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Thermometer of warmth in the patient–provider relationship (WARMOMETER) – Theory-based development of a patient self-report measure and initial validation using cognitive interview methodology

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ABSTRACT

Objective: The aims of this study are twofold: (1) the theory-based development of a patient self-report measure of physician warmth and (2) the application of cognitive interview methodology to understand patients' perception and interpretation of this new measure.
Methods: A draft measure was developed based on an in-depth literature review of the concept of human warmth by a multidisciplinary expert group. Sixteen cognitive probing interviews were conducted to examine how patients perceive and interpret this new measure and to identify potential problems. A content analysis of the interviews was used to evaluate findings.
Results: Findings indicate that the WARMOMETER is a short patient self-report assessment of physician warmth, which seems easy and intuitive to understand. In addition, most respondents were found to share a common concept of physician warmth.
Conclusions: Verification of our study hypotheses and confirmation of the theoretical assumptions of human warmth give basic indications that the WARMOMETER seems to be a valid and sensitive patient self-report instrument for assessing the socio-emotional quality of physicians.
Practice implications: These first promising results of our cognitive interviews suggest that the WARMOMETER may also be used and further validated in future health communication studies, also with other healthcare professionals.

1. Introduction

When talking about the "warmth" of a person, we do not refer to body temperature. We perceive a "warm" person as someone who "gives us a pleasant feeling of cheerfulness or friendliness" [1, p. 1186] and "has good, kind, friendly feelings" [1, p. 1186]. By contrast, a "cold" person is someone who "gives us the cold shoulder" [1, p. 191] or comes off as "a cold fish" [1, p. 191].

Beyond these linguistic facts, there has also been moving research on the concept of warmth in human relationships in recent years. For example, latest studies indicate that, together with "competence", the warm–cold dimension is one of two main first impressions we spontaneously form of other people. Moreover, studies show that most abstract psychological concepts, such as affection, are metaphorically based on concrete physical and physiological experiences.

Hence, the first aim of our study is to develop a self-report measure based on the concept of warmth in human relationships to assess the socio-emotional quality of healthcare providers from the patients' perspective. Measures based simultaneously on a sound theoretical foundation and on applying in-depth pre-testing methods are still rare. Thus, our second aim is to use cognitive interviewing to understand how respondents perceive and interpret this new measure and to identify potential problems.

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1.1. Warmth in human relationships: theoretical and empirical background

1.1.1. Warmth as the most powerful personality trait

Like other perceptions, social perception reflects evolutionary pressures. When interacting with others, human beings are immediately faced with the challenge of determining whether the other is friend or foe and, then, whether the other has the ability to enact those intentions (summaries of research: [2,3]). Following the significant early studies of Asch [4], research in the last few years has established that perceived warmth and competence are the two universal dimensions when people spontaneously interpret behavior or form impressions of others. Evidence for this comes from various sources, including experimental social psychology laboratories, election polls and cross-cultural comparisons [2]. Over the last ten years, advanced studies have firmly shown that people everywhere differentiate each other by liking (warmth, trustworthiness) and respecting (competence, efficiency). According to recent social cognition theory and research, the warmth dimension captures traits related to perceived intent, including friendliness, helpfulness, sincerity, trustworthiness and morality, whereas the competence dimension reflects traits related to perceived ability, such as intelligence, skill, creativity and efficacy [2]. Both dimensions account for 82% of the variance in people's evaluations of social behavior [5], which is a very large amount.

Furthermore, considerable evidence suggests that warmth judgments are primary. Warmth is judged before competence, and warmth judgments carry more weight in affective and behavioral reactions [2,3]. For example, from an evolutionary perspective, the primacy of warmth is fitting because another's intent for good or ill is more important to survival [2].

1.1.2. Warmth as a result of embodied cognition

Research in the last ten years indicates a reasonable rationale why warm and cold are central traits in impression formation [6]. A number of experimental studies have shown that most abstract psychological concepts, such as affection or emotion, are metaphorically based on concrete physical experiences (summaries of research: [6–8]). These findings are consistent with theories of embodied cognition and perceptual symbols [9–11], which say that people conceptualize their internal, mental worlds by an analogy to their physical and physiological world [6–8]. Therefore, concrete experiences (e.g., temperature) seem to be the underlying processes grounding abstract concepts (e.g., affection).

The use of sensory-based metaphors (e.g., a "warm" or "cold" person) allows people to represent and communicate abstract concepts that would otherwise have no link to sensory–motor experiences. Diverse experimental studies [6–8] have shown that abstract thought includes more grounding in physical and perceptual content than is often assumed. In this view, abstract concepts and concrete experiences that are jointly expressed in a metaphor are co-experienced. In the case of "affection is warmth" [9, p. 50], Williams and Bargh [6], for example, could verify this assumption in an experiment where participants who briefly held a cup of hot (vs. iced) coffee judged a target person as having a "warmer" personality (generous, caring). Zhong and Leornadelli [8] also found in an experiment that participants who recalled a social exclusion experience gave lower estimates of room temperature than did participants who referred to an inclusion experience.

Lakoff and Johnson [9, see also Ref. 6] argued that co-experience is primary. In the case of "affection is warmth," babies experience the feeling of being held affectionately by their mothers, and being held induces a warm sensation, whereas distance from the caregiver induces coldness. This basic exposure may produce people's first understanding that social closeness equals warmth, whereas social distance equals coldness [8]. This priming association is underlined by evidence that the insular cortex is involved in processing both psychological and physical warmth [6]. As a result, people express and share the abstract notion of affection in terms of the co-experienced sensation of warmth. Table I in Appendix illustrates that warm and cold expressions are deeply rooted in our language, indicating that they have no linguistic or cultural borders as their meaning is nearly the same (e.g., in German and English). At the same time, we also notice that expressions of warmth are often connected to the "heart" (marked in italics in Table I, Appendix), which is seen as the site of our strongest emotions.

The new evidence-based findings presented in the last two subsections are relevant to healthcare communication research, as described in Section 1.2.

1.2. Hypotheses

In this study, we hypothesize that referring to the warm–cold dimension in a questionnaire is a more valid method for measuring the socio-emotional quality of healthcare providers than using concepts such as empathy and trust. Although human warmth is likely to be related to constructs such as empathy [12–14] or trust [15,16], it has the psychometrical advantage that it is not a construct or latent variable and therefore, does not need to be operationalized in different items. Compared to empathy or trust, warmth is a major and genuine social perception, which is deeply rooted in our evolutionary history and environment (see Sections 1.1.1 and 1.1.2) and, as a result, in our language (see Table I, Appendix). Psychometrically spoken, using the concept of warmth and its wording in scale development should result in a more valid measurement of socio-emotional qualities in (patient–provider) relationships. Consequently, we only need to use the word "warmth" in an assessment since it does not require a range of items.

This should result in a short measure (Hypothesis I), which is easy to understand (Hypothesis II), because it refers to a concept that most people or patients share (Hypothesis III). We attempt to verify these three hypotheses through cognitive interviewing techniques.

2. Methods

This study was reviewed and approved by the Ethics Committee of the Faculty of Health, University of Witten/Herdecke, Germany. All participants were provided with an information sheet about this study and were invited to sign a consent form.

2.1. Thermometer of warmth in the patient–provider relationship (WARMOMETER): development of the draft version

The WARMOMETER was developed based on the theoretical assumptions of warmth in human relationships described in Section 1. These findings were synthesized into a draft measure, which was discussed and reflected on in a multidisciplinary expert group of four physicians (FE, CS, MB, DT), a physicist (DC), and a sociologist (MN) (see Fig. 1).

To evoke the most genuine response possible about warmth from interviewees, the expert group turned to the visual representation of a thermometer. Based on the experiments of Ijzerman and Semin [7], we considered cold to be between 15 and 18 °C and warm to be between 22 and 24 °C. Physically, warmth is defined as "a higher temperature, still pleasant feeling, that is no longer cold and not yet hot" and cold is described as the "absence of warmth" [1]. However, these definitions leave room for individual perceptions and preferences of warmth and cold. For this reason, a temperature range of 0–30 °C was used in the pre-test stage.