Candidate 10112

Judging based on mood: the influence of affective states on judgments of warmth and competence

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This thesis is an individual work written in accordance with the APA Manual 7th edition. The Bachelor project on which this thesis is based on, was led by our supervisor Hojjat Daniali, and was divided into two steps.

The first step included the general idea of the project, video materials, coding scale for measurement and validity and reliability analyses which were all provided by our supervisor. The procedure of coding, and the following interpretations and discussions of the results were done in cooperation with our supervisor.

The second step included testing the main aim of this thesis. The idea for the main aim was developed and explored independently by me, though all the members of the Bachelor group worked together to design an online survey to collect data for everyone's individual aim. Here, the group developed the design of the survey, formulated the preface and questions, handpicked the videos for each condition group included in the survey and recruited participants with guidance from our supervisor. I contributed by editing videos used for coding and in the survey, contributed to the procedure of coding, helped with formulations and layout of the survey, and took responsibility for recruitment of participants through Amazon Mechanical Turk (MTurk). The literature, data collection, statistical analyses, tables and figures in this thesis were found and conducted by me. The study design and the survey are the work of the whole group, while all interpretations and discussions in this thesis are my own – reviewed and changed for the better by our supervisor.

A big thank you goes to Hojjat Daniali for all the motivation, enthusiasm, believing, lightning the mood and most of all the feedback and availability. I am most grateful for the support of this wonderful group, for my mom and her endless phone calls, and for my boyfriend's never-ending reassurances, encouragement, and cheering.

Abstract

Health care providers warm and competent nonverbal behavior (NB) characteristics have been shown to affect patient's treatment outcomes positively. However, little is known about what factors influence judgments of NB characteristics. The current study investigated the role of mood on judgments of the NB characteristics warmth and competence in videotaped health care providers. An online study was designed, where participants (N = 124) were asked to rate their current mood based on positive and negative affect, and their impressions of a videotaped health care providers warmth and competence based on a researcher-made NB rating scale. The reliability of the NB rating scale and the validity of the videotaped NB characteristics were checked prior to the online study. Results showed that the NB rating scale was reliable and the NB characteristics were valid. Positive affect predicted higher impression ratings of both warmth and competence, whereas negative affect did not predict lower impression ratings of warmth and competence. These findings suggest that patients' mood should be taken into account in health care consultations during conscious enactment of NBs to better treatment outcomes.

In everyday social interactions, communication happens both verbally and nonverbally. Between 65% to 95% of communication is through NBs (Matsumoto et al., 2013). Nonverbal messages can among other things strengthen, oppose or replace verbal communication (Ekman & Friesen, 1969). Matsumoto, Frank, and Hwang (2013, p. 4) define nonverbal communication as "the transfer and exchange of messages in any and all modalities that do not involve words". This means that nonverbal communication includes expression through clothing, decorations in the home, different body movements through environments and NB (Matsumoto et al., 2013).

NB is divided between macro- and micro-level. Micro-level NBs are expressed through facial expressions, body movement and tone of voice (Matsumoto et al., 2013; Knapp et al., 2014). Macro-level NBs convey an attitude or psychosocial characteristic through different combinations of micro-level NBs and their frequency (Daniali & Flaten, 2019). Macro-level NBs make up impressions of for example warmth, nervousness, competence, professionalism, and power (Daniali & Flaten, 2019; Blanch-Hartigan et al., 2018). Both levels are further divided between positive and negative NBs (Daniali & Flaten, 2019). The positive NBs are associated with NB characteristics humans judge positively about each other and consist of eye-contact, smiles, and touch among other things, while the negative NBs often are described as the lack of or the opposite behavior of positive NBs (Kraft-Todd et al., 2017; Daniali & Flaten, 2019).

First impressions are formed through nonverbal cues (Ambady & Gray, 2002). Warmth and competence are two characteristics that people judge each other on socially (Judd et al., 2005; Fiske et al, 2007). Warmth and competence give impressions of trustworthiness, support, and capability (Fiske et al., 2007; Ashton-James et al., 2019), and are being measured through dimensions like tolerance, sincereness, good-naturedness, and friendliness for the characteristic warmth, while capability, confidence, independency, competitiveness,

skillfulness and intelligence are dimensions of competence (Fiske et al., 2002; Cuddy et al., 2008).

Warmth is communicated through NBs like smiling, eye contact, nodding, touching, leaning forward, relaxed gestures and a warm and anxious tone of voice (Cuddy et al., 2011; Nguyen et al., 2015; Howe et al., 2017; Kraft-Todd et al., 2017; Riess & Kraft-Todd, 2014). Competence is closely related to the expression of dominance and power which are communicated through physical assertiveness, smiling, proximity, touch and wide and open high-power poses (Burgoon & Dunbar, 2006; Cuddy et al., 2011). High-power poses increase the levels of the dominance hormone testosterone while simultaneously decreasing levels of the stress hormone cortisol (Carney et al., 2010), leaving the person feeling more powerful and thus appearing more competent and proficient (Cuddy et al., 2011).

Studies have shown that health care providers' characteristics expressed through either positive or negative NBs can affect patients' health care expectations and outcomes (for a review, see Daniali & Flaten, 2019). Health care providers radiance of warmth and competence are important to demonstrate their care for and interest in the patient, and their knowledge of and skill in treatment, procedures, and technology (Howe et al., 2019; Swick, 2000). NBs associated with warmth and competence have been shown to increase patient satisfaction (Roter et al., 2006; Ruben et al., 2017; Mast, 2007) and trust in the patient's surgeon (Ashton-James et al., 2019). Further on, warmth and competence are linked to lower pain intensity (Gryll & Katahn, 1978; Fuentes et al., 2014), increased pain tolerance (Ruben et al., 2017), increased positive outcome expectancies (Howe et al., 2017; He et al., 2018), and reduced anxiety and negative feelings (Van Osch et al., 2017; Verheul et al., 2010).

Patients evaluate their health care provider based on their NBs and it is therefore crucial for health care providers to be aware of and monitor their NBs to improve patients' physical and emotional states (Marcinowicz et al., 2009).

Mood and judgments of NB

Impressions of warmth and competence can affect patients' health outcomes positively (Daniali & Flaten, 2019), thus it is important to know what factors could influence the first impressions of health care providers.

Affective states are factors that influence people's judgments and impressions of each other (Tracy et al., 2015; Ambady & Gray, 2002; Anderson et al., 2012; Lapate et al., 2014). Rosenberg's (1998) definition of affect includes all emotional experience, differentiating between moods and emotions when describing affective states. Emotions occur spontaneously (Lapate et al., 2014), while moods are more long-lasting emotional experiences, shifting during the day or week (Rosenberg, 1998). As mood is more enduring and has been studied for a long time, the focus will be on mood rather than emotions in this thesis.

More attention is dedicated to stimuli that coincides with the current mood (Bower, 1981; Niedenthal et al., 1997; Niedenthal & Setterlund, 1994). Niedenthal et al. (2000) conducted a study where a videotaped person's happy or sad face was gradually fading into a neutral facial expression. Participants mood was manipulated in both a happy and sad condition and were asked to indicate when they no longer saw the initial emotion on the videotaped person's face. The results showed that happy participants perceived a happy facial expression longer as sad participants, and vice versa (Niedenthal et al., 2000). The same effect was demonstrated in another study where participants were exposed to unconscious positive affective stimuli, and thereafter rated a neutral face as more smiling (Siegel et al., 2018). Perceiving and judging stimuli according to one's own affective states is called the emotion congruence effect (Schiffenbauer, 1974; Ambady & Gray, 2000; Niedenthal et al., 2000).

Studies have found that affective states are conveyed through NBs (Tracy et al., 2015), among other things through vocal cues from the sender (Bänziger et al., 2013; Dasgupta,

2017; Kamiloğlu et al., 2021; Pell et al., 2009). In health care contexts, specifically, it has been tested if different NB characteristics and communicational styles influence patients' affective states during or after treatment (van Osch et al., 2017; Verheul et al., 2010). However, to my knowledge, there is only one study that has controlled for possible effects mood has on impressions of NB characteristics (Kraft-Todd et al., 2017). The aim of this thesis is therefore to investigate if mood influences impressions of the NB characteristics warmth and competence in a health care provider.

To explore the role of mood on impression ratings of the NB characteristics warmth and competence, an online survey was designed. The survey consisted of several short videos in which two actors played health care providers guiding the participants through a heat pain stimulation experiment. The videos were accompanied by several questions about participants demographics, mood, and impressions of the health care providers performances. The survey was replicated into seven condition groups, in which only the videos differed. The verbal part of the script that the actors played out in the videos was the same in all condition groups. Here, the difference lay in that the actors played in different medically important NB characteristics across condition groups: warm and friendly, competent and professional, enthusiastic and interested, neutral, cold and unfriendly, incompetent and unprofessional, and unenthusiastic and bored. The participants were randomized into only one of the seven condition groups.

The study included two separate steps. First, the performances of the videotaped NB characteristics were coded using a researcher-made NB rating scale, and then tested for reliability and validity by a group of undergraduate Psychology students. The following hypotheses were tested: a) if the items used in the NB rating scale were consistent (i.e. reliability), b) if the coding of NBs was consistent across coders (i.e. inter-rater reliability); c)

if the NBs were similarly rated across actors (i.e. reliability); d) if the NB condition groups expressed the characteristics that they were intended to (i.e. construct validity).

The second step involved the testing of the main aim. To investigate the role of participants mood on their ratings of the NB characteristics warmth and competence, the dimensionality of the NB characteristics warmth and competence was explored first. The following hypotheses were tested: e) the NB characteristic warmth consists of the psychosocial characteristics tolerant, warm, sincere and good-natured, f) the NB characteristic competence consists of the psychosocial characteristics competent, confident, independent, competitive and intelligent, g) positive affect (PA) predicts higher ratings of warmth and competence from the health care provider, and h) negative affect (NA) predicts lower ratings of warmth and competence from the health care provider.

First step

In this section, the first step of methods is described. The seven medically important NB characteristics of being nonverbally warm and friendly, competent and professional, enthusiastic and interested, neutral, cold and unfriendly, incompetent and unprofessional, and unenthusiastic and bored were coded and then tested for reliability and validity.

Method

Coders

Seven female undergraduate students of psychology coded the videos. All coders were between 21 to 25 years old, $M = 22.57$, $SD = 1.51$. The coders rated the seven NB

characteristics conveyed in the videos. The process of coding started by receiving coding training via video from the NB expert Mollie Ruben.

NB rating scale

The coders rated the NB characteristics conveyed by the actors on a 24-item Likert scale, ranging from 0 (not at all) to 4 (very much). This scale was designed for this project to test impressions of the NB characteristics warmth and friendliness, competence and professionalism, enthusiasm and interest, coldness and unfriendliness, incompetence and unprofessionalism, and unenthusiasm and boredom in the condition groups with the same name.

The items of this coding scale were chosen as psychosocial characteristics to represent the different NB characteristics the condition groups portray. As the scale used a general impression approach, no definitions of the items were provided. The positive condition groups "warm and friendly", "competent and professional", and "enthusiastic and interested" were measured through the items warm, competent, and interested. The condition groups "incompetent and unprofessional", "unenthusiastic and bored", and "cold and unfriendly" were measured through the items incompetent, bored and negative. The means of the ratings of these six items are used in the validity test.

Actors

Two professional Norwegian actors, aged between 26 and 32 years, played the role of a health care provider in seven conditions, making the condition groups 14 in sum. The actors

are Caucasian, both wearing a white lab coat and light make-up. The actors received about ten hours of training on how to express and convey different NBs prior filming.

Script and videos

In all the condition groups, the actors acted out their role as health care providers based on the same verbal script. Only their NB characteristics varied across condition groups (see next section for more details on NBs conveyed).

The script was originally used for a pain experiment (Daniali et al., 2023, unpublished manuscript). In the videos, the health care provider welcomed the participants to the experiment and instructed them to complete the tasks they were given. The health care provider then introduced the experiment in which the participant first got a heat pain-relieving cream applied on their arm, and then the heat pain stimulation was induced. The participants were further instructed to rate their stress and alertness levels, and their expected efficacy of the heat pain-relieving cream before the procedure started. At last, the health care provider asked the participant to rate how satisfied they were with her as their lead experimenter.

The coding videos lasted approximately three minutes. Ambady, Bernieri and Richeson (2000) define such fragments of suggestive facial, bodily and tonally behavior as thin slices, representing the basis for impression formation. The videos were handpicked by the group and chosen as the best of different takes. This selection was based on the groups agreement on which take gave the best impression of the chosen NB characteristic in the condition group.

NB characteristics

The conditions consist of macro-level NBs which convey psychosocial characteristics via combinations of micro-level NBs applied with various frequencies (Daniali & Flaten, 2019). For the NB characteristics, the actors were asked to play the verbal scripts while expressing the desired NBs.

For the condition groups "warm and friendly" and "enthusiastic and interested", the actors were asked to express frequent smiling, enhanced eye contact, welcoming and energetic body language with expressive hand movements, and speak with a warm and enthusiastic tone of voice. More serious facial expressions, less smiling, dominant body language and an authoritative tone of voice was expressed in the condition group "competent and professional".

In the condition group "neutral", the actors kept all their NBs neutral throughout the recording by avoiding eye contact, keeping the body language and facial expressions to a minimum, neither leaning forward nor backward, and keeping a monotonous tone of voice.

In the condition groups "cold and unfriendly" and "unenthusiastic and bored", the actors showed almost no smiling, minimal eye contact, a cold or bored tone of voice, and either closed and defensive or monotonous and bored body language. In the condition group "incompetent and unprofessional", the actors expressed anxious facial expressions and tone of voice, worried eye and lip movements, and agitated body movements.
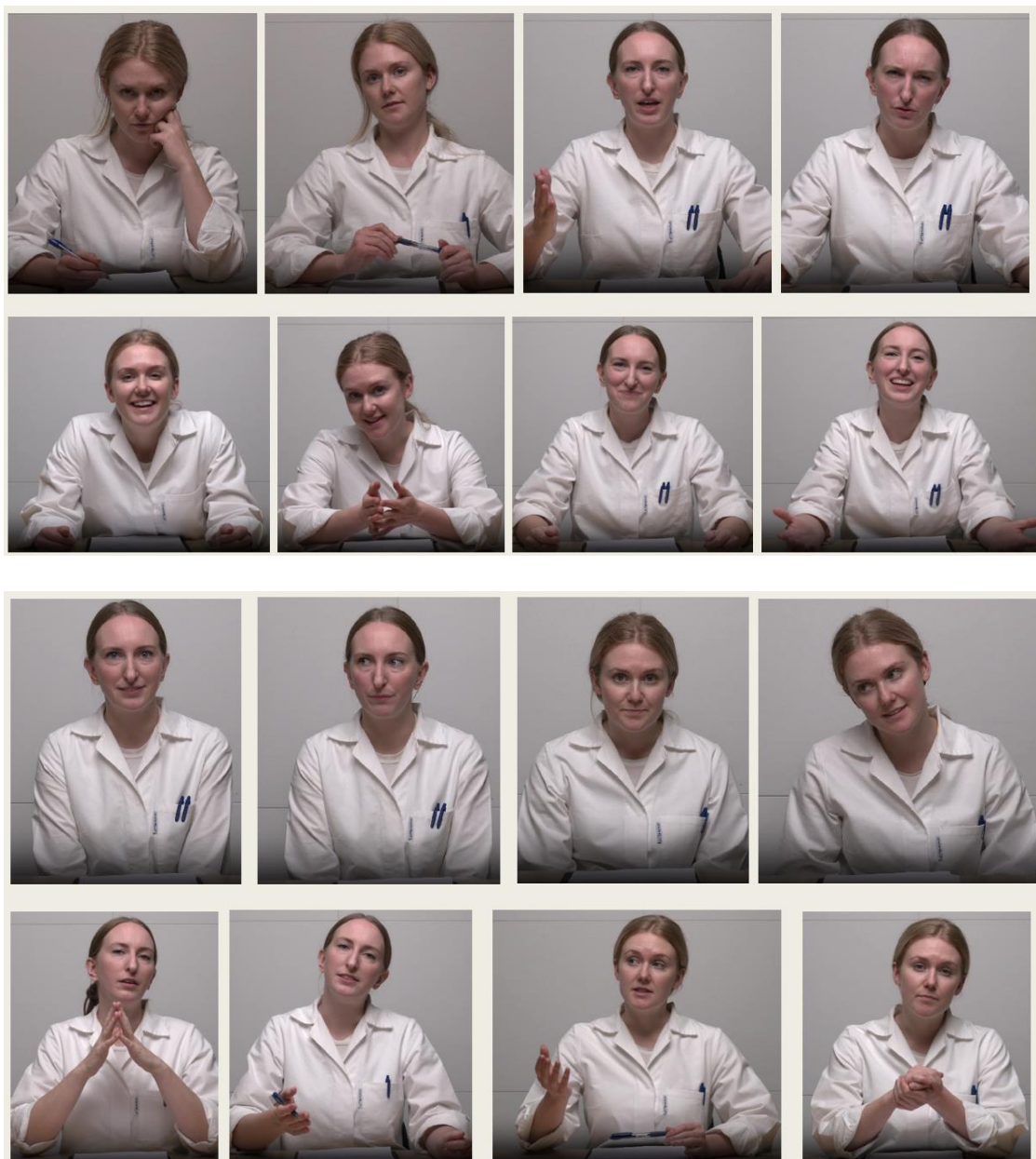
Figure 1. Cold/unfriendly shown in the top row, warm/friendly shown in the second row, incompetent/unprofessional shown in the third row, and competent/professional shown in the last row.

Procedure

      Sitting together as a group, the coders watched the coding videos one by one for each condition. First, the coders watched and coded the three positive conditions (warm/friendly,

competent/professional, and enthusiastic/interested) for both actors followed by the three negative conditions (cold/unfriendly, incompetent/unprofessional, and unenthusiastic/bored). Lastly, the neutral conditions for both actors were coded. The coding itself was done in a Google form where the coders were instructed to rate the items on the NB rating scale based on their intuitive impressions of the NB characteristics conveyed in the videos. The coding was done individually without consulting the group members.

Data screening

The dataset was controlled for missing values, descriptive statistics were evaluated and the data was checked for normal distribution. Based on the means of coding ratings for each item, new variables were made and added to the coding dataset.

Statistical analysis

IBM SPSS Statistics Version 28.0.1.0 (142) was used to conduct reliability and validity tests for the coding videos.

Cronbach's alpha (α) was used to test the reliability for the items in the NB rating scale (a). The intraclass coefficient (ICC) was used to test the consistency between coders (b). At last, the potential differences between the actors were tested using a Students t-test (c).

The different condition groups were measured through the items warm, competent, interested, incompetent, negative and bored from the NB rating scale. To test the validity of the NB condition groups, a one-way MANOVA with the seven condition groups (warm/friendly, competent/professional, enthusiastic/interested, cold/unfriendly, incompetent/unprofessional, unenthusiastic/bored, and neutral) as the independent variable,

and the psychosocial characteristics (warm, competent, interested, negative, incompetent and

bored) as the dependent variable was used to check differences between ratings of items in the

different NB condition groups. Equal sample sizes and control over of Type I error led to a

Tukey's post-hoc to find out where the differences lay (Field, 2018).

Ethics

This step did not require any ethical approval as no personal information was collected

and no participants were required.

Results

Descriptives

Table 1. *Descriptives of item ratings across condition groups (N = 14).*

Item/ Condition group	Warm		Competent		Interested		Negative		Incompetent		Bored	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
WF	3.79	0.10	3.07	0.10	3.86	0.20	0.00	0.00	0.00	0.00	0.00	0.00
CP	2.36	0.51	3.92	0.10	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EI	2.79	0.10	3.00	0.00	3.71	0.00	0.00	0.00	0.14	0.00	0.00	0.00
CU	0.36	0.30	2.64	0.30	0.93	0.10	2.86	0.20	0.29	0.00	1.57	0.40
IU	1.36	0.30	0.14	0.00	0.86	0.00	0.21	0.10	3.93	0.10	0.57	0.40
UB	0.07	0.10	0.79	0.30	0.00	0.00	3.00	0.61	2.29	0.00	4.00	0.00
N	1.00	0.40	1.57	0.40	0.71	0.40	0.36	0.51	0.29	0.00	0.43	0.40
Total	1.67	1.32	2.16	1.32	1.87	1.54	0.92	1.35	0.99	1.47	0.94	1.42

Note. WF = warm/friendly, CP = competent/professional, EI = enthusiastic/interested, CU =

cold/unfriendly, IU = incompetent/unprofessional, UB = unenthusiastic/bored, N = neutral.

Reliability of items (a)

Cronbach's alpha showed consistency of items across condition groups, $\alpha > .87$, for all items except fake, $\alpha = .50$. Acceptable values for Cronbach $\alpha > .70$, which is why the item fake is excluded from further analysis.

Inter-rater reliability of coders (b)

Inter-rater reliability showed internal consistency between coders and their ratings of NB characteristics, ICC > .60, for all items except for the items dominant, ICC = .59, and empathic, ICC = .49. Acceptable values for ICC > .60, therefore, the items dominant and empathic are excluded from further analysis.

Inter-rater reliability and differences between actors (c)

The inter-rater reliability of the NB characteristics shown by the actors were above $\alpha > .92$ and ICC > .69.

Students t-test showed that there were no significant, $p > .05$, differences between actors in their conveying of NB characteristics. Therefore, the ratings of NB characteristics between actors will be merged in further analysis.

Validity of condition groups (d)

The main effect of condition groups was significant for all dependent variables, $Fs(6,7) => 39.61, p > .001$, thus post-hoc tests followed up on the differences.

The condition group warm/friendly was rated higher in warmth than the condition group cold/unfriendly, $\Delta M = 3.43$, SE $= 0.30$, $p < .001$, and the condition group neutral, $\Delta M = 2.79$, SE $= 0.30$, $p < .001$. There was no significant difference, $p = .107$, in the ratings of warmth between the condition groups warm/friendly and enthusiastic/interested.

The condition group competent/professional was rated higher in competence than the condition group incompetent/unprofessional, $\Delta M = 3.79$, SE $= 0.23$, $p < .001$, and the condition group neutral, $\Delta M = 2.36$, SE $= 0.23$, $p < .001$. There was no significant difference, $p = .065$, in the rating of competence between the condition groups competent/professional and warm/friendly.

The condition group enthusiastic/interested was rated higher in interest than the condition group unenthusiastic/bored, $\Delta M = 3.71$, SE $= 0.18$, $p < .001$, and the condition group neutral, $\Delta M = 3.00$, SE $= 0.18$, $p < .001$. There was no significant difference, $p = .975$, in the ratings of interest between the condition groups enthusiastic/interested and warm/friendly.

The condition group cold/unfriendly was rated higher in negativity than the condition group warm/friendly, $\Delta M = 2.86$, SE $= 0.31$, $p < .001$, and the condition group neutral, $\Delta M = 2.50$, SE $= 0.31$, $p < .001$. There was no significant difference, $p = .999$, in the ratings of negativity between the condition groups cold/unfriendly and unenthusiastic/bored.

The condition group incompetent/ unprofessional was rated higher in incompetence than the condition group competent/professional, $\Delta M = 3.93$, SE $= 0.04$, $p < .001$, and the condition group neutral, $\Delta M = 3.64$, SE $= 0.04$, $p < .001$.

The condition group unenthusiastic/bored was rated higher in boredom than the condition group enthusiastic/interested, $\Delta M = 4.00$, SE $= 0.27$, $p < .001$, and the condition group neutral, $\Delta M = 3.57$, SE $= 0.27$, $p < .001$.

Discussion

There are four key findings for the analyses of the first step: a) the items used to rate the NB characteristics were reliable, b) the coders were consistent in their rating of the NB characteristics, c) actors were similar in their portrayal of NB characteristics, and d) the NB characteristics in the condition groups were valid and portrayed what they were intended to.

The majority of items were rated consistently. For instance, the items competent and warm were rated high in the positive condition groups, whereas they were rated low in the negative condition groups. Even though no definitions were provided for any of the items, they were still understood and being judged as representative for specific condition groups, but not for others. The reliability indicates a certain common understanding of the meaning for the majority of items, which implies that they are good items to describe the NB characteristics portrayed in the different condition groups.

The coders high internal consistency of item ratings support the indication that the items were representative of the NB characteristics. Coders agreed on which items were good items to describe what the NB characteristic portrayed by rating some items high in the condition groups they felt conveying these items, and low in the condition groups where there was lack of portrayal. This could also indicate an understanding between coders of what psychosocial characteristics (items) are underlying dimensions of a certain NB characteristic portrayed.

Cronbach's alpha and inter-rater reliability test were used to find out if actors were rated consistently. The results of the reliability tests and t-test showed that the actors acted out NB characteristics similarly in the different condition groups, which resulted in a merge of participants ratings of NB characteristics in the same condition group between actors. These results further indicate that the manipulated NBs in the condition groups were showing what

they intended, and constitute the effects, instead of possible findings being based on individual preferences for actors.

The results of the condition groups validity testing highlight a tendency where the largest differences of ratings are between opposite condition groups (e.g. largest difference of competence between condition groups competent/professional and incompetent/unprofessional), or between positive and negative condition groups (e.g. largest difference of rating of warmth between condition groups warm/friendly and unenthusiastic/bored). This pattern shows divergent validity, in which the positive condition groups differ significantly from the negative condition groups. The non-significant differences in ratings of items were between condition groups that were both either positive or negative (e.g. no significant difference in the rating of warmth between condition groups warm/friendly and enthusiastic/interested). This pattern shows convergent validity, in which the positive or negative condition groups can be interpreted as similar. The results can be understood in a way in which the manipulation of NBs in the condition groups was successful, thus portraying the NB characteristics they were intended to. An interesting finding is that the neutral condition group had higher ratings of the positive items competent, warm and interested than the negative items incompetent, negative and bored. This means that the neutral NB characteristic is perceived as more positive than negative, but still less positive than the positive condition groups.

The items consistency and the validity of the NB characteristics in the condition groups is important for the next step as both items and NB characteristics are tested through impression ratings.

Second step

In the second step, the role of mood on judgments of warmth and competence was tested by comparing ratings of mood with ratings on specific items on the NB rating scale in the seven condition groups.

Methods

Participants

Participants (N = 124) are between 18 and 82 years old, *M* = 34.60, *SD* = 15.32, whereas 42 men (33.9%) and 82 women (66.1%) participated.

To participate in this survey the participants had to be over 18 years old, hence excluding participants under the age of 18. Another screening criterium was a demanded right answer ("Embla") on the control question "What is the name of the pain-relieving cream introduced by the videotaped health care provider?". Six participants (4.3%) answered wrong on the control question (either "Thermoreceptor" or "Emle") and were excluded along with the five participants (3.5%) using less than 7 minutes and the four participants (2.8%) using more than 60 minutes to answer. The exclusion criteria for answering time are based on that the videos duration is around three minutes and anything under 7 minutes and over 60 minutes indicates that participants were inattentive and did not read and answer the questions properly.

Measurements

I-PANAS-SF. The PANAS (Positive Affect Negative Affect Scale) is a common scale by Watson, Clark and Tellegen (1988) used to measure both trait and state affect. It is a two-factor model where participants scoring high on PA have high positive energy levels, while

those scoring low on PA are in a state of unhappiness and inactivity. High NA, on the other hand, is a state of nervousness, anger or fear, while low NA is a state free of agitation. Those dimensions are distinct from each other and participants can score high on both PA and NA (Watson et al., 1988). The original scale consists of 20 items (Watson et al., 1988), the shorter version I-PANAS-SF (International Positive and Negative Affect Schedule Short Form) used in this project only consists of 10 items (Thompson, 2007). The I-PANAS-SF has been found to be a reliable, PA α = .78, NA α = .76, and valid measure (Thompson, 2007).

Item 1, 3, 5, 7 and 9 in the I-PANAS-SF used in the survey measures PA (active, alert, attentive, determined, inspired) and item 2, 4, 6, 8 and 10 measure NA (afraid, nervous, hostile, ashamed, upset). PANAS is sensitive to fluctuations in mood (Watson et al., 1988), and was therefore in this thesis used as a measure for mood "at this moment". In the survey, participants were asked to rate the mentioned states in the intensity in which they were feeling them at this moment, on a Likert scale from 0 ("very slightly or not at all") to 4 ("extremely").

NB rating scale. The positive loaded items from the 24-item NB rating scale used for coding were also used to measure participants impressions of the NB characteristics warmth and competence.

Procedure

For the recruitment both convenience and snowball sampling method were used. Flyers were designed with a QR-code and were handed out and hanged up throughout Trondheim. They were also handed out on different campuses in Trondheim. In addition, the link for the survey was shared by students in this group via social media, NTNU Innsida, and promoted in both lectures and student housings in Trondheim.

An online survey was designed on Nettskjema, including the different video chunks of each condition group together with the Bachelor group's questions. Nettskjema is developed by the University of Oslo (UiO) and is an online tool to collect data and design surveys. The link for the survey guided the participants first to the preface where they consented to completing the survey and to our rights to process their information until the project ended. The participants were further randomized by block randomization between the seven condition groups and the two actors.

The coding videos were split into four short videos and distributed between questions to make the survey interactional for the participants. The survey was designed in such way that the questions made sense according to the tasks the videotaped health care provider asked the participants to complete.

The survey started by asking the participants to watch the videos of the health care provider guiding them through a pain stimulation experiment, and following the videotaped health care providers instructions as if they were participating in the experiment themselves. Next, the videotaped health care provider welcomed the participant to the experiment and instructed them to answer a few questions regarding their age, gender, cultural affiliation, and mood. Further on, the participants were introduced to the procedure for the heat pain stimulation experiment and the pain treatment by the health care provider. A control question asking about the name of the heat pain-relieving cream introduced in the videos was used as a tool to control for possible inattention of the participants. Questions about expectations of the treatment, and stress and alertness levels followed thereafter. At last, the health care provider instructs the participant to rate her on the same 24-item NB rating scale used for coding, and answer a few questions about satisfaction, trustworthiness, and empathy. Average response time was around 16 minutes.

Before officially releasing the link for the survey, it was sent to around 20 participants being family and friends of the students in the group. The pilot studies aim was to get practical feedback on the survey and checking for missing data. The results from the pilot study are included in the analysis later on.

Data screening

The condition groups are intended to portray impressions of different NB characteristics. Even if the condition groups were validated only using one item from the NB rating scale to represent them, the assumption is that impressions of NB characteristics have several underlying dimensions. As warmth and competence are two positive NB characteristics, only the dimensionality of the positive loaded items on the NB rating scale was tested. The means of the items with the highest correlations for each characteristic were computed and constitute the two new variables meant to measure the impressions of warmth and competence.

New variables were conducted for PA and NA separately, consisting of the sums of each participants score. A multivariate ANOVA was used to control for differences in mood across the seven NB condition groups.

Statistical analysis

For the dependent variable, a Pearson' correlation analysis was conducted for the positive items of the NB rating scale. The correlation analysis was run on the dataset that contained the impression ratings of the coders because of the professional training on coding

NBs received beforehand. Items with correlations under .90 were excluded from the impressions of warmth and competence.

The role of mood on the impression ratings of warmth and competence is first tested via Pearson's correlation coefficient. If there was a significant correlation between either PA or NA and the impression ratings of warmth and competence, two separate regression analyses with mood as the predictor and the ratings of warmth and competence as criterion followed.

Ethics

Consent was obtained from the participants, and they were informed of the aim of the study, who was responsible for the project, and that they could withdraw at any moment before submitting their answers. This is in line with ethical guidelines on research with human subjects (National Research Ethics Committees, 2022). No personal data was collected, therefore, this study project did not need to apply for approval from neither Sikt (Kunnskapssektorens tjenesteleverandør) nor REK (Regionale komiteer for medisinsk og helsefaglig forskningsetikk). Nettskjema is approved by REK and Sikt to collect sensitive data.

Results

Descriptives

The distribution of participants across the seven condition groups, as well participants mood is shown in table 2. The independent variable mood was measured through PA, which had a range from 1-17, and NA, which had a range from 0-12. The maximum score for both

PA and NA was 20. Participants mean ratings of the items that make up the impressions of warmth and competence are shown in table 3.

Table 2. *Descriptives of participants distribution and mood across condition groups (N = 124).*

Condition group	Frequency	Percent	PA		NA	
	N	%	M	SD	M	SD
WF	21	16.9%	8.33	3.90	2.33	3.61
CU	12	9.7%	6.17	3.41	3.17	3.66
CP	20	16.1%	9.85	3.57	2.15	1.98
IU	13	10.5%	6.77	2.71	2.62	3.86
EI	20	16.1%	9.30	3.26	2.75	2.38
UB	25	20.2%	7.92	3.80	1.84	1.87
N	13	10.5%	8.54	4.05	2.08	3.50
Total	124	100%	8.30	3.68	2.35	2.89

Note. WF = warm/friendly, CU = cold/unfriendly, CP = competent/professional, IU = incompetent/unprofessional, EI = enthusiastic/interested, UB = unenthusiastic/bored, N = neutral.

Table 3. *Descriptives of dimensions of the NB characteristics warmth and competence (N = 124).*

Item	M	SD
Competent	2.27	1.06
Confident	2.48	1.20
Independent	2.21	1.14
Intelligent	2.43	1.05
Tolerant	1.91	1.18
Warm	1.49	1.22
Sincere	1.88	1.24
Good-natured	1.91	1.16
Interested	1.81	1.35
Positive	2.02	1.33

Dimensionality of warmth and competence

Correlations of the items that make up the impression of warmth are shown in table 4, while correlations of the items that make up the impression of competence are shown in table 5.

Table 4. *Correlation for measurement of warmth (N = 14).*

Items	1	2	3	4	5	6
1.Tolerance	-					
2.Warm	.99**	-				
3.Sincere	.96**	.97**	-			
4.GoodNatured	.99**	.98**	.96**	-		
5.Interested	.93**	.94**	.98**	.93**	-	
6.Positive	.95**	.96**	.97**	.95**	.96**	-

**. Correlation is significant at the 0.01 level (2-tailed).

Table 5. *Correlations for measurement of competence (N = 14).*

Items	1	2	3	4
1.Competent	-			
2.Confident	.97**	-		
3.Independent	.93**	.97**	-	
4.Intelligent	.98**	.96**	.95**	-

**. Correlation is significant at the 0.01 level (2-tailed).

The role of mood on impression ratings

Pearson's correlation coefficient showed positive significant correlations between PA and the impressions of the characteristic competence, $r(122) = .19$, $p = .036$, and the characteristic warmth, $r(122) = .26$, $p = .004$, across conditions.

There were no significant correlations between NA and the impression of warmth and competence, $p > .05$.

Table 6. *Correlations between mood and impression ratings of the NB characteristics warmth and competence (N = 124).*

	1	2	3	4
1.Competence	-			
2.Warmth	.66**	-		
3.PA	.19*	.26**	-	
4.NA	.01	.10	.21*	-

*. Correlation is significant at the 0.05 level.

**. Correlation is significant at the 0.01 level.

A regression analysis explained 4% of the variance in the outcome, $R^2 = .04$, showing that PA predicted higher ratings of competence, $b = .05$, $p = .035$.

Table 7. *Regression analysis for predicting ratings of competence.*

Variable	b	$SE\ b$	β	R^2	ΔR^2
Model 1				.04	.04
PA	.05*	.03	.19*		

*. Correlation is significant at the 0.05 level.

Another regression analysis explained 7% of the variance in the outcome, $R^2 = .07$, showing that PA predicted higher ratings of warmth, $b = .08$, $p = .004$.

Table 8. *Regression analysis for predicting ratings of warmth.*

Variable	*b*	*SE b*	β	R^2	ΔR^2
Model 1				.07	.07
PA	.08**	.03	.26**		

**. Correlation is significant at the 0.01 level.

Discussion

There are three key findings for the analyses of the second step. First, the results give an idea of the dimensionality of the NB characteristics warmth and competence. Second, participants scoring high on PA found the health care provider warmer and more competent regardless of the NB characteristics conveyed by the health care providers in the different condition groups. Third, NA did not have any significant relation to participants impressions of warmth and competence.

There were strong relations of the psychosocial characteristics warm, tolerant, sincere, good-natured, positive and interested for the NB characteristic warmth, and strong relations between the psychosocial characteristics competent, confident, intelligent, and independent for competence. These findings are in line with Fiske et al.'s (2002) and Cuddy et al.'s (2008) work on the characteristics of warmth and competence. However, to my knowledge, there has not yet been shown that the psychosocial characteristics positive and interested also relate to the impression of warmth, although Cuddy et al. (2008) have included the characteristic friendly in the impression of warmth, which could be understood as positive. On the other hand, Fiske et al. (2002) included the characteristic competitive to the impression of competence which in the present analyses was excluded because of lower correlations to the rest. The otherwise high correlations between items for both NB characteristics imply content validity for the impressions drawn from them, and therefore, they add understanding to the

dimensionality of warmth and competence. The findings can be interpreted such that impressions of these NB characteristics are based on multiple psychosocial characteristics conveyed through NB. For instance, if health care providers want to be perceived as warm, they need to display tolerance, sincereness, good-naturedness, positivity and interest, and if they want to be perceived as competent, they need to display confidence, competence, intelligence, and independence.

Moreover, the impression ratings of the NB characteristics warmth and competence showed moderate correlations with each other. This pattern of results is consistent with studies which have found that participants judgments of warmth were inferred from competent NB, and vice versa (Nguyen et al., 2015), that impressions of competence and warmth together predicted trust in the surgeon (Ashton-James et al., 2019), and that empathic NB increased patient perceptions of both warmth and competence (Kraft-Todd et al., 2017). The results show an interrelationship between the impressions of warmth and competence, suggesting a necessity of health care providers conveying both NB characteristics to improve patients physical and mental states (Ashton-James et al., 2019). However, this suggestion is controversial as other studies have shown a tradeoff between warmth and competence (Fiske et al., 2002; Cuddy et al., 2004; Fiske et al., 2007). The correlation between warmth and competence in this study imply that no such tradeoff happened.

PA predicted higher ratings of warmth and competence in the health care provider. The results are in line with the congruence effect (Schiffenbauer, 1974), which states that stimuli is perceived and judged in accordance to own affective states. The higher participants score on PA, the more enthusiasm, energy and activeness they experience. The participants happy feelings transfer to the stimuli from the short videos seen in the survey and are perceived as more positive. As PA predicted higher ratings of warmth and competence regardless of the condition group, it can be speculated that positive impressions are reinforced

in the positive condition groups whereas the negative NB in the negative condition groups simply is perceived as more positive. The present results are consistent with Kraft-Todd et al.'s (2017) work that controlled for the effects of mood on perception of clinicians' warmth and competence and found that higher positive mood was associated with higher ratings of physician warmth and competence. These findings are interesting as they mean that patient's get better impressions of their health care providers when they are in a good mood independent from the actual NBs conveyed. The practical consequences of these findings in health care contexts could comprise any changes to better patients' mood before consultations.

The second hypothesis about NA predicting lower ratings of warmth and competence was unexpectedly not confirmed. The most compelling explanation for this finding is that most of the participants scored higher on PA than on NA, leaving a sample too skewed to show significant results. However, Kraft-Todd et al.'s (2017) results also only showed small effects of negative mood influencing ratings of warmth and competence. The chances are generally lower that participants are in a negative mood when agreeing to complete a survey. To test this hypothesis in future work it should be considered manipulating the mood of the participants to get an equal distribution of PA and NA.

General discussion

In the nonverbal communication domain, more research about experimentally manipulating macro-level NBs and coding them is needed (Blanch-Hartigan et al., 2018). The present study adds understanding to both. As the NB characteristics were validated, the manipulation of the NB characteristics in this study was successful and could serve as a guideline in future work. Further on, most of the items on the NB rating scale used to code the

NB characteristics were reliable, which indicates that the items are satisfactory in describing what the NB characteristics are intended to portray.

The NB characteristics in the different condition groups were supposed to give an impression of a psychosocial characteristic, for instance warmth and competence. The present study's findings are consistent with the existing idea of what underlying dimensions warmth and competence are made up of and adds by showing that positive and interested are two dimensions not necessarily considered being included in the impression of warmth before.

Research has found that patients' impressions of health care providers warmth and competence influences their treatment outcomes (for an overview over mentioned research, see Daniali & Flaten, 2019). However, there is a gap investigating the contextual factors that influence and shape patients' impressions of their health care providers NBs (Ashton-James et al., 2019; Blanch-Hartigan et al., 2018). This study explored the role of mood on impressions of warmth and competence and presented evidence that patients in a positive mood find the health care providers warmer and more competent regardless of the actual NB characteristics portrayed by the health care providers.

Conclusion

This study contributed to a better understanding of what underlying dimensions the impressions of warmth and competence consist of and that participants in a positive mood found health care providers warmer and more competent. Greater understanding of what impressions of warmth and competence consist of, and how to convey these characteristics through NBs, can lead to the fabrication of a NB training protocol to train health care providers in their NB communication skills. Future research should also focus on mood as a

contextual factor influencing patients' impressions of NB characteristics in health care providers, as this can affect patients' final treatment outcomes.

Strengths & limitations

The first main strength of this study project is the larger ecological validity of the thin slices used in the condition groups of the survey, rather than still photos used in most other research in the NB field. The second main strength is the validation of the condition groups, which indicates a successful manipulation of the macro-level NB characteristics conveyed. Moreover, it appears that this is one of the first studies investigating the role mood has on impressions of NB characteristics in health care contexts, with a demonstration that PA predicts higher ratings of warmth and competence.

However, it is important to note that results could be influenced by the online design of the survey, participants finding the survey too long and/or it's professional language too advanced, as the members of this Bachelor group noted that several participants did not finish the survey. Further on, generalizability should be considered with care, as convenience and snowball method sampling could have given a sample consisting of mostly university students. Another limitation is the skewedness of the sample scoring high on PA, as this has the consequence of not being able to test the role of NA on impressions of NB warmth and competence. The last limitation is that the video conditions which were intended to portray an impression of a certain NB characteristic, only were validated based on one item, while impressions of NB are more complex. This should be considered in future work.

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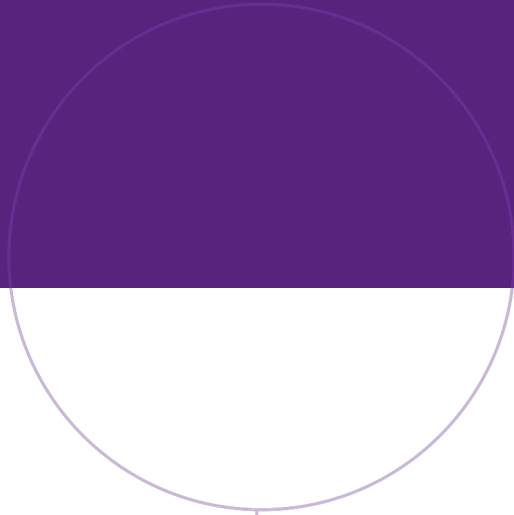
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