Patient Education and Counseling 100 (2017) 682–689

Contents lists available at ScienceDirect

Patient Education and Counseling

journal homepage: www.elsevier.com/locate/pateducou

Communication Study

# Analysing how negative emotions emerge and are addressed in veterinary consultations, using the Verona Coding Definitions of Emotional Sequences (VR-CoDES)

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ARTICLE INFO

*Article history:*
Received 14 July 2016
Received in revised form 6 October 2016
Accepted 1 November 2016

*Keywords:*
Cues
Concerns
Veterinary communication
Triadic consultations
VR-CoDES
Emotions

ABSTRACT

*Objective:* To explore the applicability, need for modifications and reliability of the VR-CoDES in a veterinary setting while also gaining a deeper understanding of clients' expressions of negative emotion and how they are addressed by veterinarians.
*Methods:* The Verona Coding Definitions of Emotional Sequences for client cues and concerns (VR-CoDES-CC) and health provider responses (VR-CoDES-P) were used to analyse 20 audiotaped veterinary consultations. Inter-rater reliability was established. The applicability of definitions of the VR-CoDES was identified, together with the need for specific modifications to suit veterinary consultations.
*Results:* The VR-CoDES-CC and VR-CoDES-P generally applied to veterinary consultations. Cue and concern reliability was found satisfactory for most types of cues, but not for concerns. Response reliability was satisfactory for explicitness, and for providing and reducing space for further disclosure. Modifications to the original coding system were necessary to accurately reflect the veterinary context and included minor additions to the VR-CoDES-CC.
*Conclusion:* Using minor additions to the VR-CoDES including guilt, reassurance and cost discussions it can be reliably adopted to assess clients' implicit expressions of negative emotion and veterinarians' responses.
*Practice implications:* The modified VR-CoDES could be of great value when combined with existing frameworks used for teaching and researching veterinary communication.


## 1. Introduction

Communication is recognized as a core clinical skill in veterinary competency frameworks internationally [1–4]. A range of stakeholders have acknowledged the need for good communication in veterinary practice including students [5–9], veterinarians [5,10] and employers [5,11,12]. Different frameworks for consultation structure and content have been adopted from the human medical literature [13–17] to analyse and teach veterinary consultation skills [17,18]. Tailoring these existing frameworks has led to better insights into veterinary consultations.

However, an interesting aspect of communication in veterinary medicine is the presence of three parties interacting: the veterinarian, the client (owner) and the patient (animal). Although the patient does not speak, the animal can and does communicate and is included in the conversation by the veterinarian and the client [19]. This adds complexity to the interaction and poses challenges in systematically analysing this communication. Examples of comparable situations in human medicine include pediatric, geriatric and neurological consultations where the patients cannot speak for themselves. Only few studies [20,21] have been published describing the in-depth characteristics of the dynamics of these triadic consultations. More research is needed to adequately analyse and understand the complex emotional

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http://dx.doi.org/10.1016/j.pec.2016.11.001
0738-3991/

interactions occurring in such consultations so that all parties' needs can be met.

Clients express a variety of negative emotions during veterinary consultations. As the patient is considered part of the family [22,23], the situation in veterinary medicine is similar to that in pediatric medicine where a parent would feel responsible for the child's well-being [24]. These negative emotions provide potential empathic opportunities, which unfortunately seem to be missed more often than acknowledged [5,25]. Responding empathically to the emotional needs of a client, in both veterinary and medical consultations, has been shown to be associated with higher levels of client satisfaction [5,10,25–27]. Not addressing, or inadequately addressing, the emotional needs of a client can affect the client's objectivity and ability to coherently explain situations or to answer questions during the consultation [28]. Training veterinarians to assess and respond to their clients' emotions is essential, as this is an important part of the process of care.

Various skills are required from the veterinarian in order to respond adequately to the varied ways clients may express negative emotions in consultations. Negative emotions may be expressed either explicitly (concerns) by naming the emotion that is involved or subtly (cues) by using more ambiguous or vague expressions of emotion. Concerns expressed by clients may require exploration by the veterinarian or may lead to opportunities for veterinarians to build a relationship or express empathy [29]. Cues expressed by clients may require further clarification, for which facilitating skills to help clients express their true concerns and information gathering skills would be necessary [29].

Until now, the implicit expressions of negative emotions by clients have not been examined in-depth in veterinary consultations. Previously, Shaw, Adams et al. [25] described and used a coding system to systematically analyse veterinary consultations, including clients' emotional distress [25]. The Roter Interaction Analysis System (RIAS) [25], whilst valuable in its own right, only allows for explicit concerns to be coded. It does not include prompts or cues to concerns as elements of interest. In order to improve our ability to analyse these consultations and to better understand how empathic opportunities are addressed in veterinary practice, identifying and characterizing these expressions would be valuable.

The Verona Coding Definitions of Emotional Sequences (VR-CoDES) [29,30] was chosen for the current study, in order to detect and analyse *implicit* concerns (cues) that clients may express during veterinary consultations. The VR-CoDES include three manuals: the VR-CoDES-CC to help identify cues and concerns expressed by clients, the VR-CoDES-P that explains how to code health provider responses (the veterinarian) and a final manual on how to identify units of analysis. The applicability of the VR-CoDES has been previously tested in a range of medical studies, concerning dental [31], psychiatric [32] and pediatric [20] consultations.

The aim of the current study is to gain a deeper understanding of how clients' expressions of negative emotions emerge during the veterinary consultation and how they are addressed by veterinarians. Specifically, the research questions of the current study are:

1. What client cues and concerns and veterinarian responses are present in the interaction between veterinarian, client and patient?
2. What challenges are faced in applying the VR-CoDES in veterinary consultations?
3. If needed, what modifications can be made to improve the applicability of the VR-CoDES in triadic consultations, specifically in veterinary consultations?
4. What is the reliability of using the VR-CoDES in veterinary consultations?

## 2. Methods

### 2.1. Context

The transcripts used for this study were based on consultations in Australian small animal practices. Details of data collection are described in a previous paper [5]. In brief, for the original cross-sectional study, clients who had scheduled a health-related problem appointment on the days of data collection were invited to participate in the study. End-of-life or breaking bad news consultations were excluded. This resulted in 65 audio-recordings of health-related consultations, of which 20 were randomly selected for analysis in the current study. This number was based on original reliability studies of the VR-CoDES [30]. The duration of the audio recordings used in the current study was between 8 min 30 s and 42 min 40 s, with a mean of 17 min 45 s. All consultations were transcribed by the first author (MV) and checked for accuracy by the final listed author (MM). The study protocol met the ethical review processes of the University of Queensland and was within the guidelines of the National Health and Medical Research Council [5].

### 2.2. Authors

The five researchers span backgrounds in clinical psychology research and teaching, clinical communication and practice, and veterinary education teaching and research. Two were formally trained in using the VR-CoDES and two were self-trained using the *Verona Network on Sequence Analysis* [33] training package.

### 2.3. Participants

Fifteen different veterinarians participated in this study. There were 3 male and 12 female veterinarians, with the majority (75%) of participants aged between 18 and 30 (range 18–50). In 16 consultations there was only one client present, and two clients were present in the remainder, in which case both clients were coded. There was a nurse present in four consultations and a child in three, and in these instances only expressions by the veterinarian and client(s) were coded. Of the patients, 80% were canines and 20% felines.

### 2.4. Analysis

An iterative approach to coding was adopted initially, with progressive identification and resolution of challenges involved in applying the VR-CoDES to veterinary consultations. A pilot study was performed on 6 consultations in order to determine any necessary modifications to the original VR-CoDES to capture the range of cues expressed in veterinary consultations (Section 3.4, Table 5). Subsequent discussions resulted in a consensus on veterinary-specific VR-CoDES nomenclature (Table 1).

### 2.5. Reliability

Inter-rater reliability was tested by coding six randomly selected transcripts [20,29,31] that had not been discussed previously by the group. Cues, concerns and responses were coded by the third author (SM) and the results compared to codes assigned by the first author (MV). To ensure that the response coding by the third author was not impacted by discrepancies in identifying cues and concerns between coders, pre-coded cue and concern transcripts were provided to the third author to use for the inter-rater reliability response coding once the cue and concern coding was completed. Delayed responses were not included in the

**Table 1**
Definitions and examples of the use of the VR-CoDES in veterinary consultations.

| Expression | Definition[a] | Examples in a veterinary context[b] |
|---|---|---|
| Concern | A clear and unambiguous expression of an unpleasant current or recent emotion where the emotion is explicitly verbalized, with a stated issue of importance for the client | C: We're still worried about that, every time ( . . . )<br>P: And she's very scared I can tell 'cause ( . . . )<br>P^: Ahw you're getting worried aren't you mate? |
| Cue | A verbal or nonverbal hint that suggests an underlying unpleasant emotion and would need a clarification from the veterinarian | |
| Cue a | Words or phrases in which the client* uses vague or unspecified words to describe his/her emotions | C: It's just really hard<br>P: She seems a little bit uncomfortable<br>P^: You don't like this bit, do you? |
| Cue b | Verbal hints to hidden concerns (emphasizing, unusual words, unusual description of clinical signs, profanities, exclamations, metaphors, ambiguous words, double negatives, expressions of uncertainties and hope) | C: I was a bit hesitant to ( . . . )<br>P: He's gonna be miserable!<br>P^: Hey baby, that's all right sweetie. That's okay. |
| Cue c | Words or phrases which emphasise (verbally or non-verbally) physiological or cognitive correlates (regarding sleep, appetite, physical energy, for example) of unpleasant emotional states. | P: I think he feels more bloated at night time. |
| Cue d | Neutral expressions that mention issues of potential emotional importance which stand out from the narrative background and refer to stressful life events and conditions | C: I can't be at home all the time, or, that's the main, the main problem.<br>P: Yeah well you know he's been through a real happening. |
| Cue e | A patient elicited repetition of a previous neutral expression (repetitions, reverberations or echo of a neutral expression within a same turn are not included) | P: She just wasn't herself; [different turn] She hasn't been herself though. |
| Cue f | Nonverbal cue; 1) clear expressions of negative or unpleasant emotions (crying); or 2) hint to hidden emotions (sighing, silence after provider question, frowning etcetera) | C: Yeah. [sighs] More money. |
| Cue g | A clear and unambiguous expression of an unpleasant emotion which is in the past (more than one month ago) or is referred to an unclear period of life ('I was worried about . . . '; 'I was terrified . . . ') | C: Yeah, yeah, oh, it's been horrible!<br>P: He used to fuss about the car |

[a] Definitions of the original VR-CODES-CC are used for this table [30]. The word 'patient' was replaced by 'client' (owner), the word 'health provider' by 'veterinarian'. Please refer to the VR-CoDES manual [30] for more details about the descriptions of the codes and details of the cue types.
[b] The notification of C, P and P^ is explained in subsections 3.2. and 3.4. (C: client's perspective, P: patient's perspective, P^: directed to the patient).

reliability analysis. Agreement percentages on coding were established using Microsoft Excel® Version 2013. Cohen's Kappa and Fisher's Exact were calculated using SPSS Statistics 22 for Windows.

## 3. Results

### 3.1. Cues, concerns and responses in veterinary consultations

Cues or concerns were expressed by clients in all 20 of the consultations studied. In 10 consultations (50%) negative emotions were presented only as cues and no explicit concerns were expressed (Table 2). The mean frequency of cues per consultation was 10.8 (range 1–25) and the mean frequency of concerns per consultation was 1 (range 0–5). The response used most commonly by veterinarians in the study to cues and concerns expressed by their clients was Ignoring (32.5%) (Table 3). Non-explicit responses were provided in 79% of consultations (Table 4). Rational responses referring to the content of the client's expression and not to the emotion, for example by providing information/advice (9.8%) or acknowledging the factual content of an expression without explicitly acknowledging the emotional element (9.0%), were used more frequently than affective responses such as responding empathically (1.3%) or acknowledging the emotion explicitly (2.1%).

**Table 2**
Frequency, percentage, mean number per consultation and range of cues and concerns.

| | Frequency | Percentage (%) | Mean | Range |
|---|---|---|---|---|
| Concerns | 19 | 8.1 | 1.0 | 0–5 |
| Cues | 215 | 91.9 | 10.8 | 1–25 |
| Cue a | 31 | 13.2 | 1.6 | 1–4 |
| Cue b | 121 | 51.7 | 6.1 | 1–20 |
| Cue c | 17 | 7.3 | 0.9 | 1–4 |
| Cue d | 24 | 10.3 | 1.2 | 1–4 |
| Cue e | 9 | 3.8 | 0.5 | 1–3 |
| Cue f | 5 | 2.1 | 0.3 | 1–2 |
| Cue g | 8 | 3.4 | 0.4 | 1–5 |
| Total | 234 | 100.0 | 11.7 | 0–27 |

**Table 3**
Frequency, percentage and mean number per consultation of veterinarians' immediate and delayed responses to clients' cues and concerns.

| | Frequency (n, %) | Mean |
|---|---|---|
| Non-explicit, Reducing space | | |
| Ignoring (NRIg) | 76 (32.5) | 3.8 |
| Shutting down (NRSd) | 7 (3.0) | 0.4 |
| Non-explicit information-advice (NRIa) | 23 (9.8) | 1.2 |
| Non-explicit, Providing space | | |
| Silence | – | – |
| Backchannel (NPBc) | 46 (19.7) | 2.3 |
| Non-explicit Acknowledgement (NPAc) | 15 (6.4) | 0.8 |
| Non-explicit Active invitation (NPAi) | 12 (5.1) | 0.6 |
| Implicit empathy (NPIm) | 7 (3.0) | 0.4 |
| Explicit, Reducing space | | |
| Switching | – | – |
| Post-poning | – | – |
| Explicit Information advice (ERIa) | 12 (5.1) | 0.6 |
| Active blocking | – | – |
| Explicit, Providing space | | |
| Content acknowledgement (EPCAc) | 21 (9.0) | 1.1 |
| Content exploration (EPCEx) | 7 (3.0) | 0.4 |
| Affective acknowledgement (EPAAc) | 5 (2.1) | 0.3 |
| Affective exploration | – | – |
| Explicit Empathic response (EPAEm) | 3 (1.3) | 0.2 |
| Total of Responses | 234 (100.0) | 11.7 |

**Table 4**
Frequency of different response types by the veterinarian to different cue types.[a]

| Responses, n(%) | Cues, n(%) | | | | |
|---|---|---|---|---|---|
| | Vague expressions (A,B) | Physiological correlates (C) | Neutral expressions (D,E) | Explicit concerns (G, concerns) | Total Cues and Concerns |
| Explicit | 33 (14.4) | 1 (0.4) | 6 (2.6) | 8 (3.5) | 48 (20.9) |
| Non-explicit | 119 (52.0) | 16 (7.0) | 27 (11.8) | 19 (8.3) | 181 (79.1) |
| Total Responses | 152 (66.4) | 17 (7.4) | 33 (14.4) | 27 (11.8) | 229 (100.0) |
| Providing Space | 67 (29.3) | 6 (2.6) | 21 (9.2) | 19 (8.3) | 113 (49.3) |
| Reducing Space | 85 (37.1) | 11 (4.8) | 12 (5.2) | 8 (3.5) | 116 (50.7) |
| Total Responses | 152 (66.4) | 17 (7.4) | 33 (14.4) | 27 (11.8) | 229 (100.0) |

[a] Cues are bundled due to small sample size and cue f (n = 5) was excluded (nonverbal). The percentage was rounded to one decimal place.

### 3.2. Challenges in applying the VR-CoDES-CC in veterinary consultations

Five challenges were identified during the application of the VR-CoDES-CC in veterinary consultations. Three main challenges will be discussed in detail below. The fourth and fifth challenge concern gaps in the system. Namely, the VR-CoDES does not encompass spontaneous comments by the health provider, so that veterinarian elicited 'spontaneous' statements of empathy are not considered. For example, *V: "He's so nervous isn't he? Poor thing"*. Furthermore, only negative emotions expressed by clients and veterinarian are coded, which omits the opportunity to code empathic responses by the veterinarian to positive emotions expressed by the client.

#### 3.2.1. Recognizing the triadic nature

The triadic nature of the veterinary consultation challenged the original two-way coding system of the VR-CoDES. Using the coding system as it was (Table 1), it was not possible to document the complete dynamics of interactions within the veterinary consultation. To recognise the nature of veterinary consultations where the patient (animal) plays a role as well as the client and veterinarian, new notations were introduced to identify the perspective and direction of cues and concerns (Section 3.4). Using the new notation, it turned out that cue b and d were expressed mostly from a client's perspective, cue a,c and e from a patient's perspective and cue b was also often directed to the patient.

#### 3.2.2. Clinical signs versus emotions

Distinguishing a description of clinical signs from an emotional cue proved to be challenging when using the existing VR-CoDES. For example, the expression: *"She was uncomfortable"*, related both to the physiological state of the animal (cue c) and also suggested a hint towards a negative emotion being described in a vague way (cue a). According to the VR-CoDES only emphasized expressions related to physiological states should be reported as cue c. If it is possible to identify an emotion expressed in a vague way it is classified as cue a. Due to this being challenging several 'reminders' for coding were created based on frequently encountered expressions of this type in veterinary consultations (Table 5). These reminders were agreed on by thorough analysis of the description of cue a and cue c.

#### 3.2.3. Outstanding topics (guilt, reassurance, costs)

Three specific topics arose potentially relating to negative emotions expressed by the client, and were categorised within 'cue b'. The first topic concerned the expression of 'feelings of guilt' that were expressed either towards the veterinarian, for example: "*We didn't realise she could slip through the bars of the swimming pool [sad tone of voice]"* or towards the patient: "*Sorry! Sorry!"*. Secondly, 'reassuring the patient' by using comforting comments such as "*It's okay*" or "*You're a good girl*" was considered evident when this coincided with at least two of three requirements, based on existing literature which defines reassurance [34], 1) a higher tone of voice suggesting emotional involvement, 2) statements of endearment directed to the patient, or 3) were subject to repetition within that same turn. Lastly, the topic of 'cost discussions' was also encountered in this study, already being a known challenge in veterinary consultations [35,36]. For example: *"Because you know, I don't have the money for her surgery"*. These topics were potentially involving negative emotions, and may create an opportunity for expressing empathy.

**Table 5**
Challenges and modifications to the original VR-CoDES for use in veterinary triadic consultations, with examples.

| Section | Challenge | Modification | Example |
|---|---|---|---|
| 3.2.1 | Coding of cues and concerns that concern emotions or feelings assumed for the patient (animal) instead of the client (owner). | Introduction of the −P (patient's perspective) notation. | C: "And, it just, she was really uncomfortable." |
| 3.2.1 | Coding client's emotional expressions that are directed to the patient instead of the veterinarian. | Introduction of the −P^ (directed to the patient) notation. | C: "Ahw you're getting worried aren't you mate?" |
| 3.2.2 | Reminder: Distinguishing clinical signs from emotions. | Vague descriptions of physical and emotional states, different from the ones identified in the original VR-CoDES, were identified and categorised. | "Doesn't like": cue a<br>"Dopey": cue c<br>"Hard": cue a<br>"Sore": cue c |
| 3.2.3 | Expressions of guilt by the client. | Addition of 'implicit expressions of guilt' to the existing code cue b. | C: "And, to our own, to our own fault I think we ehm, we thought we'd give her some of our ehm, our dinner, and that's when she got sick . . . " |
| 3.2.3 | Statements of reassurance (tone of voice suggesting emotional distress, statements of endearment directed to the patient, repeated statements directed to the patient). | Addition of 'reassurance' to the existing code cue b. | C: "It's all right Luca. It's okay darling. It's okay. You're a good girl. Hey Luc? You're a good girl." |
| 3.2.3 | Client elicited cost discussions. | Addition of 'client elicited cost discussions' to the existing code cue b. | C: "I'm kind of put in this terrible position of having to prioritize ( . . . ) Because you know I don't have the money for her surgery." |

### 3.3. Challenges in applying the VR-CoDES-P in veterinary consultations

The raters were generally able to apply the VR-CoDES-P to veterinary consultations, though not all of the 17 response codes were represented in the data set. A notable result of analysing veterinarians' responses to negative emotions of their clients was that their responses explicitly referred to that (underlying) emotion in only just over one in five consultations (20.9%) (Table 4). Whether or not the veterinarian responded in an explicit way was independent of the cue type (Fisher's Exact test: $p = 0.30$). Cue type, however, was strongly related to the facilitation of further disclosure by the veterinarian (Fisher's Exact test: $p = 0.01$). Space for further disclosure was more likely to be provided during discussions involving neutral expressions or explicit concerns, whilst cues regarding physiological correlates for example were more likely to be responded to by reducing space for further disclosure (Table 4).

### 3.4. Modifications

The modifications made to the original VR-CoDES-CC were created to address the previously discussed challenges and serve to improve applicability of the VR-CoDES-CC for coding triadic consultations in general and veterinary consultations specifically (Table 5). Cues, concerns and responses that were expressed from a client's perspective were given the additional notation '-C' and those expressed from a patient's perspective (by the client) the notation '-P', respectively. Cues, concerns and responses directed to the patient (animal) rather than the veterinarian or client were marked using '-P^'. In total, about twenty one percent of all cues expressed by the client (21.4%) were expressed towards the animal instead of the veterinarian (Table 6). In most instances, veterinarians responded to negative emotions by communicating to the client (56%), while one out of ten responses (9.8%) were directed to the patient (animal). Clients expressed around one third of their cues and concerns from the patient's perspective (34.4%), and veterinarians responded to clients' cues and concerns from the patient's perspective in a similar proportion of responses (34.2%).

### 3.5. Reliability

Inter-rater reliability for the modified VR-CoDES-CC was moderate [37] for cue identification (agreement percentage 75.0%; Cohen's kappa 0.50, $p < 0.000$) and very good for cue specification (agreement percentage 88.3%; Cohen's kappa 0.82, $p < 0.000$). The agreement between raters on the modifications made to the VR-CoDES-CC to note perspective and direction of cues and concerns was also good (agreement percentage 83.3%; Cohen's kappa 0.74, $p < 0.000$), as was inter-rater reliability for elicitation of cues by the veterinarian and client (agreement percentage 79.8%; Cohen's kappa 0.69, $p < 0.000$). Concerns, cue f and cue g were excluded from reliability testing due to low frequencies.

**Table 6**
Frequency and percentage of cues, concerns and responses, being expressed from a client's perspective, a patient's perspective or being directed to the patient (animal).

| | Cues and Concerns, n(%) | Responses, n(%) |
|---|---|---|
| Client's perspective (-C) | 95 (44.2) | 131 (56.0) |
| Patient's perspective (-P) | 74 (34.4) | 80 (34.2) |
| Directed to the patient (-P^) | 46 (21.4) | 23 (9.8) |
| Total | 215 (100.0) | 234 (100.0) |

Inter-rater reliability for the VR-CoDES-P was good for the dimension of explicitness (agreement percentage of 91.9%, Cohen's kappa 0.79, $p < 0.000$) and moderate for the dimension of providing versus reducing space (agreement percentage 77.4% Cohen's kappa 0.54, $p < 0.000$). Inter-rater reliability for the 17 specific response codes of the VR-CoDES-P was fair (agreement percentage 48.4%; Cohen's kappa 0.39, $p < 0.000$). Inter-rater reliability was poor (agreement percentage 51.6%, Cohen's kappa 0.18, $p < 0.000$) for the modifications made to note the perspective and direction of the responses by veterinarians.

## 4. Discussion and conclusion

### 4.1. Discussion

The purpose of this study was to explore the applicability, need for modifications and reliability of the VR-CoDES-CC and VR-CoDES-P in a veterinary setting, while also gaining a deeper understanding of clients' expressions of negative emotion and how they are addressed by veterinarians. Qualitative and quantitative analyses were used on 20 veterinary consultations involving health related appointments. To the authors' knowledge this study represents the first time the role of the patient has been recognized in triadic consultations where the patient cannot speak by taking into account the two central perspectives of communication involving the patient, the veterinarian and the client.

#### 4.1.1. What client cues and concerns and veterinarian responses are noted in the interaction between veterinarian, client and patient?

Cues were expressed more frequently in this study than in comparable studies in medical consultations, both when involving adult [38] and pediatric [20] patients. The mean frequency of concerns was slightly higher than in pediatric consultations [20] and equal to the minimum number of concerns expressed by adult patients, respectively [38]. The large number of (underlying) concerns identified during this study represent numerous opportunities in each veterinary consultation to build a relationship with the client by addressing these emotions.

Negative emotions that are expressed during the consultation can be considered potential empathic opportunities [39]. From previous research in veterinary medicine [40,41], we know that communicating effectively about emotional issues not only enhances client satisfaction [5] and adherence [42] but also improves veterinarian job satisfaction [41]. Based on medical studies, we know that dealing with clients' emotions empathically is associated with reduced stress, increased patient adherence, and greater symptom resolution [43]. However, consistent with previous studies [5,25], empathic opportunities seemed to be missed more often than utilized in this study, with empathic response rate being very low (4.3%). Underutilizing these opportunities may hold back the development of the relationship with the client and decrease client satisfaction. It is notable that ignoring was the most common response to negative emotions in this study (32.5%), meaning no reference was made whatsoever to the content or the emotion of the cue or concern [30]. Ignoring a cue or concern by sticking to the veterinarian's own agenda may create a barrier to the expression of subsequent concerns in the consultation [44] or cause the same issue to arise later in the consultation [45].

In this study, 50.4% of responses did not open space for further disclosure, whilst 34.2% opened space without mentioning the (underlying) concern. These responses do not actively encourage disclosure of negative emotions, which might be an explanation for the large amount of cues instead of explicit concerns found in this study. Discouraging disclosure of negative emotions may be done deliberately to reduce time pressure and proceed quickly with the

consultation [46]. However, veterinarians simply may have not picked up on a cue given by the client, potentially because they were not adequately taught how to identify and effectively address their clients' emotions [5,47]. Interestingly, responding with a back-channel was the second most prominent response among the veterinarians in this study, facilitating communication about a concern whilst using a minimal prompt or word but not a full statement. This might be perceived by veterinarians as a neutral, easy or safe way of responding to a cue that is recognized.

#### *4.1.2. What challenges are faced in applying the VR-CoDES in veterinary consultations?*

Using the original VR-CoDES it was not possible to capture the full extent of the direction of emotional communication in the interactions between veterinarian and client during the consultation. The triadic nature of veterinary consultations means that cues and concerns may be directed towards the animal (patient) as well as the veterinarian or client. It is clear that veterinarians do not direct as many responses towards the animal as a client does cues. This may be due to the greater extent of human-animal bond between a client and their pet compared to the veterinarian's relationship with the animal, or due to the relative power relationship that may exist between veterinarian and client in the consultation [48]. Clients who feel impotent and/or unheard in a consultation may feel more comfortable indirectly expressing their concerns in a way that is directed to the patient than directly to the veterinarian. Not recognizing this behaviour as a potential empathic opportunity and thus not picking up on this cue, can result from ignorance, considerations of time pressure or concern about managing emotions, as previously discussed.

#### *4.1.3. What modifications can be made to improve the applicability of the VR-CoDES in triadic consultations, specifically in veterinary consultations?*

Based on our findings in this study and knowledge from existing literature it was decided that expressions of guilt, reassurance statements and client elicited cost discussions should be identified as cues, and added to the existing 'Cue b' of the original VR-CoDES.

Feelings of guilt may arise for the client due to a responsibility for the well-being of the patient, as comparable to the situation in pediatric medicine. Clients might blame themselves for any problems going on with the patient [24]. In pediatric medicine this emotional burden of the parent has not been separately acknowledged in the VR-CoDES study [20], in which children were interviewed, not parents.

Statements of reassurance by the client stood out as a specific kind of communication directed to the patient. These expressions directed to the animal are thought to differ in emotional load as they can be expressed to reassure the patient, or to indirectly serve as a way of communicating the client's own distress to the veterinarian. An example of a reassurance statement that may have an underlying emotion: "*That's all right sweetie. That's all right. That's all right. Good girl. Yeah it's okay, shhh*".

Discussions of costs can cause unease for veterinarians [36], as it can be challenging for veterinarians to balance both the relationship with their client and the commercial aspect of running a business [15,49]. Avoidance of these discussions however can be a concern for clients, and may contribute to some clients' suspicion and mistrust of the veterinary profession [36]. Based on this existing knowledge on cost discussions in veterinary practice [35,36] it was decided that cost discussions would be examined specifically during coding. Client elicited expressions about costs that did not involve negative emotions, such as "How much will an operation cost?", were considered to be informative questions, not to be coded as a cue. In contrast, discussions of cost where the wording or context indicated associated negative emotion were coded as cue b.

#### *4.1.4. What is the reliability of using the VR-CoDES in veterinary consultations?*

Reliability for individual cue specification (cue a to g) was good. However, a large part of this agreement was determined by the identification of cue b, taking up a majority of coding (51.7%) whereas cue d and e (neutral expressions standing out from the narrative background) were relatively rare and cue f and g were excluded from the inter-rater reliability testing due to low frequencies. The overrepresentation of cue b is consistent with the percentage of cue b (52%) identified in pediatric consultations by Vatne, Finset, Ørnes & Ruland [20]. This percentage was lower in the dental setting (27% cue b) [31]. The overrepresentation may be ascribed to the breadth of the description. This category includes emphasized expressions, feelings of uncertainty and hope, metaphors and profanities, amongst others, plus the newly modified subjects of guilt, reassurance and cost discussions that are added to this cue category. Nonverbal cues (cue f) were least evident in the transcripts and represented only 2.3% of the total cues expressed, in contrast to comparable studies in other settings [20,31]. This was to be expected given that this cue describes non-verbal expressions of emotion and the analyses in this study were based on audio transcripts that did not allow visual analysis of the consultations. Lastly, only 13 of the 17 possible response codes were identified in this study, which parallels the outcome of the original validation study of the VR-CoDES [30] and could be due to small sample size.

#### *4.1.5. Study limitations*

It is important to note the limitations of this study when considering the opportunities available for future research. The generalizability of this study is limited by its small sample size and Australian-only context. Some comments were inaudible in the audiotaped consultations, and the use of audiotape rather than videotape or direct observation means that visual non-verbal communication could not be assessed. Coding was performed using transcripts which could result in an underestimation of the number of cues and concerns coded as verbal nuances could have been missed. End of life consultations were excluded from this study, meaning that the results of this work cannot be directly translated to this emotionally laden context. The constraints of the VR-CoDES mean that veterinarian elicited expressions of empathy and positive expressions of emotion could not be analysed in this study. Intra-rater reliability was not conducted in this study as coding was conducted over a relatively short period of eleven weeks, and it was beyond the scope of this study to examine the external validity of this framework. Finally, the use of coding software may help facilitate accuracy and expedite the process of using the VR Codes.

### *4.2. Conclusion*

Cues were present in every veterinary consultation and concerns in fifty percent. Several challenges were faced in coding veterinary consultations using the original VR-CoDES. Using minor additions to the coding system including guilt, reassurance and cost discussions it can be reliably adopted to assess clients' implicit expressions of negative emotion and veterinarians' responses.

### *4.3. Practice implications*

To address the differences in vocabulary used in veterinary consultations compared to those in human medicine, specific guidelines were created for veterinary consultations as a result of

this study. These Guidelines contain the modified coding system for veterinary triadic consultations described in this paper, plus examples of how it can be used to categorise expressions of negative emotions that are either routine or challenging to classify. The modified VR-CoDES provide a base for in-depth analysis of negative emotions and how they may be addressed in veterinary consultations. It is of value as a tool for training veterinary students and veterinarians in recognizing and facilitating the expression of subtle and overt concerns by their clients. A practical limitation is that the use of this system can be quite complicated and time consuming. Further research is necessary to combine the modified VR-CoDES with existing frameworks used for teaching veterinary communication skills. This would help to make the VR-CoDES more practically available and enhance their applicability in veterinary education.

## Conflicts of interest

None.

## Informed consent and patient details

I confirm all patient/personal identifiers have been removed or disguised so the patient/person(s) described are not identifiable and cannot be identified through the details of the story.

## Acknowledgements

The authors would like to thank all of the participating veterinarians and clients for their contribution to this study. The authors would also like to acknowledge Hans Vernooij and Erik Teske from the Faculty of Veterinary Medicine at Utrecht University for their help and support with performing statistics.

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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