of therapy dogs) and not always in direct communication. In this regard, Delphi technique is a valuable tool to promote interaction among experts (Bezzi, 2013). By promoting interaction between a group of people, over other methodologies, Delphi overcomes geographical limitations and, to some extent, economic constraints and allows some anonymity for respondents (Van der Fels-Klerx et al., 2002; Van Teijlingen et al., 2006).

This sociological method has been widely adopted across different disciplines, including health services (Bettcher et al., 1998), nursing (McKenna, 1994), medicine (Beattie and Mackway-Jones, 2004) and veterinary medicine (Merola and Mills, 2016).

Materials and methods

Study design

The lack of scientific literature and consensus among experts on the features of successful therapy dogs prompted us to set up a Delphi study.

The number of survey rounds was decided in advance: as suggested by the literature (Sumsion, 1998; Hsu and Sandford, 2007), three rounds of consultation were undertaken, with responses aggregated and fed back to the group at each round.

The entire process was web-based and took 5 months to be completed. Throughout all rounds of the Delphi process, communication occurred by e-mail. In order to enhance response rates, a reminder e-mail was sent to non-respondents close to the deadline of each round.

Procedural steps were as follows (see Figure 1):

The purpose of round 1 was to generate ideas, asking participants to answer the open-ended question "In your opinion, what defining features a therapy dog should have to be eligible for Animal Assisted Interventions? Specific intervention types could require specific features. Please, answer this question taking into account a dog suitable for the majority of Animal Assisted Interventions types". Round 1 answers were collated by authors into a single list of dog features and then used to set up the round 2 questionnaire.

In round 2 participants were asked to rate to what extent, in their opinion, each feature mentioned in the list is desirable/undesirable for a therapy dog using a 4 point Likert scale (1=Very undesirable, 2=Undesirable, 3=Desirable, 4=Very desirable). Descriptive statistics for the group ratings were calculated: mode, median, and percentage scores (as consensus measure). Items were arranged in 3 groups based on consensus achieved (desirable features with consensus, undesirable features with consensus, non-consensual features) and items on which there was consensus that they are undesirable for a therapy dog were removed.

In Round 3 participants rated the resulting items as they did in Round 2, but this time information about how the group responded was provided (median score and respondents'

percentage for each category, selected comments). Respondents were asked to review the rating they gave to each item in round 2, to consider the group response and then re-rate the features, taking the information into account.

This process, enabled researchers to gain a consensus from a group of professionals in different geographical locations about the defining features of a dog suitable for the majority of Animal Assisted Interventions programs.

Participants

A group of Italian professionals working in the field of dog-assisted interventions was invited through an e-mail to take part in this study. In order to provide a wider insight into the phenomenon, the group included dog handlers, therapy dog trainers and veterinarians with expertise in AAI. Since there is no agreement on how to define and identify a professional as an “*expert*” (Baker et al., 2006), we required all participants to be registered in the Italian database of AAI professionals (Digitalpet) (<https://www.digitalpet.it>) and to have completed educational programs established by the Italian National Guidelines for AAI (Ministry of Health, 2015). AAI courses are organized by authorized organizations and are approved by the Regional Authorities. The Italian guidelines provide details on minimum contents and duration of the training programs that each professional figure needs to attend. The training programs consist of a theoretical and a practical part and have a duration of about 200 hours. They include general and specific training, entailing a basic course (minimum 21 hours) and an advanced course (minimum 120 hours), common to all the professionals, with an intermediate course in between (minimum 56 hours for dog handlers and minimum 40 hours for veterinarians), which instead is differentiated for each figure (Italian National Guidelines for AAI, 2015).

Moreover, in our study dog handlers should have had at least 6 years of experience as dog handlers and therapy dog trainers should have had at least 5 years of experience in training therapy dogs. Indeed, the National Guidelines also deal with the definition of different professional figures, included dog handlers. The Italian National Guidelines for Animal Assisted Interventions were approved in 2015, for that reason, 5 years of experience was the maximum standard we could set for the figure of the dog handler, as it is defined by the

guidelines, while for the figure of the dog trainer (not defined by the National Guidelines) we could set a higher standard.

Fifty-six invitation e-mails were sent to the selected AAI professionals working in Italy. One message was rejected as “*undeliverable email*”. Thirty-eight experts agreed to participate in the study. In the first round we had 37 respondents, in the second round 36 and in the third one 33. We achieved a good response rate with an overall drop-out rate of 10.81%.

In Table 1, we show the distribution of respondents throughout the three rounds.

	Round 1 (n=37)	Round 2 (n= 36)	Round 3 (n=33)
Age (years)	49.73 ± 9.38	49.69 ± 9.51	50.58 ± 8.80
Gender			
Female	30	30	28
Male	7	6	5

Respondents of the first stage were 30 women (81.08%) and 7 men (18.92%) with a mean age of 50 years (s.d. = 9.38).

Based on their main role in AAI, participants could be divided into three clusters (dog handlers, dog trainers, veterinarians with expertise in AAI), but 27 (72.97%) of them reported playing more than one of those roles in the AAI settings, in other words, domains of expertise were overlapping.

Ethical Statement

An invitation e-mail to take part in the Delphi was sent to the experts with an information sheet about the study. The information sheet contained an extensive explanation about purposes, procedures, possible risks and benefits of this research, a description of Delphi methodology and details about research staff and project funding.

Moreover, experts were provided with reasons why they had been invited to take part to the panel and, as suggested in the literature (Sinha et al., 2011), we highlighted the importance of completing the whole Delphi process in order to avoid dropout and enhance the reliability of results.

Finally, they were advised about their rights, data management and protection in accordance to the Reg. EU N. 679/2016 and they were asked to express their informed consent to take part to the study.

First round questionnaire

Round 1 began the 31st of May and participants were asked to reply to the survey within 8 days.

The first round questionnaire was divided in two sections: the first part with demographic details (such as gender, age, qualification) including domain of expertise in AAI (dog handler, dog trainer or veterinarian), years of experience in the field and working region. The second one consisted in an open-ended question, according to the classical Delphi approach (Davidson, 2013), without restrictions on the response in order to unearth as many as possible relevant issues, minimizing the risk to lose potentially useful information (Mead and Moseley, 2001). In fact, at this stage of the process, open-ended questions may provide respondents with the opportunity to elaborate and express their own views without the risk of interferences from the research team (Thompson, 2009).

In the open-ended question, the panel members were asked what defining features a therapy dog should have to be eligible in most dog-assisted intervention programs, with various kinds of users/patients. We wanted to avoid narrowing of the topic, we did not want experts to consider only a single, particular intervention or setting because we aimed to identify features that are essential for the efficacy and efficiency of the therapy dogs in a variety of interaction activities and client types.

In addition, respondents were also asked to provide definitions of the characteristics they just identified, because it is likely that several respondents use different terms to refer to the same aspect (Schmidt, 1997).

Second round questionnaire

The second phase of the Delphi process started the 25th of June and participants were asked to reply to the survey within 8 days, as they did in round 1.

The second round questionnaire was sent to all first round respondents with a report about the results of the first questionnaire including an explanation of response analysis and method adopted to set up the new questionnaire.

In the second stage, panel members were asked to revise the list of therapy dog features resulting from the first round reporting any disagreement, comment, et cetera.

Participants were also informed that, in some instances, features resulting from the first round were split. These items were presented in round 2 questionnaire by specifying 3 different levels of the same feature (low, medium, high level of trait expression).

All the therapy dog characteristics resulting from the first round were submitted to respondents in a random order and panel members were asked to rate to what extent each characteristic was desirable or undesirable to make a therapy dog successful in most dog assisted intervention programs. We used a four point Likert-type scale (1=very undesirable, 2=undesirable, 3=desirable, 4=very desirable) to simplify the response process. In the Likert-scale a neutral middle point was omitted to push respondents to classify every issue and to promote the debate (Turoff and Linstone, 2002; De Villiers et al., 2005; Lavrakas, 2008; Simms et al., 2019). Participants were also asked to answer a free-text optional question, explaining their ratings for each feature.

Third round questionnaire

The 6th of August respondents of the second round received a feedback report and the third round questionnaire. A longer turnaround time was provided for this last round. Since the third round was conducted during summer months, respondents were also allowed to negotiate the deadline to avoid a decrease of the response rate due to summer holidays. All items rated in round 2 were classified according to a consensus criterion: consensus was achieved if at least 80% of participants rated the item in the lower two categories (very undesirable or undesirable) or in the higher two categories (desirable or very desirable) (O'Loughlin and Kelly, 2004). Following the second survey round, items resulted classified in:

- 1) desirable features with consensus: items rated by at least 80% of panel members as desirable or very desirable (median score ≥ 3 and 80% or more of ratings within range 3-4);
- 2) undesirable features with consensus: items rated by at least 80% of panel members as undesirable or very undesirable (median score ≤ 2 and 80% or more of ratings within range 1-2)
- 3) items without consensus: if consensus criterion was not met.

Moreover, we slightly re-worded 21 items because they were noted by participants to be somehow ambiguous on the previous round. In order to be more precise regarding their meaning, these items were presented in round three questionnaire in a slightly modified version. For example, following participants' comments, the items about "pro-activity" were clarified by adding the definition "reaction time to a stimulus".

In addition, participants were informed that, based on their comments, the item “Decision-making ability” was split into three new items “High level of decision-making ability”, “Medium level of decision-making ability” and “Low level of decision-making ability”. In its definitive version the third round survey consisted of 92 items, including all the desirable/very desirable features with consensus (54) and all the items that did not achieved the criterion for consensus in round 2 (29). In order to maintain respondents’ attention focused on the main aim of the study, we decided to exclude all items that reached consensus as undesirable/very undesirable, with the exception of those that were modified, meaning items slightly re-worded (+7) or split (+2).

Each therapy dog feature was randomly presented to respondents with a structured summary of the single-item result (see Figure 2 for an example). The summary included the individual rating given to the item by the respondent in the second round, a group feedback (median score and respondents’ percentage for each category) and some comments of panel members (using their original sentences), selected to represent the range of opinions among the panel.

Respondents were asked to revise their judgments in the light of the data presented for each therapy dog feature and to re-rate each resulting item, using the same four-point Likert-scale described above.

Moreover, participants could comment on each item and an additional textbox was provided at the end of the questionnaire to enable further remarks.

Data Analysis

We collected both qualitative and quantitative data from each round. They were entered into an Excel database (Microsoft Excel, 2013). Descriptive statistical analysis was performed for all items.

Specifically, median, mode and percentage scores were calculated.

In order to compare the distribution of two independent samples (veterinary experts vs. non-veterinary experts) the non-parametric Wilcoxon Mann-Whitney test was performed for each item, after the evaluation of homoscedasticity hypothesis through robust Levene’s test. Data were analysed using STATA 12.1.

Qualitative data, meaning the therapy dog features and the definitions proposed by participants in response to the initial open-ended questions, were managed by the authors.

Two researchers independently grouped the therapy dog features listed by panel members in the first round according to the definitions provided by the experts and duplicates were dropped out (i.e. use of the same words or synonyms) (Schmidt, 2001). The two lists of features were compared and any disagreement in categorization discussed to obtain a single list used to set up the questionnaire for the second round. Authors addressed all different terms mentioned by participants (together with their definition, if provided) and preserved the original wording provided by respondents whenever it was possible to avoid any misrepresentation of data, since it's up to panel members (and not to authors) to judge emerging ideas for their quality (Hasson et al., 2000).

In some instances, experts mentioned different levels of the same issue (suggesting a gradation in the expression of some features). Therefore, 30 characteristics were split into 3 sub-items assessing different levels of each attribute (low/medium/high level) in order to clarify items and fairly represent the ideas of all panel members (e.g. high level of reliability, medium level of reliability, low level of reliability). High Reliability means that the dog will respond appropriately to cue more than 80% of the time and express expected positive behavior more than 80 per cent of situations. Splitting items avoided instances in which participants embraced a specific degree of the mentioned feature unconsciously or without expressing it.

In order to summarize group's opinions on each therapy dog feature, median, mode and percentage scores were calculated for each item. Data from the second and third round were analysed through consensus measures. In the literature, there is no agreement concerning the definition of "consensus" (Diamond et al., 2014). In our study, we considered that consensus was reached when $\geq 80\%$ of respondents' ratings fall within the range 1-2 or 3-4 of the Likert Scale (O'Loughlin and Kelly, 2004). In other words, if at least 80% of participants rated an item in the lower two categories (meaning very undesirable or undesirable) it was determined that consensus was reached. In the same way, if at least 80% of participants rated an item or in the higher two categories (meaning desirable or very desirable) we classified the item as consensual.

Therefore, percentage scores were calculated for each feature to describe the level of consensus amongst respondents and measures of central tendency (median and mode) were used to detail results. Results for each feature were reported as median scores and

frequencies. Further comments (comments provided by respondents by revising the list of therapy dog features resulting from the first round and free-text explanations of ratings given by respondents in the second round) were read, examined carefully and discussed between the research team members. Based on comments provided by respondents after the first two rounds, some items were slightly re-worded or split. Moreover, careful consideration of explanations of ratings provided by respondents after round 2, helped authors to select three free-text answers for each item to be included in the structured feedback, in order to represent the range of opinions among the panel.

Results

Round 1

Panel members listed a wide range of features including appearance, behavioral traits, skills, motivations and attitudes. All respondents' answers resulted in a list of 58 defining-characteristics for a therapy dog (see Figure 3).

Twenty-nine features were split in three sub-items for the subsequent scoring in the second and third round. The final list included 116 items (see supplementary materials, Table 2)

Round 2

Consensus was gained on 87 items (75%): 54 items were classified as desirable/very desirable by more of 80% of experts (e.g. ability to adapt, high reliability, high predictability, ability to relax, psychophysical balance, etc.). Thirty-three items were undesirable/very undesirable and they were removed (e.g. high level of aggressive behavior, low level of reliability, low level of predictability, low level of motivation to work in AAI, high level of motivation to resource guarding).

Twenty-nine items (25%) did not meet the pre-determined criterion for consensus (see supplementary materials, Table 2).

A careful analysis of free text responses was particularly relevant in this phase because participants highlighted the need to clarify some items, which were slightly re-worded (see supplementary materials, Table 3 and Table 4).

Round 3

Participants reached consensus for 64 (69.57%) of the 92 characteristics proposed in Round 3, leaving 28 items (30.43%) without consensus (see supplementary materials, Table 3).

Fifty-five features were classified as desirable or very desirable. We organized these features in ranking order according to their desirability for respondents. Sixteen features were considered “very desirable” (4) by more than 80% of panel members (ability to adapt, high level of reliability, ability to understand human cues, high level of patience, high level of predictability, ability to relax, having a good attachment to humans, psychophysical balance, high level of self-awareness, high level of motivation to take part in Animal Assisted Interventions, high level of resilience, ability to adapt his/her behavior to different individuals, high level of cooperative/collaborative motivation, high level of docility, high level of motivation to communicate, emotion management skills) (Figure 4).

Furthermore, differences in score distributions between veterinarians and non-veterinarians were examined for round 2 and 3. The results of the analysis showed no significant differences between the two groups for most of the individual item ratings ($p < 0.05$). The two groups seemed to share the same views on the features that make a dog successful in most dog-assisted intervention programs.

In round 2 only one statistically significant difference was detected, regarding the item “Decision-making ability” (Wilcoxon Mann-Whitney test: $n=36$, $z = -2.190$, $p = 0.0286$). The median score of this item was 4 for veterinarians, while for all other experts was 3.

Statistically significant differences among score distributions in the third Delphi round were found regarding three elements: “Soft coat” (Wilcoxon Mann-Whitney test: $n=33$, $z = 2.179$, $p = 0.0293$), “Problem solving skills” (Wilcoxon Mann-Whitney test: $n=33$, $z = -2.105$, $p = 0.0353$) and “Medium level of empathy” (Wilcoxon Mann-Whitney test: $n=33$, $z = -1.982$, $p = 0.0475$). The median score for “Soft coat” was higher for dog handlers/dog trainer experts compared to veterinarian experts, while veterinarian experts rated “Problem solving skills” and “Medium level of empathy” as more desirable compared to other experts.

Discussion

A Delphi method involving therapy dog handlers, therapy dog trainers and veterinarians with expertise in AAI was used in this study as a tool to explore the widest range of views on

the defining features that make a therapy dog successful in most dog-assisted intervention programs. Even though we are aware that dog handler's characteristics and his/her relationship with the dog should be given as one of the main issues for the selection of dyads involved in dog-assisted interventions (Horváth et al., 2008), in this study we focused our attention only on the dog side.

Up to our knowledge, this issue has rarely been investigated. Some general behavioral requirements for therapy dogs are considered well known (the ability to cope with strange situations, to remain calm and confident under stressful situations and to be reliable with visual or vocal commands), but their application and interpretation in therapy dog selection and assessment are merely arbitrary (Glenk, 2017). Since the Italian National Guidelines for animal assisted interventions were approved and published by the Italian public authority, the selection and assessment of animals involved in AAI were highlighted as a weak point, which needs to be clarified and implemented (Simonato et al., 2018).

Therefore, a thorough investigation using a scientific approach of the opinions supported by Italian professionals that work in the field and the consensus building on this issue is the first institutional step to push towards standardization of practices in the selection and assessment of therapy dogs at national level.

Delphi consultation process resulted as an efficient method to facilitate structured group discussion among experts coming from different geographical areas and with different roles in dog-assisted intervention programs.

We noticed a high degree of consensus by panel members about the desirable features of the therapy dog: 55 features reached consensus as desirable/very desirable features.

Probably this result could be influenced also by the common AAI educational programs established in Italy thank to National Guidelines. All of them described psychological and behavioral traits of the dog whereas physical appearance, sex and performance in training tasks had poor consideration among the panel members. The top 16 attributes claimed by more than 80% of experts as "very desirable" were all related to four main issues: dog resilience, dog emotional balance, dog motivation to collaborate with both handler and users/patient and dog communication skills.

The top ranked item was "Ability to adapt (ability to adapt to a changing environment, behavioral plasticity and flexible responses to events)" and it did not change position between rounds.

This outcome supports the idea that management of stressful situations through functional coping strategies and good emotional control makes the dog a reliable partner for the handler in the AAI setting (Glenk, 2017). Another very high ranked feature was a high motivation/willingness to collaborate, which improves in general the working dog efficiency (Troisi et al., 2019). Finally, his/her ability to use communication skills towards both the handler and the patient/user (e.g. visual communication cues) is crucial for both safety and efficacy reasons (Fredrickson-MacNamara and Butler, 2006). We noticed that previous selection protocols were set up to assess fear, aggressive behavior, undesirable behavior (e.g., biting, licking, jumping) and negative interactions with the users which need to be avoided in therapy dogs (Mongillo et al., 2015). However, exclusion criteria are not sufficient at all to assess the efficacy and efficiency of the dog in the setting of the interventions. One study took into account other features of therapy dogs linked to communication skills and emotion control, using gazing test and A-no-B task as well as owner-rated questionnaire to investigate therapy dog behavior, suggesting this could be a useful approach to future selection protocols (Cavalli et al., 2018) in accordance with our results.

It is interesting to note that during the process, changes on levels of consensus occurred in both directions, maybe reflecting a more complex view of the phenomenon achieved by participants through the process of controlled feedback. Areas of disagreement and dissenting comments pointed out lack of consensus among respondents for 28 features. The lowest agreement was for some features expressed at “medium level”. The respondents’ personal experiences may have influenced their position in judging a “medium level” of motivation to take part in AAI, of discomfort tolerance, docility, motivation to resource guarding (keeping hold of objects), patience (managing waiting times without frustration), reliability and predictability as sufficient or insufficient for the dog to have success in the setting of interventions.

Moreover, it is worth noting that characteristics generated in the first step of the process were often anthropomorphic: respondents assigned human qualities onto the animals. Anthropomorphizing attitude seems to be quite common mainly among people working with dogs (Horowitz and Bekoff, 2007). Thanks to their playing behaviors such as gaze-monitoring, mirroring behaviors and turn-taking as well as their ability to produce visual signals salient to humans (Miklósi et al., 2005; Horowitz, 2009) dogs have often been anthropomorphized. Moreover, since the animal is considered like a member of the

multidisciplinary team involved in AAI, the attitude to describe the dog with attributes typical of humans is quite common among professionals of the field.

We noticed lack of differences between veterinarian and non-veterinarian in the ranking position of therapy dog features or in the use of anthropomorphic terms. This is probably due to the Italian education programs provided to all AAI professionals, which are established by National Guideline for AAI. Veterinarian experts rated “problem solving skills” and “medium level of empathy” as more desirable compared to other experts, whereas physical features like “soft coat” has a lower score. These results may be influenced by their academic background and the relevance that veterinarian give to dog behavior and welfare. Indeed, these features guarantee a high ability of the dog in dealing with different situations with little stress and maintaining his/her role as relational mediator without emotional imbalance.

This study has several practical implications as a preliminary source to test the psychological profile of dogs that work successfully in the setting of AAI. Moreover, it has also some clinical application because information collected could be useful to support the assessment of adult and young dogs that can be selected to be trained and become therapy dogs and to implement AAI educational programs for veterinarians involved in therapy dog assessment and selection practice.

Limitations of the study

In considering the results of this study, its limitations should be acknowledged.

As already mentioned, the outcomes of this study might provide a baseline for future research with the aim to make progress in the direction of standardization of practices in the selection and assessment of therapy dogs. It is, however, necessary to more clearly operationalise some of the items and the anthropomorphic nature of some of the traits. Delphi methodology has been criticized for the arbitrary nature of the definition of “expertise”, which leads to questionable results (Goodman, 1987). McMillan et al. (2016) argued that “*Experts, in the context of consensus methods, are those people who have knowledge about the topic of concern*”, but, to date, it is yet not clear how to identify someone as an expert (McMillan et al., 2016). Since our research topic has been rarely investigated, we decided to involve people with real-life experience, rather than scientists, to obtain information that may be relevant into practice. We involved professionals with different backgrounds to have different points of view about the issue we investigated

(Powell, 2003; Förster and von der Gracht, 2014), even though this approach may have some limitations (Van der Fels-Klerx et al., 2002). No claim can be made about the representativeness of the sample. We obtained a high response rate and most of panel members completed the entire Delphi process showing a strong motivation to participate. Certainly, a high degree of commitment to the topic is required because the consultation process's value is heavily dependent upon the sample's stability, but, on the other hand, individuals with a high involvement in the topic might be subject to bias (Keeney et al., 2001).

One problem may have arisen in our study. There is a danger in splitting a feature in 3 different items (low/medium/high level), as we did in the present study. The intensity of each feature is difficult to define or quantify and may be influenced by one's own experience. Moreover, because of the complexity of negative phrasing, participants may have found it difficult to rate how undesirable a specific feature is. Different respondents may have interpreted some questions in different ways. For example, some participants seemed to have interpreted "low level of aggressive behavior" as desirable, in that there is not high level of aggressive behavior present, while other respondents rated the same item as "Very undesirable", probably because there is some degree of aggression present (in low level). While acknowledging those important limitations, we thought that it was worth splitting to avoid instances in which participants were forced to answer to an item one way if they were thinking of a specific intensity of a certain feature in particular, but not of a different level of the same item.

Moreover, the study focused on the Italian AAI framework, so our results can lack of external validity.

Conclusion

Further studies are needed to investigate the link between the dog features identified by the panel members and the successful and reliable involvement of dogs in AAI. Delphi method helped us to identify themes that respondents consider important in relation to this topic, but this does not mean that the correct answer to the research question has been found (Hasson et al., 2000).

Nevertheless, our findings provide a baseline for future research that starts from professionals' point of view with the aim to set up a practical selection and assessment protocol of dogs useful to veterinary practitioners and dog handlers involving them in the process.

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Authorship statement

This study was designed by Simona Normando and Laura Contalbrigo and it was performed by Lorena Filugelli. Data were analysed by Marica Toson, Lorena Filugelli, Simona Normando and Laura Contalbrigo.

The paper was written by Lorena Filugelli, Laura Contalbrigo and Marica Toson with the supervision of Simona Normando. All authors approved the final version of the paper.

Conflict of interest statement

The authors declare no conflict of interest

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Captions

Figure 1. Flowchart shows various steps involved in this Delphi study

Figure 2. Example of feedback presented in round 2 of the online Delphi survey

Figure 3. List of 58 characteristics proposed during Round 1

Figure 4. Consensual and desirable characteristics. Ranking order according to desirability for respondents (%)

Data are sorted in descending order. Items' place on the rank is determined by which has the maximum number of "4" votes, then "3" votes, then "2" votes and, last, "1" votes.

Journal Pre-proof

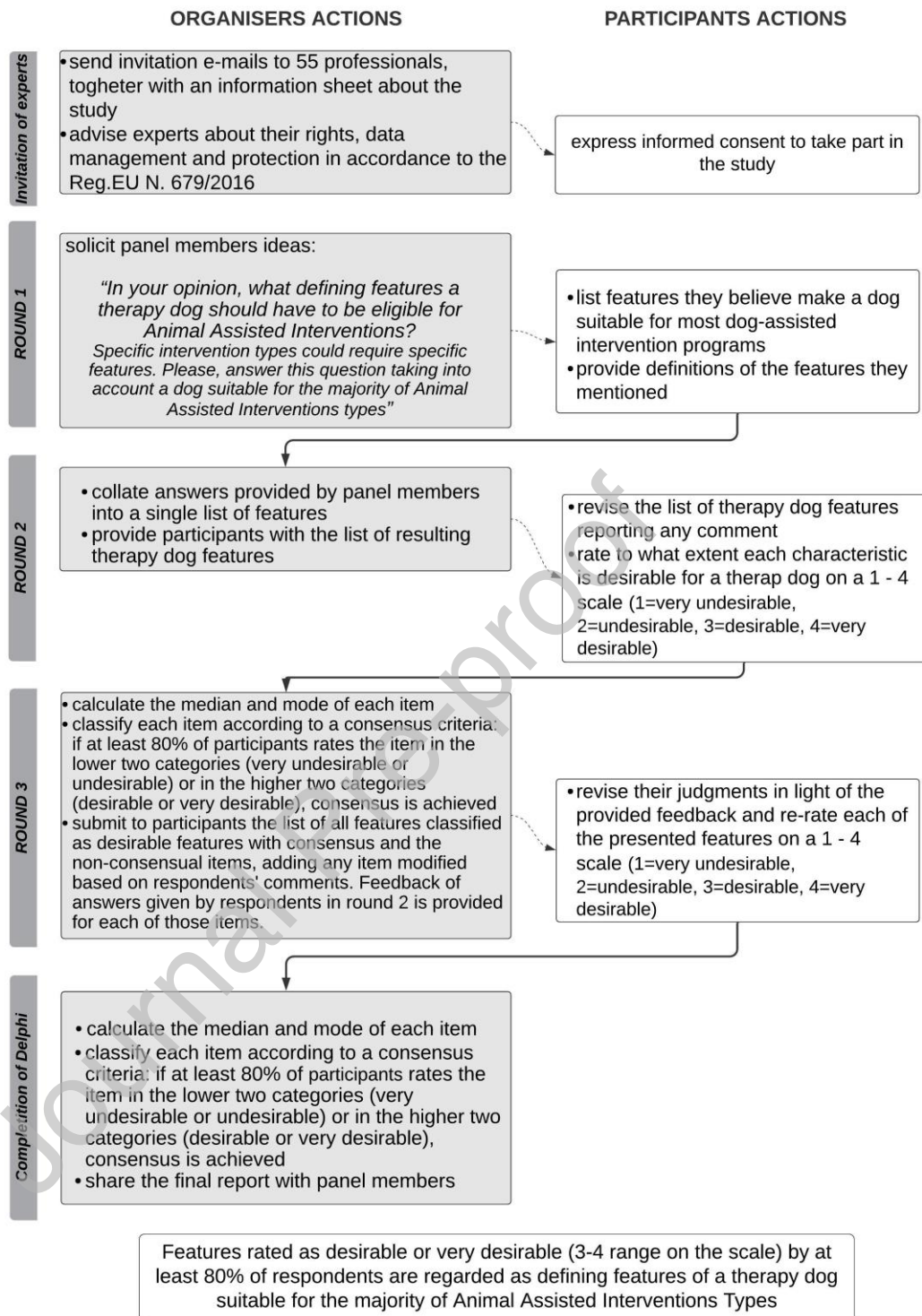


Fig. 1

Please, rate to what extent each characteristic is desirable/undesirable for a dog eligible for the majority of Animal Assisted Interventions types, with various kinds of users/patients.

Please rate each item on a scale from 1 to 4, with 1 being "Very undesirable" and 4 being "Very desirable".

Pleasant appearance

The score you gave to "Pleasant appearance" in the second round was 3.

	Median	% of panel's answers		Consensus
		very undesirable (1)/ undesirable (2)	Desirable(3)/ very desirable (4)	
Pleasant appearance (the dog has morphological traits that inspire trust, a sense of security	3	5,56	94,44	YES
Representative comments				
<ul style="list-style-type: none"> • "This is something that is desirable, but it doesn't mean that dogs that doesn't look very comforting, for example big black dogs, can not be involved in AAI programs. It's up to AAI professionals to introduce the dog properly and to choose the objectives and the ways in which this physical appearance will be to benefit of the intervention" • "Essential, in our places of work there are often many people, we need to always keep in mind that there might be a chance that there might be someone across the room or down the hall, and that this person, maybe not directly involved in the intervention, might be afraid of dogs. We have to protect those people. For AAI patients/users it is not always relevant" • "To encourage the approach and the relationship" 				

	1 (very undesirable)	2 (undesirable)	3 (desirable)	4 (very desirable)
Pleasant appearance (the dog has morphological traits that inspire trust, a sense of security etc.)				

Fig. 2

Proposed defining features of a dog suitable for the majority of Animal Assisted Interventions programs
<ul style="list-style-type: none"> ·Motivation for intraspecific socialization ·Motivation for interspecific socialization ·Spontaneously seeking physical contact ·Showing pleasure while being groomed ·Performing proper greeting rituals or other social rituals ·Ability to adapt his/her behaviour to different individuals (different AAI users/different dogs/different animals belonging to other species) ·Affiliation motivation (being part of a tight group) ·Having a good attachment to humans, meaning relational patterns that allow him to use humans as a secure base (the dog can explore the environment and seek proximity to his/her attachment figure in the face of danger) ·Motivation to communicate (showing an emotional state or pointing to something) ·Ability to understand human cues ·Communication skills ·Showing easily detectable signs of distress ·Barking as the preferred communication channel used ·Epileptic motivation (Care and nurturing of a mate) ·Epileptic motivation (seeking for help and soliciting care from another subject) ·Cooperative/collaborative motivation (joining an activity with his/her partner or engaging in a group activity) ·Motivation to play ·Play competence ·Motivation to work in AAI ·Food motivation ·Motivation to guard (controlling a territory, controlling a defined place, controlling a group of animate or inanimate objects) ·Motivation to protective aggression (protection of people, animal or territory) ·Motivation to resource guarding (keeping hold of objects) ·Balance among his/her motivational areas ·Psychophysical balance ·Self-control skills (the dog controls his/her impulses and regulate his/her emotion and body responses to a specific event) ·Self-control around food ·Patience (managing waiting times without frustration) ·Discomfort tolerance ·Calm temperament (the dog has a low arousal and doesn't show excited behaviours) ·Positive emotional balance (prevalence of positive emotions) ·Emotion management skills (the dog is able to regulate his/her emotions/the level of his/her arousal) ·Self-awareness (becoming aware of himself, of his/her own emotions, etc.) ·Fearful/shy attitude ·Ability to relax ·Docility ·Curiosity (novelty seeking and exploratory behaviour) ·Combattiveness (pursuing in the behaviour, after the reaction to an uncomfortable environmental stimulus) ·Resilience ·Empathy ·Predictability ·Reliability ·Ability to adapt (ability to adapt to a changing environment, behavioural plasticity and flexible responses to events) ·Proactivity ·Trainability ·Aggressive behaviour ·Consistency ·Self-confidence (self-efficacy/self-esteem) ·Attentiveness (the dog focuses and maintains attention on certain stimuli) ·Learning ability ·Problem solving skills ·Having adequate coping strategies ·Decision-making ability ·Dog manipulation skills (push or pull objects, collecting objects, etc.) ·Tendency to retrieve objects ·Feminine sex ·Soft coat ·Pleasant appearance (the dog has morphological traits that inspire trust, a sense of security etc.)

Fig. 3

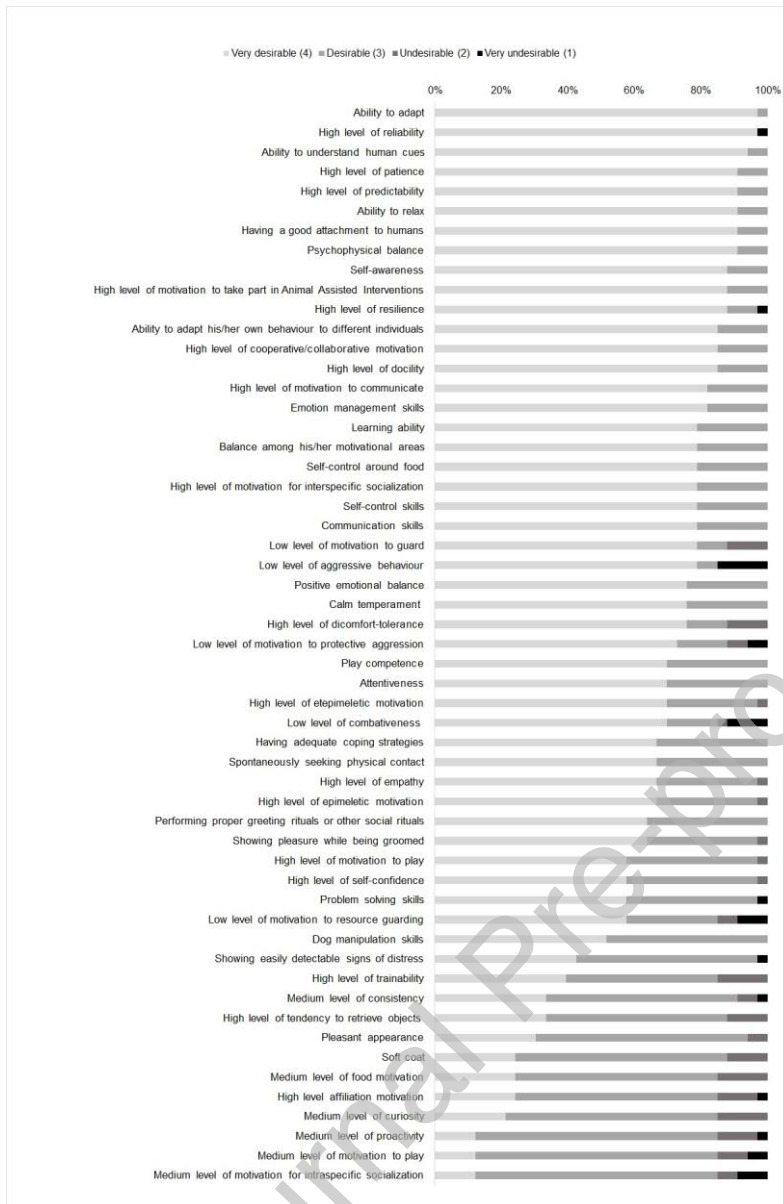


Fig. 4