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Exploring the Interplay of Cognition and Emotion in Trust Relationships With Cognitive-Affective Maps

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ABSTRACT

This paper relates to the debate on cognition-based and affect-based uni-dimensional trust by addressing the interconnectedness of cognition and emotion. It puts forward the thesis that trust is always relationship-based and that the perceived characteristics on the basis of which a trustee is considered trustworthy by a trustor in this relationship are cognitions that have different emotional values (valences). Analyzing the valences of such cognitions in trust relationships is a research desideratum, which the paper addresses by using cognitive-affective maps (CAMs) as an innovative method in trust research. To illustrate the methodology, the example of dyads of parents and early childhood educators is used as a context in which key aspects of trust are relevant. The analyses show what concepts are mutually salient and how they are valued. The findings are discussed with regard to the methodology of possible future trust research.

1 | Introduction: Cognitive and Affective Bases of Trust Relationships and the Study of Their Interconnectedness From the Perspective of Coherence Theory

Trust is a central element of interpersonal relationships. For a long time, the dominant position in trust research was that trust is either cognition-based or affect-based. However, this multi-dimensional view of trust has been contested for some years as scholars have come to view trust as a uni-dimensional concept with both a cognitive and an affective base. This paper relates to this debate and, following research on the interrelation of cognition and emotion, assumes that the facets of trustworthiness are cognitions linked to emotions.

1.1 | The Bases of Uni-Dimensional Trust and the Facets of Trustworthiness

For a long time, various approaches considered trust to be either cognition-based or affect-based (Lewicki and Bunker 1996; McAllister 1995; Schaubroeck, Lam, and Peng 2011). In this view, cognition-based trust refers to the characteristics of the trustee, and affect-based trust refers to those of the relationship (e.g., PytlikZillig and Kimbrough 2016). Cognition-based trust is posited to rely on a trustor's experience-based beliefs concerning the dependability and reliability of a trustee fulfilling his/her expected role well. By contrast, affect-based forms of trust are considered to be grounded in experiences of mutual care and concern based on personal interactions with a trustee whose motives can be understood (Mayer, Davis, and Schoorman 1995; McAllister 1995; Schaubroeck, Lam, and Peng 2011). Representing a multi-dimensional view of trust, Tomlinson et al. (2020, 545) link the different facets of trustworthiness (ability, benevolence, integrity) as described by Mayer, Davis, and Schoorman (1995) with the cognitive or affective base of trust.

Both approaches are now considered overly cognitive in orientation, and empirical studies do not seem to

support a multi-dimensional conception of trust. Lee, Dirks, and Campagna (2023) have developed a model that places affects at the center of the trust process. In line with these considerations and based on a detailed review of theoretical and empirical work on this topic, Legood et al. (2023) argue that the long-held view that trust has two forms, as posited by McAllister (1995), is no longer valid. They hold that this view confuses different antecedents with forms of trust (Legood et al. 2023, 6). Instead, they see trust as a uni-dimensional phenomenon having two different bases (Legood et al. 2023, 22, 24). Referring to Rousseau et al. (1998, 395), uni-dimensional trust is regarded as the willingness based on the positive expectation of the other's positive intentions and behavior (Legood et al. 2023, 4) to make oneself vulnerable toward another person whose actions cannot be controlled. Such willingness has differential antecedents, including "cognitive and affective content" (Legood et al. 2023, 24; Lewis and Weigert 1985). In this regard, Legood et al. (2023) distinguish cognition-based trust (cognitions about the environment, the trustee, and the relationship) and affective-based or relationship-based trust (based on moods and emotions experienced in or influencing a relationship; Legood et al. 2023, 10). They further suggest that recent literature on the basis of trust examines relationship rather than affect (Legood et al. 2023, 7; van Knippenberg 2018) and claim that both the role of emotions in trust (Legood et al. 2023; Searle, Nienaber, and Sitkin 2018, 536) and relationship-based trust (van Knippenberg 2018, 4, 11) should be subject to empirical studies. Relationship-based trust, especially, has been a topic of longstanding academic discourse, presumed to hinge upon the commonality of shared values, affects, and interests (Li 2014, 85). In fact, as a closer look reveals, affects and cognitions are interdependent and inherently entangled with trust.

1.2 | Relationship Between Emotions and Cognitions in Trust

According to Forgas (1999), the term "affect" serves as an umbrella concept encompassing both emotions and moods. Moods, in this context, are characterized as relatively enduring, less intense affective states with less conscious accessibility and more diffuse underlying causes than emotions. Emotions are "more intense, brief and target-specific affective reactions" that involve "consciously available cognitive information" (Forgas 1999, 592; Baer and Colquitt 2018, 173; Lee, Dirks, and Campagna 2023, 4). Affects have intra-personal and interpersonal functions. They regulate social interaction by informing persons about events and motivating them to deal with them (Rothermund and Eder 2011, 179). Furthermore, they can vary in their valence: that is, "evaluative emotions" toward an event or experience can be positive or negative (Robbins 2016, 290; Scheve and Berg 2018, 30).

When it comes to the relationship between affect and trust, there is no unanimous consensus in the literature. Some argue that trust is an emotion (Ward 2019, 14), whereas others suggest that emotions can be either outcomes (Lewis and Weigert 1985, 971; Williams 2001; Robbins 2016, 290) or antecedents of trust. In the latter case, it has been observed that positive emotions and moods such as acceptance tend to enhance trust, whereas negative emotions such as fear tend to diminish it (Dunn and Schweitzer 2005; Legood et al. 2023; Lount 2010; Myers and Tingley 2016; Williams 2001).

In addition to emotions, cognitions are also significant in the process of building trust. Cognitions, may they be conscious or unconscious, include, for example, the development of knowledge and awareness, memory, perception, evaluation, judgment, and decision-making—all of which are relevant to relational trust. Taken as a "situated cognition" (Kramer 2006), trust is closely related to beliefs that stem from the trustor's cognitive assessments of the trustee's characteristics (Heyns and Rothmann 2021, 3). The perception of trustworthiness is a cognition that is closely interconnected with the decision to trust (van der Werff et al. 2019). Trust is often considered the result of a process of deliberation taking place in the face of risks and uncertainty—and expectations are often studied as cognitions that are relevant to trust (Alarcon et al. 2018; van Knippenberg 2018). In this process, a trustor activates his/her beliefs, which can happen more or less intentionally and reflexively or more intuitively on the basis of heuristics (Lewicki and Brinsfield 2015; Lount 2010).

Affects "regulate cognitive processing" (Sauerborn and Scheve 2017; Storbeck and Clore 2007, 1212) and appear to be linked to the memory of an event (Ahn et al. 2015), with research indicating that memories of an event are stronger the more emotionally intense the event is experienced (Canli et al. 2000). Drawing on social information processing research, Williams (2001) underlines that emotions and cognitions, that is, cognitive appraisals, are associated with and relevant to trust. Emotional states can influence the trustor's cognitive evaluation of a trustee—for example, his/her perceived trustworthiness—and finally the motivation to trust (also Dunn and Schweitzer 2005; Myers and Tingley 2016). In addition, trust experiences impact the emotions of a trustor (Williams 2001, 389; Bąk 2022, 104).

All in all, the view that emotions and cognitions are independent foundations of trust can be refuted (Lazarus 1999, 3). Instead, cognitions and emotions should be conceived as inherently interwoven.

1.3 | Role of Coherence in Trust Relationships

Trust theories posit that when the experiences, expectations, and beliefs of trust partners align with their perceptions and assessments, trust, trusting behavior and the growth of trust are more likely (Colquitt, Scott, and LePine 2007; Schweer and Thies 2008; van der Werff et al. 2019). In general, theories of trust have in common that they assume a certain degree of coherence between the trust partners, their beliefs and emotions as a prerequisite for the growth of trust.[1] In particular, if the trust partners have positive experiences of each other and do not disappoint their mutual expectations, trust can flourish. Coherence in the sense of agreement and consistency—that is, shared beliefs, experiences, perceptions, and expectations or goals and norms—can thus be seen as an important element of trust.

Coherence-theoretical approaches assume that belief systems are emotionally embedded and play a guiding role in shaping

experiences and behaviors. They propose a "theory of cognition as a process of emotional, 'hot' coherence" (Homer-Dixon et al. 2013, 345). Emotions, in this view, are crucial for key cognitive processes, such as "perception, understanding, and decision making" (Homer-Dixon et al. 2014, 2). Concepts, beliefs, and goals carry emotional valences that influence coherence assessments as significantly as logical reasoning (Homer-Dixon et al. 2013, 345). The emotional value (valence) of a particular element is linked to an individual's current needs and goals, with positive valence assigned to elements that fulfill those needs and negative valence associated with barriers to satisfaction (Rothermund and Eder 2011, 44–45). This aligns with research that highlights the differentiated influence of positive and negative emotions on decision-making, the content and depth of thought, perception, and (de-)activation (Lerner et al. 2015).

Accordingly, with regard to trust, scholars emphasize the influence of affects on trust-related cognitions and behaviors (van der Werff et al. 2019). Thagard (2006) posits that "whether to trust someone depends largely on the valence attached to them based on all the information you have about them" (Thagard 2006, 21) and that such valence stems from perceptions of coherence that are connected with both emotion and cognition. In summary, trust is related to coherence between the trusting partners. Coherence refers to shared beliefs, experiences, perceptions, and expectations or goals and norms. In the following, we subsume these different aspects under the term "concept." Crucially, such concepts include different facets of trustworthiness. Coherent concepts can be regarded as the foundation of trust in interdependent relationships. Analyzing cognitive and affective bases of trust thus requires exploration and interpretation of different facets of trustworthiness and the emotional value they carry. Against this background, focusing the analytical lens on the coherence of concepts and valences can contribute to the body of research on trust congruence (e.g., Tomlinson, Dineen, and Lewicki 2009) and trust symmetries or asymmetries (De Jong and Dirks 2012).

2 | Cognition and Emotion and Their Analysis in (Written) Language

Recent findings highlight the fundamental role of language in experiencing and perceiving emotions (Bąk 2022, 103; Lindquist, MacCormack, and Shablack 2015). Trust is found to be associated with emotional experiences, and such experiences are "labeled by and dependent on language and concepts" (Chadbourne et al. 2022, 1064). The trustee's expressed emotions can also serve as information for the trustor and can even "infect" how they perceive the trustee's trustworthiness (van Kleef 2009). Therefore, studying "language is an important area to look at for such phenomena" (Lakoff 2016, 269).

Against this background, spoken language in conversations is seen to influence the quality of the relationship between the trustor and the trustee. In order to analyze mutual perceptions in a relationship, however, written language serves as the primary source. This includes transcripts of qualitative interviews where individuals discuss their relationship with another person, which can be examined for the appearance of concepts and the emotional, positive or negative, valence these concepts have.

As noted, in the context of trust the facets of trustworthiness (competence, benevolence, and integrity [Mayer, Davis, and Schoorman 1995]), or in addition, honesty, openness, and reliability (Hoy and Tschannen-Moran 1999) stand out as concepts of particular interest. By analyzing knowledge, perceptions, judgments and so forth, as well as the valence attached to these, it is possible to shed light on how trust and trustworthiness are shaped by both cognition and emotion.

This view comes with several implications. Firstly, through the lens of coherence theory, the analysis of trust should address both concepts that are explicitly considered relevant to trust by the trustee and the trustor (i.e., the facets of trustworthiness) and the emotional values that the interaction partners associate with these concepts. Secondly, drawing on narratives about social relations plays a key role in identifying trust's entangled cognitive and affective base (Bormann and Schäfer 2023; Schäfer 2016). Interviewees should be asked to give comprehensive narratives about memories of various situations. This ensures that these data can be interpreted not only in terms of an interviewee's beliefs and assessments but also their emotional evaluations. Thirdly, we concur with the coherence theory (Thagard 2006; Homer-Dixon et al. 2014) that trust is connected to the degree to which expectations and attitudes toward the world are compatible with information received in social interactions relating to the interaction partner. We hold that such expectations and attitudes can be understood as networks of mental representations of the environment associated with affects.

Linguistic knowledge helps to distinguish basic emotions (joy, anger, disgust, fear), to identify emotion-expressing (e.g., hate, happiness) and emotion-representing (e.g., "ah") lexemes and expressions in both spoken and written language (Schwarz-Friesel 2013). To interpret language in terms of its emotional content and value, and thus the emotional state of the language producer, the researcher must activate what Schwarz-Friesel (2013, 37) refers to as "world knowledge," that is, general and experience-based knowledge about society and the relevant environment. For example, if somebody says that someone "yelled" (rather than saying that someone spoke very loudly), this individual can be assumed to be negatively affected by the volume of the other person's statement. In addition, expressive adjectives and adverbs, as well as optative sentences, also provide clues to the emotional value of something (e.g., "unfortunately"). Word lists (e.g., PANAS; Breyer and Bluemke 2016), where terms are assigned to positive or negative emotions, can be used to make the interpretation of language more intersubjectively reliable.

3 | Research Questions

To summarize, this paper views trust as a uni-dimensional construct primarily rooted in relationships. Trust is based on the perceptions of the interaction partner. These perceptions, whether conscious or unconscious, are considered cognitions, and cognitions are closely related to emotions. When examining the bases of uni-dimensional relationship-based trust, the connections between cognitions and emotions should be subject to analysis. In particular, the facets of trustworthiness perceived in a relationship are linked to emotions, and these connections

should be explored. We further assume that coherent concepts (facets of trustworthiness) and coherent valences that the trustor and trustee have with respect to these concepts are associated with their trust.

These assumptions are investigated in an innovative methodology. To this end, we focus on parent–educator interaction in childcare. This field forms a context of particular relevance to trust, as the relationship between parents of young children and early childhood educators (ECEs) is characterized, inter alia, by a particular vulnerability (parents entrust their child to the care of people they hardly know) and an asymmetry in terms of the parties involved (educators usually have a professional advantage in terms of knowledge regarding educational issues; in addition, there is a lack of available childcare places in Berlin, Germany, so that parents cannot always choose an early childhood education center [hereafter ECEC] based on their preferences, but sometimes have to accept whatever is available).

The following research questions are posed:

RQ1. What concepts (known and possibly other facets of trustworthiness) are relevant to the parents and ECEs as trust partners?

RQ2. What are the valences (emotional values) of these concepts (known and possibly other facets of trustworthiness) shared by these trust partners?

RQ3. How are the concepts (known and possibly other facets of trustworthiness) interrelated?

RQ4. How do the concepts (known and possibly other facets of trustworthiness) and their valences differ in "true dyads" consisting of parents and ECEs?

4 | Method

4.1 | Study Context

This research focuses on understanding the emotional aspects of mutual perceptions within relationships. We use the example of the relationship between parents and ECEs as a case for this explorative study in which we examine the parents' view of their relationship with ECEs. Their relationship is characterized by situational interdependency, which potentially includes the conflict of interest between parents and ECEs, mutual uncertainty of information, or power imbalance (Weiss, Burgmer, and Hofmann 2022). Due to these specific situational and contextual factors, the findings of this study do not allow for generalizations beyond the parent-ECE relationship. However, insights can be gained with regard to the methodology of cognitive-affective mapping, which can be transferred to relationships of trust in other contexts.

Although most studies only investigate trust from one side (Korsgaard, Brower, and Lester 2015, 48), this study examines the perspectives of both parties involved in a relationship. Therefore, in addition to interviews with parents and ECEs who were asked about their *general* assessment of the respective other group, the sample also includes interviews with '*true dyads*,' that is, parents and ECEs who actually interact with each other in practice.[2] By focusing primarily on these true dyads, the present study thus makes it possible to capture the reciprocal perceptions and evaluations of individuals who are "at once a trustor and a trustee" (Korsgaard, Brower, and Lester 2015, 48).

4.2 | Ethical Considerations

The interview partners were informed about the study and the protection and analysis of their data, and they all signed a consent form to participate in the study. Original audio files of the interviews were deleted immediately after a quality check on the transcripts. In accordance with the regulations of the authors' institutions, no ethics committee was involved because the participants are adults, did not belong to a particularly vulnerable group, and the study did not affect any personal rights.

4.3 | Sample

The explorative study relies on an opportunity sample. Parents with children in an ECEC and ECEs caring for children under 6 years old participated. In the interaction between parents and ECEs, parents can be seen as particularly vulnerable, as they often have little experience and are for the first time entrusting their child to an institution and its staff who are virtually unknown to them. The sample comprises 23 interviews, including 10 with ECEs (all female, mean age 38.7) and 13 with parents (eight mothers, five fathers, mean age 33.3), including three true dyads, that is, a parent and the ECE of his/her child. Some parents also have older children and are therefore more experienced with ECEs. Parents also differ in terms of their educational level: six parents have a school-leaving certificate or vocational qualification, the others have a university degree. The interviews were conducted in Berlin, Germany, in the winter of 2022/2023. The interviews lasted 33 min on average, ranging from 17 to 90 min (Table 1).

4.4 | Measures and Procedure

Trust is often studied in what (Endreß 2010) labels its reflexive mode when, for example, instruments of standardized attitudinal research are used to explicitly explore trust levels by asking the question, "How much do you trust ...?" (e.g., World Values Survey). Such studies treat trust as something mainly cognitive, based on conscious calculation and deliberation, and the result of a more or less reflexive assessment of the interaction partner's characteristics. However, considerable debate exists regarding the measurement of 'trust' (Patent and Searle 2019). For example, it remains unclear who respondents think of when asked about their trust in other people and in what context they trust them (Sturgis and Smith 2010). In addition, the standard measurement of generalized trust does not adequately capture affective experience. To grasp the pre-reflexive mode of "functioning" trust (Endreß 2010), other methods are required. From the wide range of methods of qualitative research, procedures of data collection and

TABLE 1 | Overview of the sample.

	Parent ($N=13$)[a]	Early childhood educators ($N=10$)
Gender	8 female, 5 male	10 female
Age	33.3 (ranging from 29 to 41)	38.7 (ranging from 23 to 56)
Educational background	Overall academic	Overall vocational degree, some academic
Generalized interpersonal trust	3.9 (ranging from 3 to 5)	4.2 (ranging from 3 to 5)
Years of professional experience	—	19.6 (ranging from 0.75 to 40 years)
Duration of children in the ECEC	3 (ranging from 0.5 to 7 years)[b]	—

[a]Some parents have more than one child.
[b]This refers to parents with several children who were in the ECEC.

evaluation which make it possible to collect subjective theories and beliefs as well as emotional connotations in narratives about trusting relationships seem particularly suitable (Bormann 2023; Schweizer et al. 2017).

This study used episodic interviews (Flick 2011) to collect so-called episodic and semantic knowledge. Episodic knowledge, that is, knowledge linked to subjectively relevant experiences, is evoked by open-ended questions about relationships, situations, and events. To this end, the interviewees were stimulated to describe how they experience their relationships with the other party and what is important to them in that relationship. Semantic knowledge, that is, argumentative representations of thoughts, terms, and their relations, are addressed through targeted follow-up questions on various subject-related aspects. Therefore, the interview guide also comprised questions about the interviewees' conceptual ideas, definitions, or subjective theories concerning the relationship. Only in a later step were the participants asked to comment on trust issues specifically and address the facets of trustworthiness.

The interview manual was tested and adapted to improve the interviewees' understanding of the questions and the process (see Supporting Information 1: Interview manual). At the end of the interview, the participants were asked to provide additional data in a brief questionnaire. In addition to the number and age of their children and the number of years of experience with an ECEC (parents) or the duration of their professional experience (ECEs), participants were asked to state their age, educational status, and generalized interpersonal trust. The latter was measured using a standardized measure consisting of three items rated on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*; Beierlein et al. 2012).

The interviews took place individually and face-to-face or via video call by trained university students. All interviewees agreed in writing to participate in the study after being informed about the study and how the data would be used. The audio files of the interviews were transcribed according to the simplified rules of content-semantic transcription (Dresing and Pehl 2018).

4.5 | Data Analysis and Visualization

The interviews were analyzed by means of qualitative content analysis, aided by the software MAXQDA (Kuckartz and Rädiker 2022), using a system of theory-driven and data-driven codes (see Supporting Information 2: Extract from the code manual). Each sentence was treated as the smallest coding unit to retain essential contextual information. MAXQDA's Text Search and Autocoding tool was utilized to check positive and negative emotions mentioned in the interviews, using the German version of the Positive and Negative Affect Schedule (PANAS; Breyer and Bluemke 2016). When coding text sections related to trustworthiness concepts, the valence associated with each concept was also coded. This resulted in double-coded text segments containing concept valences. As in many text segments, several concepts were coded, and networks of interrelated concepts and their valences can be found.

Following coherence theory considerations, such networks can be visualized in so-called "cognitive-affective maps" (referred to in the following as CAMs [Homer-Dixon et al. 2013; Luthardt, Bormann, and Hildebrandt 2021; Luthardt et al. 2022; Luthardt et al. 2020]). CAMs represent a person's system of beliefs and concepts with their specific valence in "a diagram that displays not only the conceptual structure of people's views but also their emotional nature, showing the positive and negative values attached to concepts and goals" (Thagard 2012, 37). The results of the interview analysis were visualized in CAMs following four steps (Thagard 2010).[3]

1. Identifying the main concepts of the topic: The main concepts relevant to trust relationships were drawn from theory (facets of trustworthiness: competence, benevolence, integrity, honesty, openness, reliability). Furthermore, some additional concepts (empathy, communication skills, and shared pedagogical beliefs) were derived from the data.

   To determine the aspects of their relationship that are subjectively relevant to the interviewees, only the narrations in which the interviewees reported on their relationships were included in the analysis presented here. The parts of the interviews in which the participants were explicitly asked about the individual facets of trustworthiness are not included.

2. Interpreting the valence of each concept: All the text passages in which the interviewees referred to one or more facets of trustworthiness were additionally coded with regard to the concept's positive or negative valence, so that

the corresponding text passages each included concept valence combinations. Text passages that contained references to multiple facets were coded multiple times so that relationships between facets could be captured. It should be emphasized that the valences of the concepts relate to the trustworthy characteristics perceived in the specific counterpart (parent or ECE) rather than the emotional value the concepts have for the interviewees in general.

3. Determining the connections between the concepts and arranging the concepts: The results of this linguistic and content analysis of the interviews were then visualized in the form of code relation models representing concept-valence networks by using the MAXmaps application (see Supporting Information 3: MAXmaps intersection of codes of entire sample). The MAXmaps were converted to CAMs using the application called 'Valence,' available via the University of Freiburg, Germany. Drawing the CAMs took place in accordance with the guide used in previous studies (Luthardt et al. 2020): Ovals display positive, hexagons represent negative, and hexagon-ovals ambivalent elements.

   In this study, a concept is considered positive (negative) if its positive (negative) valences outweigh the negative (positive) ones. However, concepts sometimes have a fairly similar number of opposing valences, that is, their valence is ambivalent. Concepts are considered ambivalent if they are coded with equal shares of negative and positive valences or if up to 20% of all their codings differ (e.g., if a concept has 15 coded valences in total, 6 of which are negative and 9 positive, it is ambivalent). Concepts coded with a total of less than three valences in a dyad's CAM (two valences in single-person CAMs) are considered a neutral element. If a concept was not mentioned at all, it is not included in the CAM. Concepts between which a connection was shown at least twice (in single CAMs: once) in the MAXmaps code relations browser because they were mentioned in the same text segments are connected with solid lines when they have coherent valences, and with dotted lines when they have incoherent valences. The concepts that have the most connections with other concepts (of whatever kind) are understood as main nodes.

4. Validation: Data-driven codes, such as the subject of or reason for vulnerability, and additional information, such as the index value for generalized interpersonal trust, were included in interpreting the CAMs.

5 | Results

The presentation of the results starts with the presentation of the parent and ECE CAMs, followed by analyses of two selected true dyads. First of all, the concepts that the CAMs contain are specified, then their valence, and finally how the concepts are linked to each other.

5.1 | CAMs for Parent and ECE Groups

Firstly, CAMs were created separately for the groups of all parents and all ECEs (Figures 1 and 2). In terms of overall

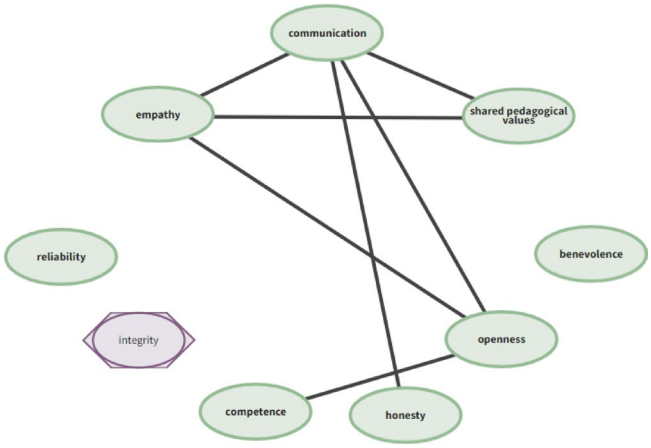

FIGURE 1 | CAM of all parents.

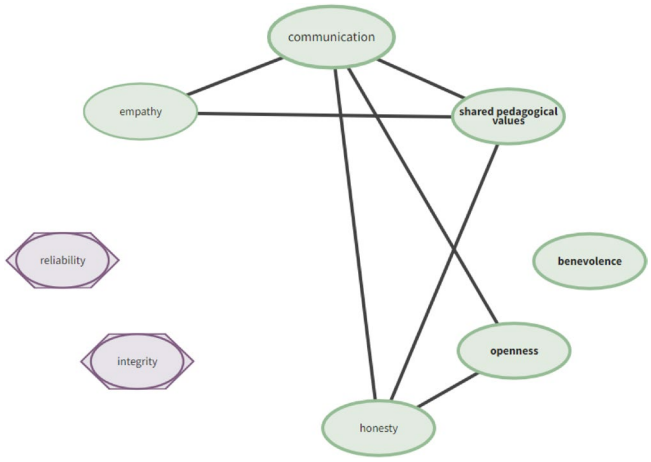

FIGURE 2 | CAM of all ECEs.

interpersonal trust, ECEs report a slightly higher average trust[4] (4.4) than parents (4.1). True dyads stand out with a lower average trust (ECEs: 3.5, parents: 3.4).

Comparing the CAM of the parents (Figure 1) and the ECEs (Figure 2) reveals that parents and ECEs share many concepts (RQ1), as well as positive (honesty, openness, benevolence, empathy, shared pedagogical values and communication) and ambivalent valences (integrity; RQ2). For both parents and ECEs, communication is the main node.

The CAMs of parents and ECEs also differ in some respects. One concept (competence) was not mentioned by the ECEs (RQ1). The valence of another concept (reliability) differs between parents and ECEs. All the other concepts are positive for parents, whereas for ECEs, reliability and integrity are ambivalent.

For parents and ECEs, the main node, "communication," is connected with empathy, shared pedagogical values, openness, and honesty. In the parent CAM, reliability and integrity are not connected with other concepts, nor is benevolence (RQ3). In the ECE CAM, neither reliability, integrity, nor benevolence are related to other concepts (RQ3). All in all, the CAMs of the two groups differ in terms of the valence of concepts and the concepts that are (inter-)connected with others (RQ4).

5.2 | Dyad CAMs

In the following, two of the three CAMs of the parent-ECE dyads in the sample are analyzed for a better understanding of the reciprocal perceptions of parents and ECEs (RQ4). This is done at the level of two contrastively selected dyads with one parent and one ECE each.

5.2.1 | Dyad B

The parent (Figure 3) and the ECE (Figure 4) from this dyad have known each other for about 3 years. The highly educated (Master's) 36-year-old mother has two children (4 and 6 years old), of which the younger one still attends the ECEC. She is satisfied because she feels her boy is looked after carefully by an ECE who she has known for 3 years. The ECE is a 56-year-old woman with 35 years of professional experience. Her generalized interpersonal trust is 3.6, whereas the mother's generalized interpersonal trust is 3.

Figures 3 and 4 illustrate that although parent and ECE share a few concepts with similar valences (openness, shared pedagogical values, and communication), their CAMs differ greatly overall.

In the parent of dyad B's CAM (Figure 3), almost all concepts are mentioned, and all are positive, whereas some concepts are not addressed (reliability, integrity). Overall, only a few of the concepts are interconnected, and one remains unconnected (empathy). Communication and shared pedagogical values are the main nodes.

In the ECE's CAM of dyad B (Figure 4), only a limited number of concepts are mentioned (openness, shared pedagogical values, empathy, and communication), whereas other concepts are not (reliability, integrity, competence, honesty, and benevolence). Apart from one ambivalent concept (empathy), the remaining concepts are positive (communication, shared pedagogical values, openness). The few concepts playing a role in this ECE's CAM are partly connected, although empathy and communication are the main nodes.

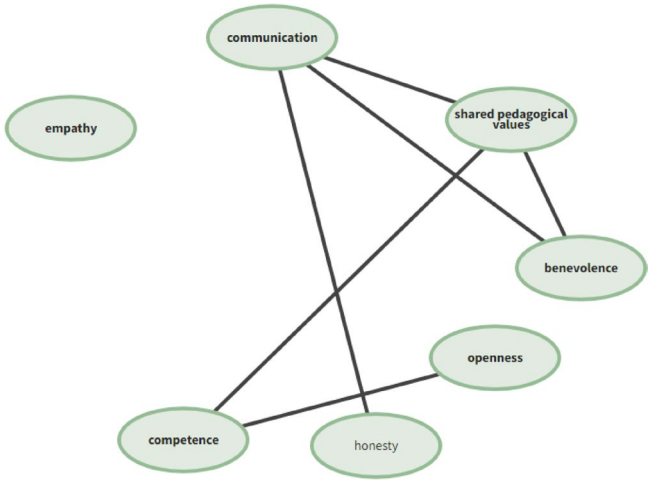

FIGURE 3 | Parent of dyad B.

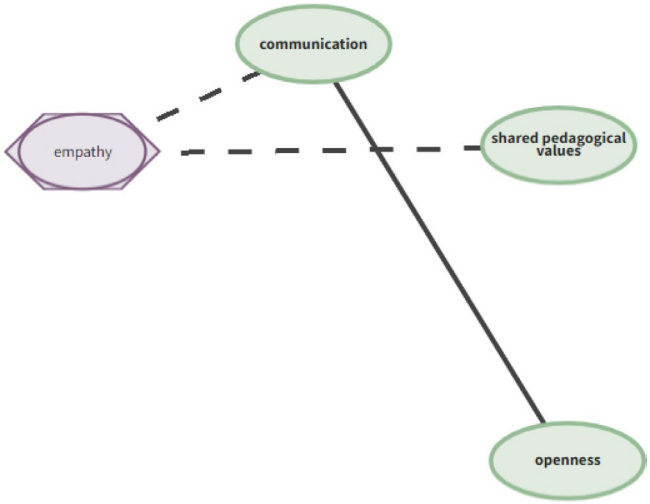

FIGURE 4 | ECE of dyad B.

The two individual CAMs are coherent in that they share the valence of openness, shared pedagogical values, and the main node of communication. However, they display incoherence in some other respects: the number of concepts mentioned differs, one concept has different valences (empathy), and the connections between concepts differ.

When it comes to empathy, the ECE is ambivalent about the parent and shares negative narratives[5]:

> Then I don't feel like I'm being taken seriously, and then I sometimes don't take as much time for the conversations because I think they're not really that interested. (TR-D1-PFK (B): 41)

as well as positive ones:

> I just feel—there are situations where you're alone, your colleagues are ill, and the parents come and say: "What? You're alone? Or you're alone. Oh no!" And: "How does that work?" And: "Oh, thank you very much!" And so on. I find that very appreciative. And I'm really pleased about that. (TR-D1-PFK (B): 45)

Communication is the commonly shared, positive main node in the two concept-valence networks. For example, the parent's account of the communication

> But when we see each other, it's always a, yes, I think it's becoming more and more trusting, I would say. And simply an exchange of comments about the child. (VA-D1-ET (B): 11)

is paralleled by the ECE

> But I have a good feeling. I believe that things can be clarified in a conversation. (TR-D1-PFK (B): 17)

Although the parent and the ECE were interviewed separately, the statements on the main node of communication for both the parent and the ECE revolve around the way they exchange views about the child, its habits and behavior at home and in the ECEC.

5.2.2 | Dyad A

The parent (Figure 5) of this dyad is a 41-year-old mother of two children aged 3 and 6. She has known the ECEC for 5 years, but finds the ECEs in the facility too young and inexperienced. Also, she criticizes the high number of children being integrated at the same time, which in her opinion leads to her son receiving too little attention. Her generalized interpersonal trust is 3.6. The ECE (Figure 6) of this dyad is a 23-year-old BA graduate with 3.5 years of professional experience. For her, it is essential to invest in building trust with the parents right from the beginning, which requires open communication and sensitivity from both parties. Her level of generalized interpersonal trust is 3.

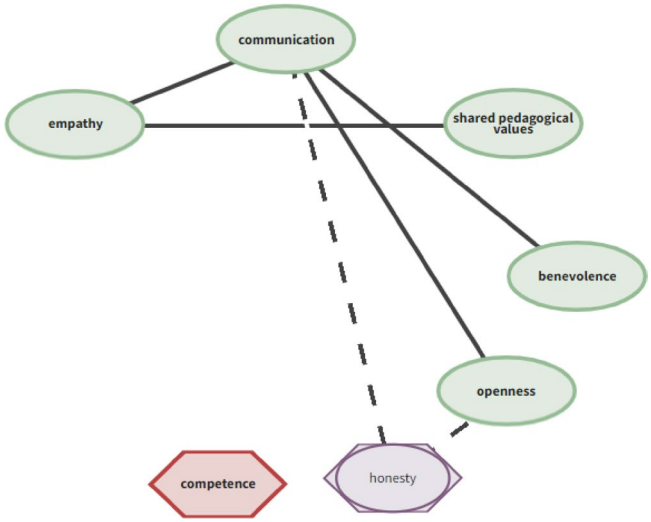

FIGURE 5 | Parent of dyad A.

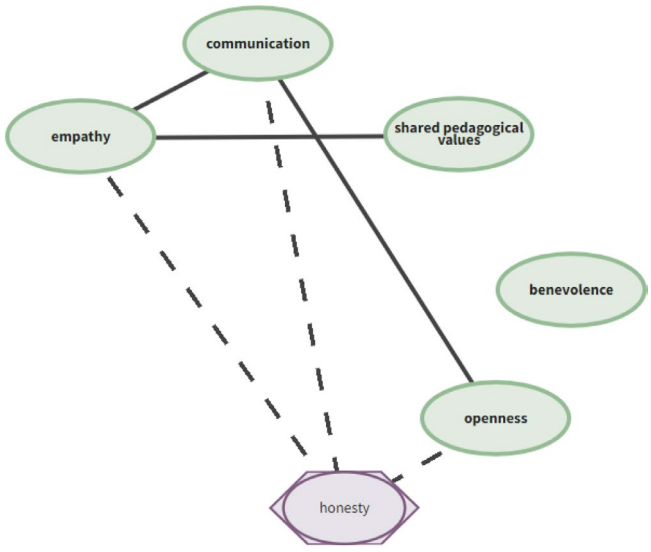

FIGURE 6 | ECE of dyad A.

Figures 5 and 6 illustrate that the parent and the ECE of dyad A share some concepts with positive valence and a negatively valued one, but also differ in some respects.

The two CAMs of this dyad share both the concepts that are mentioned and those that are not mentioned (reliability and integrity). For the majority of the concepts of the parent and the ECE, the ambivalent (honesty) and the positive valence match (openness, benevolence, empathy, shared pedagogical values, and communication). Communication is the main node of both CAMs.

Whereas some concepts have not been mentioned by the parent (reliability, integrity), the concept-valence network includes positive valences, one ambivalent concept (honesty), and one negative concept (competence) (Figure 5). Competence is valued negatively because

> First of all, I thought that the educators, management, and all employees were too young (AA-D1-ET (A): 6-7)

and

> It seemed to me that they were overwhelmed, in any case (I4-AA-D1-ET (A): 13)

Communication, again, is the main node in this parent's CAM: it is linked to empathy, benevolence, openness, and honesty. In addition, honesty, openness, empathy, and communication are related. Competence is not interrelated to any other concept.

In the ECE's CAM (Figure 6), some concepts do not play a role (competence, integrity, reliability). Most concepts are valued positively (empathy, shared pedagogical values, openness, benevolence, and communication), and one is ambivalent (honesty). Communication is the main node, connected with shared pedagogical values and honesty. Benevolence stands alone.

Although some concepts of this dyad's CAMs have a similar valence (i.e., are coherent, e.g., empathy, shared pedagogical values, benevolence, and communication), they differ with regard to the ambivalent and neutral concepts and in terms of the concepts that were mentioned. The parent values competence negatively:

As regards honesty, the parent and the ECE are both ambivalent. Sometimes, the parent expresses negative emotions concerning the exchange of sensitive information:

> If I find out that my child has somehow hurt itself and nothing is said to me? (laughs) Something like that. Or if the children tell me things. And I think I'm one of the few mothers who is lucky in that respect: My children talk to me (AA-D1-ET (A): 55)

In other respects, she expresses a positive opinion about the ECE's honesty:

> I always hope that it is open, that it is communicated honestly, and that, yes, you can talk about everything in principle. But that's also the case in our daycare center. (AA-D1-ET (A): 69)

The ECE, on the other hand, is also ambivalent about honesty, as she says

> I have the feeling that there is a catalog of excuses for every symptom. (...) For example, if a child somehow has conjunctivitis, they say, yes, she just got something in her eye, or he did. Coughs and fevers and so on, they always say, yes, everything was okay with us this morning. (...) Or when gastrointestinal problems occur, they always say they just ate something wrong and so on. So, it just repeats itself. And at some point, you run out of patience or I no longer feel so valued. (BA-D1-PFK (A): 37)

and

> Because then it is simply clear to both sides that we don't hide things or gloss over things or anything like that. Instead, we have an open and honest dialog with each other. And I would say that's one of the most important foundations for a trusting relationship. (BA-D1-PFK (A): 89).

Concerning communication as the main node of the two CAMs, both the ECE and the parent refer to organizing time for conversation, establishing conditions for communication, and explaining educational measures. In this dyad, empathy is another concept related to some others. Both parent and ECE talk about the importance of informing each other about concerns and getting to know and understand pedagogical principles and interests, especially with regard to the problem that children are sometimes brought to the ECEC despite being ill and then have to be picked up by the parents.

5.3 | Summary of Main Results

The analyses show that the trusting partners only share some concepts (RQ1). Of the facets of trustworthiness established in research, not all are regularly mentioned: reliability and integrity seem to be less salient to the interviewees than other facets. Concepts relevant to the relationships derived from the data (communication, empathy, shared pedagogical values) are mentioned in all cases. Moreover, the valences that the facets of trustworthiness have differ (RQ2). Although many concepts are mostly valued positively, some CAMs show ambivalent valences of selected concepts (honesty, empathy). Only one dyad's CAM clearly shows a negative value for one concept (competence). With regard to the interrelations of the concepts, the CAMs indicate that communication is, overall, the main node (RQ3). Whereas some concepts are not mentioned, others remain unconnected. Regarding the views the trusting partners in dyads have (RQ4), it becomes clear that the ECEs are more selective about the concepts than the parents, whose many mainly positively valued concepts are interrelated. In terms of the main node, the dyads' members also talk about the same topics, despite being interviewed separately.

6 | Discussion

Drawing on the assumption that cognitions and emotions are interconnected and recognizing the importance of this in trust research, this study utilized the professional relationship between parents and professionals as a case to show the varied emotional valence of facets of trustworthiness. When comparing the CAMs of parents and ECEs, a clear distinction emerges. Parents tend to perceive the characteristics of the group of ECEs far more positively than vice versa, and for them, almost all facets of trustworthiness are linked to many others. ECEs, on the other hand, are far more selective and critical in the sense that they are more discriminating about the characteristics of parents and show fewer connections between the facets of trustworthiness. The fact that parents consider almost all of the characteristics positively may indicate a high level of professionalism on the part of the ECEs and their efforts in establishing a successful partnership. It is also possible that parents, driven by concern for their child's welfare and their desire for their child to do well in every way, consider all concepts important because they are particularly vulnerable when they “leave” their child to daycare. Conversely, ECEs exhibit a more focused view, highlighting specific parent characteristics as particularly beneficial for the relationship. Surprisingly, the competence of parents plays a subordinate role in the ECE's descriptions of their relationship with them.

At the level of the true dyads, these patterns persist to some extent. The lower selectivity that parents in true dyads display with regard to the relevant concepts of trustworthiness can probably be partly attributed to the fact that these parents have already experienced the situation of having a child in an ECEC or are already familiar with the ECE. Likewise, the fact that the concept of ‘competence’ plays a role for these parents but not for the professionals in these true dyads is probably due to the parents' level of education: as university graduates, they are formally educated at a higher level than the professionals who care for their child. Presumably, these parents are particularly concerned about whether their child is receiving the best possible support. In the CAMs of true dyads, it also becomes clear that communication seems to be essential and positive overall. Although the concept of ‘communication’ contains different content in the dyads, the positive value it has indicates the coherence of mutual views on the topic and the importance of communication. However, the prominence of communication as the main node in all CAMs suggests the need to explore possible sub-concepts of communication to understand the extent to which sub-concepts of communication can be identified. Different communication styles or content could be related in specific ways to individual facets of trustworthiness and their emotional valence.

The visualizations illustrate the very different concept-valence networks of the two dyads, that is, the diverging emotional valence of the different facets of trustworthiness in the view of the parents and the ECEs. The analysis of the relation-based trust in dyads shows that even those facets of trustworthiness, which are usually categorized as cognition-based (ability, integrity), have affective content (although it must be noted that these facets sometimes are not mentioned as important features of a relationship). This finding supports the view that cognitions and affects are deeply entangled in the formation of trust.

6.1 | Contribution

To our knowledge, this study marks the first attempt to empirically tackle the interconnectedness of cognition and affect in trust research. We followed the view of closely interconnected cognitions and emotions that a trustor has about the characteristics of a trustee when focusing on relationship-based trust. The study thus challenges the traditional view of cognition and affect as independent dimensions of trust.

We believe our study advances the theoretical framing and empirical understanding of uni-dimensional relationship-based trust by underpinning the proposition that cognitions about the trustworthiness of trust partners have varying emotional values. We demonstrated this by employing an innovative approach combining a coherence theory-based method with qualitative content analysis and linguistic methods. This approach has the potential to advance trust theory and methodology.

Methodologically, the use of cognitive-affective maps breaks new ground in trust research, as this visualization can make it easier to comprehend the relationships between facets of trustworthiness and the specific emotional valence they hold for individuals in relationships. CAMs can reveal the (in-)coherence of trust-related concepts and the valences they have for trust partners. In other words, CAMs can help identify where trust partners diverge. This may contribute to the exploration and better understanding of the possible causes of problems between trusting partners. The most meaningful conclusions can be drawn from CAMs at the dyad level, as they show how the valence of perceptions considered relevant to a trusting relationship match. In order to take this further and make the research more efficient, future studies could experiment with automated sentiment analysis and relate it to standardized measures of trust that parties have in each other.

Theoretically, the study offers two key insights. Firstly, its findings provide empirical evidence regarding the relationship base of uni-dimensional trust. It shows that different facets of trust (Hoy and Tschannen-Moran 1999; Mayer, Davis, and Schoorman 1995) can have different emotional valences. The common reading is that the facets of trustworthiness indicate either cognition-based (ability, integrity) or affect-based trust (benevolence) and thus cannot be maintained—all facets of trustworthiness carry affective value. Consequently, trust should be understood as grounded in relationships and based on situated, entangled cognitions and emotions among interaction partners. Secondly, the study taps into coherence theory to advance our understanding of trust and its formation. Although it has been a common assumption among trust researchers that trust requires matching expectations and beliefs, drawing on coherence theory enables us to see the formation of trust as a process of "hot coherence" incorporating both cognition and affect. What is more, the study provides empirical insights into the link between the coherence of concept-valence networks and the quality of trusting relationships. Korsgaard, Brower, and Lester (2015) distinguish between reciprocal trust, mutual trust, and trust asymmetry. Whereas reciprocal trust is seen as "individual-level trust within the context of the dyad wherein each party is both a trustor and a trustee" (Korsgaard, Brower, and Lester 2015, 50), and mutual trust is seen as "an emergent attribute of the dyad, in which parties come to share a perception about the degree to which they trust each other" (Korsgaard, Brower, and Lester 2015, 50), trust asymmetry is characterized by the partners in a dyad having different degrees of trust in each other. This study suggests that symmetrical mutual trust requires trust partners to have shared concepts and corresponding emotional valences. Drawing on coherence theory, we assumed that the coherence of the emotional values of shared concepts is crucial for trust. This is supported by an analysis of the two dyads in the study. Their CAMs display a partial incoherence in terms of the concept-valence networks, along with divergent views of the relationship. There is a certain degree of concept coherence but no valence coherence. At the same time, the partners in the dyads report a medium level of mutual trust. It seems promising for future studies to further explore the association between the degree of coherence in emotional valences related to shared concepts of trustworthiness, and the quality of trust in a relationship.

Our findings may also be useful for programs aiming to enhance parental trust through partnership practices (Hummel, Cohen, and Anders 2022) as it helps identify the (in-)coherence of mutual perceptions of parents and ECEs. The results show that the facets of trustworthiness tend to hold a more positive affective value for parents than for the ECEs, suggesting that ECEs maintain a more nuanced perspective and possibly a more critical attitude toward parents. This inclination is likely to be attributable to the professional experience of the ECEs rather than their general interpersonal trust, which typically remains high among individuals who share closeness and is primarily influenced by situational factors such as conflict, interdependence, or power asymmetry (Weiss, Burgmer, and Hofmann 2022).

To summarize, CAMs help in understanding and visualizing the intricate dynamics of trust, especially within the context of mutual perceptions within relationships. CAMs help to reveal the common ground on which trust is built by revealing which concepts (facets of trustworthiness) are relevant for the trusting partners, and which are shared between them. In addition, CAMs shed light on the emotional aspects of cognitive trustworthiness perceptions (RQ2) and provide insights into which concepts are related to each other (RQ3). Finally, by comparing CAMs, we can identify commonalities and differences in how trust is perceived and valued within different relationships (RQ4).

6.2 | Limitations and Directions for Further Research

The methodology presented in this paper offers an innovative approach that promotes a better understanding of the coherent or incoherent perceptions that trust partners have of each

other. When considering the study, some *limitations* should be addressed. As far as the reported results of the exploratory study are concerned, it should be noted that they are quite context-specific are not easily transferable to other contexts for several reasons. Firstly, only a small number of interviews were used. A larger and more systematically collected sample, for example, with regard to socio-economic background, could provide deeper and more generalizable insights into possible different experiences on the part of asymmetric relationships. Secondly, the interviewees tended to represent a group that is quite trusting, so the sample may exhibit a bias in this respect that is less prevalent in other contexts. Thus, it can be assumed that interviewees in relationships in the workplace, more hierarchical social contexts, or in cases of (more) asymmetric dependence may show different concepts that have different valences for the trusting partners and, accordingly, the CAMs may show less coherence. Thirdly, the level of experience with members of the other group may affect the importance and value placed on certain concepts relevant to their relationship. For instance, unlike a parent who has their first child in an ECEC, an "experienced" parent may already be acquainted with a particular ECE and may have established a strong trust relationship over time.

When it comes to *future studies*, the sampling should be more differentiated. Given the significant role of experiences, adopting the experience-sampling methodology (Weiss, Burgmer, and Hofmann 2022) could offer valuable insights into the impact of situational factors on the facets of trustworthiness and their emotional valence. Also, potentially confounding socio-demographic variables on the part of the participants, including their level of education, should inform the sampling strategy. For instance, the results of this study suggest that the competence of the ECE is particularly important for highly educated parents. Therefore, exploring the potential in the significance and the emotional valence of various concepts and how these are linked to socio-demographic features would be worthwhile.

In addition, the analytical approach developed in this study should be further refined. This study did not aim to identify directed correlations between the concepts or the role played by the strength of emotions. Accordingly, it should be explored whether the values assigned to the concepts influence the nature of the relationship. For example, it might be interesting to analyze whether problematic communication leads to an unfavorable emotional evaluation of empathy, or vice versa.

In this respect, future studies should also focus on the possible causal direction of the linkage between concepts. Studies that aim to further develop the approach presented in this article should encourage more in-depth narratives about critical events in a relationship and how they are emotionally experienced in order to reveal (in)coherence regarding both the emotional experience of situations and their reappraisal. In a similar vein, dyadic interviews should be used to inquire about the level of trust the parties place in each other if they feel trusted by the other, and how this affects their relationship.

The content of the concepts was not at the core of this study. Future studies, however, should also explore to what extent trusting partners share the same content of the concepts relevant to trust. Such analysis can help to understand to what extent the trusting partners share the meaning of the concept, its content, and its valence. In this context, mismatches should be analyzed with regard to their meaning for the development of a relationship. On a related note, it should be investigated in intervention studies how findings on the content and valence of concepts can be used to contribute to turning problematic relationships into relationships in which trust can grow. Furthermore, the intensity of emotions related to the concepts should be considered in order to help understand (in)coherence and (problematic) trust relationships. Even if communicative validation of qualitative content analyses is sought, the challenge of a possible bias in interpretation remains so that different researchers may arrive at different CAMs. Therefore, future studies should make use of the automatic coding features of the software in combination with extended word lists on emotional cognitions. The use of techniques in the field of rapidly developing automatic text recognition and language processing models should also be considered. Furthermore, the visualization guide used here (see data analysis and visualization) should be subjected to an in-depth analysis to find out whether different thresholds lead to substantially different CAMs. Theoretical and empirical effort is still needed to clarify what it actually means when individuals fail to mention certain facets of trustworthiness, which are assumed to be the basis of trust. Finally, further studies should investigate the extent to which the underlying assumptions, according to which respondents' narratives provide information on the subjective relevance of facets of trustworthiness, can be supported by other methods. After all, it may well be that respondents simply forget to address concepts that they would actually judge relevant to them.

6.3 | Conclusion

All in all, this study has made a step toward understanding the interplay of concepts and their valences in trust relationships. The common view of trust having either a more cognitive or a more affective basis is further refuted by this study. The CAM methodology offers insights into situated and contextualized knowledge about the bases of relationship-based trust, particularly in dyads, and can help reveal the divergences and similarities of mutual perceptions and their emotional content in relation to trust partners. This not only helps identify potential trust issues but may also provide a foundation for targeting trust relationships in the future.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data and materials can be obtained from the corresponding author upon reasonable request: inka.bormann@fu-berlin.de.

Endnotes

[1] Similarly, classical game theory sees the coherent fulfillment of mutual expectations as the basis of trust in interdependent relationships (Nash 1951).

[2] "Trust relations are always essentially dyadic, between two individuals, even if one of those 'individuals' is a collective entity in the form of an institution, such as money or the government, or an organized body such as a profession" (Barbalet 2019, 13).

[3] Steps 1 and 2 were carried out in connection with the content analysis.

[4] After reversing the polarity of one item, the ceiling of the score is 5 (*strong agreement towards trust items*; Beierlein et al. 2012).

[5] All quotes have been translated into English.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.