

Candidate: 10077

The Role Of Culture on the Perception of Nonverbal Behavior of Healthcare Providers

Bachelor's thesis in Psychology 2900

Supervisor: Hojjat Daniali

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Department of Psychology



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Preface and self-declaration

This bachelor thesis in Psychology from the Norwegian University of Science and Technology (NTNU). Following the APA manual seventh edition (American Psychological Association, 2020). The thesis was part of a research project consisting of two phases collaborated on by six bachelor students, but was individually written by me, and supervised by Hojjat Daniali.

The first phase was preplanned by the supervisor, here, reliability and validity testing of videos portraying nonverbal behaviors was the main aim, statistical analysis was done together in a group of six students and individually. Videos with raw footage were provided by the supervisor, while sorting and picking videos, as well as coding, was done by the students. Editing of the videos for coding and use in the online study for phase two was done by me.

Phase two of the study included making an online survey which was done together by all students in order to cover all the group members research questions. Recruiting participants, coding in nettskjema, and initial cleaning of the dataset was done collectively. Finding relevant literature, appropriate scales, data analysis and interpretation and writing of results for my thesis was done by me. The research question and hypotheses are all based on my own idea.

I want to thank Hojjat Daniali for valuable input and feedback, as well as patience and understanding. I would also like to thank my peers in the group for their great teamwork and the openness for discussions about the project. I would like to thank my family and partner for their immense support.

Abstract

This thesis explores if culture can be one of the factors causing differences in the perception of nonverbal behavior (NB). Healthcare professionals express that they do not have the cultural competence to effectively communicate with minority group patients (Pettersen et al., 2022). NB is an essential part of our communication, still, little is known about what causes the same NB to be perceived differently by different people. The thesis has two phases.

The first phase tests the reliability and validity of videos showing a healthcare provider displaying different NB. These NBs were displayed in seven different conditions ('Warm and Friendly', 'Cold and Unfriendly', 'Competent and Professional', 'Incompetent and Unprofessional', 'Enthusiastic and Interested', 'Unenthusiastic and Bored' and a 'neutral'). Seven coders rated the NB characteristics in the videos with a researcher made rating scale. The results support the videos' validity and reliability, making them adequate for use in the online study in phase two.

In phase two, participants ($N=124$) were grouped into high and low collectivist and individualist groups based on their answers on a scale measuring cultural values. All participants rated the NB characteristics in the videos. The findings indicated that there is a difference between the two collectivism, as well the two individualism groups in the perception of NB. However, a two-way MANOVA did not support that it was culture that caused this difference. There cannot be drawn a definite conclusion that culture effects perception of NB, but there is a difference in the perception of NB between the two culture groups.

Keywords: Nonverbal behavior, Culture, healthcare, communication

There are many factors that influence communication. It is often thought that words are most efficient at conveying messages, however, research shows how non-verbal behavior (NB) is central to understanding and learning the actual meaning behind our words (Manusov & Patterson, 2006, p.xxiii). Blanch- Hartigan et al., (2018) explain NB as everything besides spoken words, such as; gestures, facial movement, body position, interpersonal distance, appearance cues, vocal cues, and characteristics of the environment. These behaviors can be divided into two levels: micro- and macro-level NB. Micro-level NB can be divided into categories such as gestures, posture, touching behavior, facial expression and vocal behavior (Daniali & Flaten, 2019; Knapp et al., 2013, p.12). Macro-level NB is a collection of the micro-level NB and together they convey a psychological meaning, like empathy or anger (Daniali & Flaten, 2019).

Non-verbal communication refers to the influence NB has on how others are perceived. There are two processes in nonverbal communication; encoding, which is the production or conveying of NB, and decoding, which is the interpretation of this behavior. The process of receiving nonverbal messages includes giving meaning to, or interpreting those messages (Knapp et al., 2013, p.5). The meaning given to the NB depends on contextual information; the encoder (sender) and decoder (receiver) of the behavior, their relationship, and the other NB present are all information that must be considered when understanding the meaning of the NBs.

There are no single meanings to NBs, and many factors can effect how NB is interpreted. This thesis investigates culture as a factor and how it may affect the interpretations of macro-level NB. In this thesis, NB in the healthcare setting is looked at specifically. There is evidence that suggests healthcare provider NB influences several aspects of the patient's experience, including the view of their healthcare provider or treatment, patient satisfaction, positive health

outcomes and increased diagnostic accuracy (Mast, 2007; He et al., 2018; Kraft-Todd et al., 2017).

Aruguete & Roberts (2002) investigated the effect of the race and nonverbal communication style of physicians on participants' evaluations. The present thesis is not looking at the race of the healthcare provider, the results of the study also showed that when the verbal and NB of physicians were controlled, there was no main effects of race, this means that participants did not evaluate the physicians differently based on their skin color. On the other hand, results that are very relevant for this thesis is that when physicians displayed non-verbal concern, participants rated themselves as more satisfied and trusting. Additionally, they were able to recall more medical information. Participants also rated themselves as more likely to comply with medical treatment, self-disclosure personal information, and recommend the physician. (Aruguete & Roberts, 2002). These results show that physician's NB has clear effects on participants' evaluations of physicians.

What is culture how can it be measured

As mentioned above, this thesis looks at culture as a factor for differences in the decoding process of NB. Research shows that cultural differences go deeper than beliefs and values. They extend all the way to the level of fundamental forms of self-conception and social interaction, and even to the perceptual and cognitive processes people use to develop new thoughts and beliefs (Gilovich et al., 2019, p.25). Hofstede (2011) describes culture as “the collective programming of the mind that distinguishes the members of one group or category of people from others”. He refers to patterns of thinking, feeling and potential acting as mental programs, and explains how these are learned throughout a person's lifetime (Hofstede et al., 2010, p.5). It

is difficult to make an abstract concept such as culture into a measurable observation, as it is difficult to operationalize.

In an attempt to operationalize culture, Hofstede studied survey data from employees of “International Business Machines “(IBM) about values in more than fifty countries. Through statistical analysis of average answer by country, common problems were revealed (Hofstede et al., 2010, p.30). The basic problem areas found represent dimensions of cultures. Dimensions are an aspect of a culture that can be measured relative to other cultures. Every dimension describes two opposite extremes. This allows researchers to compare various factors of cultures (Faheti et al., 2020; Hofstede et al., 2010, p.31). One of the cultural dimensions defined by Hofstede is “Individualism as opposed to Collectivism”, which will be used to operationalize culture for this thesis. The dimension has roots in the differences between individualist and collectivist societies. According to Hofstede et al. (2010, p.91-92), in individualistic societies the interest of the individual is more important than the interest of the group. The ties between individuals are loose, and everyone is expected to look after themselves. A healthy person is not supposed to be dependent on the group, but is independent. In collective societies, the interest of the group is most important. In these societies, a mutual dependence develops, and people think of themselves as a “we”, hence, individuals in these societies are interdependent. Hofstede summarizes ten differences between the two societies in order to give an overview of them (see table 1).

Table 1 “Ten Differences Between Collectivist and Individualist Societies” (Hofstede, 2011)

Individualism	Collectivism
Everyone is supposed to take care of him- or herself and his or her immediate family only	People are born into extended families or clans which protect them in exchange for loyalty
“I” - consciousness	“We” - consciousness
Right of privacy	Stress on belonging
Speaking one’s mind is healthy	Harmony should always be maintained
Others classified as individuals	Others classified as in-group or out-group
Personal opinion expected: one person one vote	Opinions and votes predetermined by in-group
Transgression of norms leads to guilt feelings	Transgression of norms leads to shame feelings
Languages in which the word “I” is indispensable	Languages in which the word “I” is avoided
Purpose of education is learning how to learn	Purpose of education is learning how to do
Task prevails over relationship	Relationship prevails over task

Culture has a large influence on NB. Matsumoto and Hwang (2013) Believe that cultural differences in NB can be summarized according to cultural norms associated with the overall expressivity that is encouraged or discouraged in specific cultures. Expressive cultures are likely to use facial expressions and gestures more frequently, with greater intensity and duration, speak in louder voices, use direct gaze and feature relaxed and open postures at closer distances. Reserved cultures are likely to use fewer facial expressions and gestures, speak in softer voices, avoid direct gaze, and display more rigid, closed postures at relatively greater distances (Matsumoto & Hwang, 2013, p. 112).

Culture in the healthcare sector

Cultural competence is a growing topic of conversation in healthcare settings, especially in the education of healthcare professionals (Čebon & Huber, 2021). With about 281 million international migrants, making up 3,6 percent of the world population in 2020, the world is getting more culturally diverse every year (McAuliffe & Triandafyllidou, 2021). Generally, cultural competence refers to knowledge of social and cultural factors that influence illness and related behavior, and actions taken to provide the best quality care considering each patient's background (Constantinou et al., 2022). It is not unreasonable to imagine that differences in perception of NB could be one of these social and cultural factors, though there is little literature on this point. Knowledge of this and how it effects the provider-patient communication could potentially increase the cultural competence of physicians, allowing them to give better care based on the patient's background.

Minorities receiving lower quality healthcare than non-minorities is a prominent issue. Populations under the mandate of the United Nations refugee agency expanded by over 70% from 2012 to 2018. Of these, over 20% had given up on seeking medical care entirely due to the difficulties they encountered (Baugh et al., 2020).

Not knowing why people of different races receive different treatment in healthcare, Aruguete & Roberts (2002) hypothesized that interracial interactions between physicians and patients may be hindered by difficulties in communication. And that improvement in the communication skills of physicians could potentially reduce the problem and improve the health status of minorities (Aruguete & Roberts, 2002). This hypothesis is partly supported by finding

of a study by Petterson et al., (2022), who set out to describe the cultural competence of primary healthcare professionals, that specialize in diabetes care, and examine related factors that affect cultural competence. A cross-sectional study was performed, involving a questionnaire, the Cultural Competence Assessment Instrument (CCAI-S). This is a self-report instrument aiming to measure perceived cultural competence in healthcare professionals. This questionnaire contains three domains: 'Openness and awareness', 'Workplace support' and 'Interaction skills'. The results of the study showed that 58% of the primary healthcare professionals perceived themselves as open and aware regarding clients with other cultural backgrounds. 36% perceived they had good interaction skills in relation to cultural competence. Finally, 6% reported having received support from their workplace in relation to cultural competence. So even though the healthcare professionals perceived that they had developed cultural openness and awareness, only a third felt they had the interaction skills needed to be culturally competent.

Aim of the study

There is little to no literature on the way culture can influence the perception of NB, this is the gap this thesis tries to fill. The question is if participants who identify with an individualistic culture will perceive NB differently than participants who identify with a collectivistic culture. The hypothesis is based on the evidence that people from different cultures have different expressions of NB (Matsumoto & Hwang, 2013, p. 112). If people have different expressions of NB, just like they have different verbal languages, it would be misguided to assume that NB is interpreted the same by everyone. By understanding the differences in the nonverbal communication, healthcare providers can increase their cultural competence and use it as a tool for providing better healthcare to their patients in minority groups.

To investigate the main aim, this study has two phases. The first phase was developed with the goal of testing the validity and reliability of videos in which actors, portraying a healthcare professional, displayed different NB. These videos were shown to participants in an online survey in phase 2 of the study. In total there were seven conditions in which participants could be put, the videos therefore show seven NB characteristics; 'Warm and Friendly', 'Cold and Unfriendly', 'Competent and Professional', 'Incompetent and Unprofessional', 'Enthusiastic and Interested', 'Unenthusiastic and Bored' and a 'neutral'. All videos had the same verbal information, while the NB displayed was different in each condition.

To ensure the validity and reliability, seven coders coded all the videos. The results from the coding were compared to each other and analyzed to test the following hypotheses: the coding items had acceptable reliability (H1), also, the NB characteristics had to be coded consistently across the coders and actors (H2, H3). The last hypothesis was that the NB conditions expressed the intended NB characteristics, they had to have construct validity (H4).

The second phase of the study was an online survey where anonymous participants viewed the same videos that were used in phase one. Participants also had to answer questions about their cultural affiliation and rate the NB characteristics of the healthcare provider in the videos. The goal was to test two hypotheses: (H5) participants who score high on collectivism or individualism will rate the NB differently than participants who score low on collectivism or individualism. Lastly, the differences in perception of NB are because of the participant's cultural affiliation (H6). Each hypothesis is tested in the results and discussed in a separate discussion for each phase, followed by a general discussion and conclusion.

Method Section Phase 1

The purpose of the first phase is to determine the validity and reliability of the videos conveying the different NB.

Coders

The coding of the videos was done by 7 students at NTNU, 6 bachelor students who were a part of the group studying NB and 1 master's degree student who was co-supervisor for the project. All coders were female, ranging from 21 to 25 years old ($M=22.6$, $SD= 1.5$), and fluent in English. Coders received training through an online video by Mollie Ruben, an expert within the field of NB.

Script and Videos

The videos were of 7 conditions portraying macro-level NBs. 'Warm and Friendly', 'Cold and Unfriendly', 'Competent and Professional', 'Incompetent and Unprofessional', 'Enthusiastic and Interested', 'Unenthusiastic and Bored' and a 'neutral' condition. There were two actors, therefore all conditions were viewed twice, but with different actors, resulting in 14 conditions. The video length ranged from 2,5 to 3,5 minutes. The same verbal script was used for all conditions to ensure that the verbal information of the conditions was identical. To maintain consistency in other aspects of the video the actors were in the same place; a room with white walls and a wooden desk with a clipboard in front of them. The script was originally used for a pain experiment, (Daniali et al., 2023) and divided into 12 chunks. Of these, six were edited to fit the narrative and included in the survey. For the coding of the videos, all six chunks were edited together and shown as one longer video.

Actors

Each videotape featured a white female physician (portrayed by an actor) who was taking the viewer through an experiment for a pain-relieving cream. The actors who were playing the healthcare providers were Norwegian and between the ages 26 and 32 years. They were both wearing a white lab coat and had their hair in a ponytail with no excessive makeup. The two actors portraying the physicians were similar on various things like skin and hair color. The two actors received approximately 10 hours of training in how to convey the different NB's.

NB characteristics

When recording the videos, the actors were asked to play the verbal script while expressing the desired NB. Hojjat Daniali, a non-verbal communication researcher and a professional actor were present when filming and provided feedback for the actors. The actors had to repeat the scene until the desired performance was recorded. This section will explain the nonverbal characteristics in each condition.

The 'Warm and Friendly' condition required the actors to express frequent smiling, enhanced eye contact, welcoming body postures with expressive hand movements. They had to speak with a warm and friendly tone of voice. For the condition 'Competent and Professional' the actors were instructed to show a serious facial expression, limited smiling, more dominant body gestures and hand movements, and spoke with an authoritative tone of voice. In the condition 'Enthusiastic and Interested' the actors showed excited facial expressions with a longer gaze, enhanced body movements, open body gestures, and an enthusiastic and energetic tone of voice. These characteristics are quite positive in the eyes of most, therefore these NBs are positive.

The following three conditions have nonverbal characteristics that are generally seen as more negative, making the NB negatively loaded. In the condition ‘Cold and Unfriendly’ there was close to no smiling, minimal gaze, a cold tone of voice and the body posture was defensive. In the condition ‘Incompetent and Unprofessional’ the actors were told to show an anxious facial expression and tone of voice, their body movements were supposed to be agitated with worried eye and lip movements. The condition ‘Unenthusiastic and Bored’ required the actors to show bored facial expressions, minimal gaze and bored body movements, as well as speak in a flattened and monotonous tone of voice.

Lastly, for the ‘Neutral’ condition, the actors kept all their NB neutral throughout the recording, this meant a flat plain face, not moving the hands, no body movements, straight sitting position, sitting a meters distance from the camera, and a monotonous tone of voice. The actors were also told to not look directly into the camera, except for one straight look in each dialogue.

NB rating scale

A google form was used to rate the videos. The question answered to rate was: “How much did the health care provider seem to be...” followed by 24 macro-NB characteristics like “Competent”, “Interested”, “Hostile” and “Intimidated and unsure”. Each statement was then rated on a 5-point Likert scale, ranging from 0= “not at all” to 4= “very much”. All coders rated the items individually and were told to go with their first impression and not think about their answer too much to get their initial impression of the NB. Each condition except neutral had one NB characteristic related to it, the reason neutral did not have one was because it is meant to convey the absence of NB. The NB characteristic for condition ‘Warm and Friendly’ was *warm*, ‘Competent and Professional’ was rated through *competent*, and ‘Enthusiastic and Interested’ through *interested*. ‘Cold and Unfriendly’ was rated through *negative*, ‘Incompetent and

Unprofessional' through *incompetent*, and lastly the condition 'Unenthusiastic and Bored' was rated through the item *bored*.

Procedure

As a group, the coders watched the videos one by one, starting with the positive conditions of both actors ('Warm and Friendly', 'Competent and Professional', 'Enthusiastic and Interested'), then the negative ('Cold and Unfriendly', 'Incompetent and Unprofessional', 'Unenthusiastic and Bored'), and lastly the neutral condition. Coding took about 2 hours.

Data Screening and statistical analysis

Descriptive statistics were evaluated, and the data was checked for missing values and normal distribution. New variables were made and added for the dataset based on the means from the coders on each item.

Reliability and validity tests for the coding videos was done in IBM SPSS statistics Version 29.0.0.0 (241).

To test the reliability of the items in the rating scale a Cronbach's alpha was used. To test consistency between coders the intraclass coefficient (ICC) was used, and the potential differences between actors were controlled for with a student's t-test.

A one-way ANOVA with a Tukey's post-hoc was used to test validity and differences between ratings of items in the NB condition groups. The items from the rating scale (Table 4) used to measure the conditions were *warm*, *competent*, *interested*, *incompetent*, *negative* and *bored*.

Ethics

There was no need to apply for ethical approval for this phase of the study as it was anonymous and there was no personal or sensitive data collected. The study acted in accordance with the guidelines of the National Research Ethics Committees (National Research Ethics Committees, 2022)

Results Phase 1

Descriptive statistics

Table 2

Mean and standard deviations of items rating NB characteristics across conditions (N=7)

NB video	Competent <i>M (SD)</i>	Warm <i>M (SD)</i>	Interested <i>M (SD)</i>	Negative <i>M (SD)</i>	Incompetent <i>M (SD)</i>	Bored <i>M (SD)</i>
W&F	3.07 (0.10)	3.79 (0.10)	3.86 (0.20)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
C&P	3.92 (0.10)	2.36 (0.51)	3.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
E&I	3.00 (0.00)	2.79 (0.10)	3.71 (0.00)	0.00 (0.00)	0.14 (0.00)	0.00 (0.00)
C&U	2.64 (0.30)	0.36 (0.30)	0.93 (0.10)	2.86 (0.20)	0.29 (0.00)	1.57 (0.40)
I&U	0.14 (0.00)	1.36 (0.30)	0.86 (0.00)	0.21 (0.10)	3.93 (0.10)	0.57 (0.40)
U&B	0.79 (0.30)	0.07 (0.10)	0.00 (0.00)	3.00 (0.61)	2.29 (0.00)	4.00 (0.00)

N	1.57 (0.40)	1.00 (0.40)	0.71 (0.40)	0.36 (0.51)	0.29 (0.00)	0.43 (0.40)
Total	2.16 (1.32)	1.67 (1.32)	1.87 (1.54)	0.92 (1.35)	0.99 (1.47)	0.94 (1.42)

Note: C&P= 'Competent and Professional', W&F= 'Warm and Friendly', E&I= 'Enthusiastic and Interested', C&U= 'Cold and Unfriendly', I&U= 'Incompetent and Unprofessional', U&B= 'Unenthusiastic and Bored', N= 'Neutral'

Reliability of items

Consistency across conditions was found with Cronbach's alpha, which needs to be $\alpha > .70$ to be accepted. All items showed, $\alpha > .87$, except fake, $\alpha = .50$, excluding it from further analysis.

Interrater reliability of coders

To show internal consistency between coders and the ratings of NB characteristics the interrater reliability (ICC) needs to have a value above .60. The test showed ICC $> .60$ for all items except dominant. ICC = .59, empathic ICC= .49 and fake ICC=.12.

Interrater reliability of actresses

Interrater reliability of the NB characteristics of the actresses were $\alpha > .92$ and ICC $> .69$.

Differences between actresses

An independent samples t-test was used to test differences of the average perception of NB by the coders on the actors NB. The results showed no significant results $p > .05$ between actor 1, $M = 1.45$, $SD = 1.47$, and actor 2, $M = 1.40$, $SD = 1.44$. Levene's test was also not significant, therefore it can be concluded that there is equal variance in the groups and the actors can be merged for further analysis.

Validity of condition groups

A one-way MANOVA shows a significant main effect of the conditions for rating in all items $F_s(6, 7) \Rightarrow 3.9.61, p < .001$. A Tukey post hoc test was used to investigate this result further.

Competent was rated higher, $F(6,7) = 71.15, p < .001$, in the ‘Competent and Professional’ condition than the ‘Incompetent and Unprofessional’ condition, $\Delta M = 3.79, p < 0.001$, and in the ‘Neutral’ condition, $\Delta M = 2.36, p < 0.001$.

Warm was rated higher in the ‘Warm and Friendly’ condition than in the ‘Cold and Unfriendly’ condition, $\Delta M = 3.43, p < 0.001$, as well as the ‘Neutral’ condition $\Delta M = 2.76, p < 0.001$.

Interested was rated higher in the ‘Enthusiastic and Interested’ condition than in the ‘Unenthusiastic and Bored’ condition, $\Delta M = 3.71, p < 0.001$, and the ‘Neutral’ condition $\Delta M = 3.00, p < 0.001$.

Bored was rated higher in the ‘Unenthusiastic and Bored’ condition than in the ‘Enthusiastic and Interested’ condition, $\Delta M = 4.00, p < 0.001$, and the ‘Neutral’ condition, $\Delta M = 3.57, p < 0.001$.

Negative was rated higher in the ‘Cold and Unfriendly’ condition than in the ‘Warm and Friendly’ condition, $\Delta M = 3.86, p < 0.001$, as well as in the ‘Neutral’ condition, $\Delta M = 2.50, p < 0.001$.

Incompetent was rated higher in the ‘Incompetent and Unprofessional’ condition than in the ‘Competent and professional’ condition, $\Delta M= 3.93$, $p < 0.001$, and in the ‘Neutral’ condition, $\Delta M= 3.64$, $p < 0.001$.

Phase 1 Discussion

Phase one of the study was done to validate and test the reliability of the videos of the healthcare providers, the results reveal findings to support our hypotheses.

The high values in the Cronbach's alpha support the first hypothesis (H1) of coding items having acceptable reliability. The results indicate high internal consistency for all the NB coding items except for *fake*. The intraclass correlation (ICC) showed that THE coders were consistent in their ratings of the coding items, except for *dominant*, *empathic* and *fake*. This finding shows support for the second hypothesis (H2) which states that the NB characteristics are coded consistently across coders. Because the items were not operationalized there was no definition of the items given to the coders. It is important to ensure that people have the same understanding of the coding items before they are sent out to a larger population. To illustrate with an example; this means that when coders viewed the videos in the NB condition ‘Warm and Friendly’ coders rated the NB as equally high or low with the item *warm* etc. This indicates that coders had the same understanding of the coding items even without clear definitions.

The next results came from the t-test and a MANOVA. The t-test showed that there were no significant differences in how the coders rated the NB of the actors. This supports hypothesis three (H3) for NB characteristics being coded consistently across actors. In addition, these results show that the coders’ perception of the NB is not because of the actors' individual differences, but because of the manipulation of the NB. The similarities make it possible to merge the results

of the two different actors into a single variable in the study for phase two. Resulting in there being up to twice as many participants for each condition, producing more reliable and valid data.

Support for the fourth hypothesis (H4) was given through the results of the MANOVA which was that the NB conditions expressed the intended NB characteristics. For this to be valid the NB characteristics, or the items, had to be rated significantly higher in the condition they are associated with than in the condition that is supposed to show the opposite. For example, the rating of *warm* in the ‘Warm and Friendly’ condition had to be significantly higher than in the ‘Cold and Unfriendly’ condition. For the conditions conveying positive NB, the biggest difference was always with one of the conditions conveying negative NB and vice versa, though not always with its counterpart. The results give an indication that the coders saw a clearer difference between positive and negative NB, than between the individual conditions themselves. Grouping the conditions into the variables ‘positive’, ‘negative’, and ‘neutral’ may then give stronger support to the hypothesis that the conditions express the intended NB characteristic. For the ‘Neutral’ NB condition there was no item to measure how neutral the actor appeared. Though, the results show that for the ‘Neutral’ condition, the coding items *bored*, *incompetent* and *negative* (‘negative’ NB) had low ratings and the coding items *warm*, *competent* and *interested* (‘positive’ NB) had low to moderate ratings. The actors were supposed to show as little NB as possible in the ‘Neutral’ condition, this is not easy, as there is always some NB showing. So, even though there was no coding item for neutral, the low ratings indicate that coders perceived the actors as sufficiently neutral.

Method section Phase 2

Participants and sampling methods

Participants were 124 after exclusion, both women and men, entered the study. The sample was between the ages of 18 to 82, $M=34.60$, $SD=15.321$. 15 participants were excluded from further analysis because they did not meet the inclusion criteria. These criteria were: 1) that the participant did not use less than 7 minutes, 2) the participant did not use more than 1 hour, 3) the participant answered the control question wrong, 4) the participant was below the age of 18.

Official data collection took place from 17th of March 2023 until 17th of April 2023. On 15th of March the survey was sent out to 20 participants who were family and friends of the students to conduct a small pilot study. Because there were no problems with the pilot study, these participants are included in the total sample of 124.

In order to recruit participants, the main sampling methods used were snowball and convenience sampling. The snowball method was used in a way of convenience where participants were encouraged to share the survey, but not with an intention of reaching a specific group, just the general population and as many as possible. The survey was posted on several online platforms like Facebook and Instagram, as well as subreddits like r/Psychology and r/Samplesize that have platforms specifically to post surveys. Furthermore, flyers were created with a QR-code and posted at several university campuses of NTNU Trondheim and around Trondheim city center, a digital version of the flyer was also put up on screens in student housing. At NTNU Dragvoll, the survey was promoted to psychology students during lectures, as well as posted on Innsida.

Measurements

As mentioned in the introduction, this thesis utilizes individualism as opposed to collectivism (INDCOL) dimension in order to operationalize culture.

Culture was measured using a 16-item version of the Singelis et al. (1995) scale, a version which was initially created by Triandis and Gelfand (1998) but adopted, modified and validated by Fatehi et al., (2020). This scale aims to measure the vertical and horizontal aspects of the INDCOL dimension. Nevertheless, for the purpose of this thesis the scale will be used to only measure individualism and collectivism. In the strengths and limitations portion of this thesis there will be further detail about why this decision was made. The vertical and horizontal aspects of individualism and collectivism will not be discussed in this thesis.

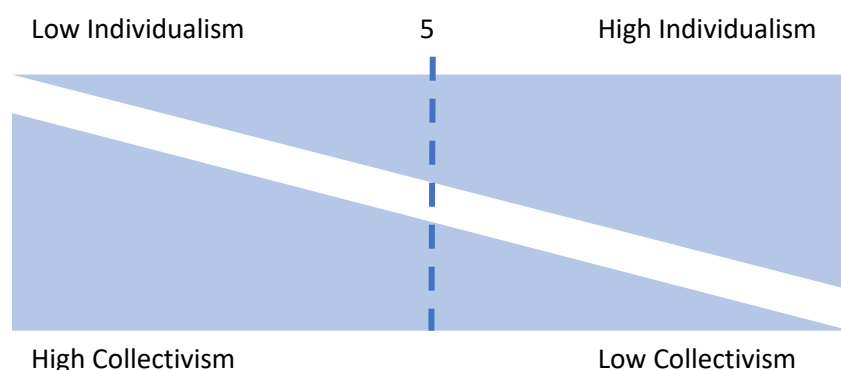
As mentioned, the instrument includes 16 items and response options on a 9-point Likert-scale, where 1 indicates complete disagreement, and 9 indicates complete agreement. The reliability of this scale was tested by Fatehi et al., (2020) with Cronbach α ranging from 0.58 to 0.71 for the factors. When dealing with psychological constructs, values below 0.7 can be expected because of the diversity of the constructs being measured. Some also suggest that in the early stages of research, values as low as 0.5 can suffice (Field, 2018, p. 823). This scale does not have many items, when the number of items increase the values of Cronbach's α does too.

The scale contains four factors: Horizontal individualism (question 1, 5, 9 and 13), Horizontal collectivism (question 2, 6, 10 and 14), Vertical individualism (question 3, 7, 11, 15) and Vertical collectivism (question 4, 8, 12, 16). As noted, for this thesis the scale was used to measure only collectivism (question 2, 4, 6, 8, 10, 12, 14 and 16) and individualism (question 1, 3, 5, 7, 9, 11, 13 and 15). In this study, a mean score higher than 5 was treated as either high collectivism or individualism, and a score lower than 5 was treated as low collectivism or individualism.

All participants answer all questions; therefore, they could be put in both the collectivism and individualism group. The figure below (figure 1) illustrates how the same participants who

are in the low collectivism group fall somewhere within the high individualism group, and vice versa. Culture is a fluent dimension where the participant can have both collectivist and individualist values. When reading the results and discussion, a difference between the high individualist group and the low individualist group can also be interpreted as a difference between a group with mainly strong individualist values and a group with mainly low individualist values and most likely stronger collectivist values. The same goes for the high/low collectivist groups.

Figure 1



Procedure

Each participant was asked to answer a questionnaire with in total four videos ranging from 18 seconds to 1 minute and 36 seconds. This was deemed long enough to be able to accurately infer the NB. Ambady et al. (2000), would define this as thin slices:

“... a brief excerpt of expressive behavior sampled from the behavioral stream. By brief we mean any excerpt with dynamic information less than 5 minutes long. ... Thin slices can be sampled from any available channel of communication, including the face, the body, speech, the voice, transcripts or combination of the above.” (Ambady et al., 2000, p.203)

A study by Furley & Schweizer, (2016), shows that a clip of about 4 seconds can also be enough for people to judge whether athletes are winning or losing based on NB. This shows us how humans can draw conclusions about someone's NB in just a few seconds, even if it is not in person, but through a video.

Participants were instructed that the healthcare provider would lead them through the experiment and to follow the instructions as if they were participating in the experiment. After viewing the first video participants were instructed to answer several questions about themselves. Including age, gender, cultural affiliation and their current mood. The next video was introduced by explaining that the healthcare provider was going to introduce the procedure for the pain stimulation and the pain-relieving cream. After watching the video participants were asked to answer questions about the healthcare provider regarding expectations of the cream and a control question regarding the name of the cream. The third video was introduced with an explanation of that participants in the original study were asked to report their stress levels during the pain simulation multiple times. Participants in this study were then asked to imagine they were the participants undergoing the pain stimulation in the original experiment and to report their stress levels. The fourth video had no introduction but was followed with participants being asked to rate statements about the videotaped healthcare provider's nonverbal behavior on a five-point Likert scale. The scale ranged from not at all to very much, it was the same NB rating scale used by the coders in phase 1 (see method section phase one, NB rating scale). The last part of the questionnaire included questions about satisfaction and trust not relevant for this thesis.

Data screening and Statistical analysis

IBM SPSS statistics Version 29.0.0.0 (241) was used for the statistical analysis.

Because it was only possible to submit completed questionnaires, there was no need to address missing data.

When running a crosstab analysis of the data it became clear that there was a skewed distribution of participants across conditions and the individualism/collectivism groups. When grouping the conditions into a new variable with three levels, 'positive' NB, 'negative' NB and 'neutral' NB, the distribution of participants became more equal.

Correlation analysis was used to create new variables for each item on the rating scale which correlated most with their matched condition.

Mann-Whitney U test was conducted to determine whether ratings of NB differed between high and low collectivist and high and low individualist participants in all conditions.

To investigate if differences in ratings of NB do in fact stem from the participants cultural affiliation a two-way MANOVA was conducted.

Ethics

There was no need to apply for ethical approval for this phase of the study as it was anonymous and there was no personal or sensitive data collected. The study acted in accordance with the guidelines of the National Research Ethics Committees (National Research Ethics Committees, 2022)

Results Phase 2

Participant characteristics

Cultural affiliation was calculated by taking the mean of the questions related to individualism and the mean of the ratings of questions related to collectivism. New variables

were computed where participants who had a mean score higher than 5 were considered high on the scale of individualism or collectivism and those who had a mean rating under 5 were considered to be on the low side of collectivism or individualism.

Table 3. the distribution of high and low individualism and collectivism

Individualism		Collectivism	
High	Low	High	Low
62	59	70	54

Note. All participants.

Descriptive statistics and correlations of items

Table 4. Descriptive statistics of the items on the NB rating scale

Item	Mean	Standard deviation
Competent	2.27	1.06
Confident	2.48	1.20
Independent	2.21	1.14
Competitive	1.34	1.27
Intelligent	2.43	1.05
Tolerant	1.91	1.18
Warm	1.81	1.22
Sincere	1.88	1.24
Good Natured	1.91	1.16
Interested	1.81	1.35
Positive	2.02	1.33
Expressive	1.99	1.32
Dominant	1.74	1.26
Empathic	1.55	1.17
Bored	1.62	1.49

Negative	1.10	1.16
Shy	.79	1.14
Passive and Submissive	1.07	1.20
Hostile	.85	1.01
Anxious	.69	1.02
Dumb	.54	.85
Incompetent	.78	1.04
Fake	1.39	1.27
Intimidated and unsure	.75	1.10

Note. Values range from 0 (not at all) to 4 (very much) on a 5-point Likert scale.

In phase 1 of this experiment the results of the MANOVA showed that the NB characteristics in the condition groups showed the intended NB. The MANOVA used the items *competent, warm, interested, incompetent, cold* and *bored* to measure this.

A correlation analysis was conducted on items *competent, warm, interested, incompetent, cold* and *bored* to see which combination of items best described the NB characteristics.

Table 5. Correlations for the measurement of competence

Item	1	2	3	4
1.Competent	1			
2.Confident	.78	1		
3.Independent	.72	.72	1	
4.Intelligent	.79	.66	.69	1

Table 6. Correlations for the measurement of warmth

Item	1	2	3	4	5
1.Warm	1				

2.Tolerant	.73	1			
3.Sincere	.70	.65	1		
4.Good natured	.78	.70	.73	1	
5.Empathic	.79	.77	.62	.78	1

Table 7. Correlations for the measurement of interested

Item	1	2	3
1.Interested	1		
2.Positive	.82	1	
3.Expressive	.80	.83	1

Table 8. Correlations for the measurement of negative

Item	1	2
Negative	1	
Hostile	.64	1

Table 9. Correlations for the measurement of incompetent

Item	1	2	3	4	5	6
1.Incompetent	1					
2.Shy	.55	1				
3.Passive and submissive	.59	.51	1			
4.Anxious	.56	.74	.40	1		
5.Dumb	.71	.53	.52	.59	1	
6.Intimidated and unsure	.75	.71	.50	.74	.64	1

Table 10. Correlations for the measurement of bored

Item	1
1. Bored	1

Items which had the highest correlations with the target variable were computed into new variables which were used for the Mann-Whitney U and MANOVA analyses.

Differences in ratings of nonverbal behavior across conditions.

In condition ‘Warm and Friendly’, ratings of *competence* were significantly higher in the high collectivism group than in the low collectivism group, $U=75.5$, $z=1.99$, $p=.046$, $r=0.44$

In condition ‘Warm and Friendly’, ratings of *incompetence* were significantly higher in the low collectivism group than in the high collectivism group, $U=20$, $z=-2.31$, $p=.025$, $r=-0.52$

In condition ‘Warm and Friendly’, ratings of *bored* were also significantly higher in the low collectivism group than in the high collectivism group, $U=19$, $z=-2.49$, $p=.02$, $r=.56$

In condition ‘Cold and Unfriendly’, ratings of *negative* were significantly higher in the low collectivism group than in the high collectivism group, $U=3.5$, $z=-2.47$, $p=.01$, $r=0.69$

In condition ‘Neutral’, ratings of *incompetence* were significantly higher in the high individualism group than in the low individualisms group, $U=36$, $z=2.40$, $p=.02$, $r=0.67$

MANOVA Interaction effects between condition and culture on the ratings of nonverbal behavior

The data violates the assumption of adequate sample size and homogeneity of variance-covariance matrices.

Using Pillai’s trace, there was no statistically significant interaction effect between the grouped conditions and individualism on the ratings of NBs, $V=.08$, $F(12, 222) = .74$, $p=.71$

Using Pillai's trace, there was no statistically significant interaction effect between the grouped conditions and collectivism on the ratings of NBs, $V=.15$, $F(12, 228) = 1.54$, $p=.11$. However, separate univariate tests on the outcome variables revealed one significant interaction effect between grouped conditions and collectivism on the rating of 'Cold and Unfriendly', $F(5, 118) = 3.41$, $p= .04$.

Discussion phase 2

In this phase, the aim was to explore whether the perception of NB of healthcare professional is influenced by culture identity, through the use of recorded videos.

Our findings in the MANOVA suggest that there is no significant interaction effect between the grouped conditions and culture on the ratings of NB, with the exception that there was a significant interaction effect between the grouped conditions and collectivism on the rating of 'Cold and Unfriendly'. Nevertheless, this effect is not valid because the data violates the assumptions that must be met to run a MANOVA and have valid significant results. The assumptions the data does not meet are normally distributed data and the small sample size. This caused the rejection of the hypothesis six on culture being what causes differences in the perception of NB (H6). One of the main problems with the data is that it does not have a normal distribution. A Mann-Whitney U test can be used on data with skewed distribution, as well as a small sample size, usually with more than 5 in each group. The results of this test show multiple significant differences between the low and high collectivism/individualism groups. Supporting the fifth hypothesis (H5) about there being a difference in interpretation of the NB between the low and high collectivism/individualism groups.

Most significant results were in the condition of ‘Warm and Friendly’ between the collectivism groups for the ratings of *competent*, *incompetent*, and *bored*. As shown in the results, ratings of competence were significantly higher in the group with high collectivism scores. Ratings of *incompetent* and *bored* were higher in the group with low collectivism scores. The results of this Mann-Whitney test shows that there is a difference in ratings between the groups, but not why, therefore we do not know what causes these differences. To further explore this, a test like a MANOVA with a post hoc or discriminant analysis is needed (Field, 2018, p. 765). When putting these results into context, it is clear that people who scored higher for collectivism rate the videotaped healthcare provider as more competent when they were expressing ‘Warm and Friendly’ NB. On the other hand, participants who scored lower on collectivism, rate the videotaped healthcare provider significantly more *incompetent* when expressing ‘Warm and Friendly’ NB characteristics. As mentioned in the method section of phase one (see “NB characteristics”), the actors were told to express frequent smiling, enhanced eye contact, expressive hand movements and having a warm and friendly tone of voice in the ‘Warm and Friendly’ condition. It can be hypothesized that participants from less collectivistic cultures see these types of NB in healthcare professionals, making them seem less competent than someone from a more collectivistic culture. It may also be an indication that people from different cultures have different interpretations of NB. This means that it would be wrong to have one universal definition for, for example, competence, as it may look different for someone from a low collectivist culture compared to a high collectivist culture. Of course, other factors cannot be ruled out, like physical appearance, which also plays a role in the differences between the groups.

This result is not enough to conclude that there is a difference between how participants from different cultures interpret NB. It does, however, give an indication that with a data sample which has more participants and a normal distribution there may be a more significant result from a MANOVA.

Summary of discussions

One major thing that became apparent in this study is that NB does in fact have an impact on how healthcare professionals are perceived. Phase one of the study gave support regarding the reliability and validity of the videos and that they conveyed the NB they were intended to, this means that manipulation of the NB was successful. The results in phase two illustrate how two groups of people can perceive someone as either more competent or incompetent, when expressing the same warm and friendly NB characteristics. For healthcare professionals, knowing what NB is appropriate in various contexts will give them the ability to influence their patient's perception of them. Which in return can increase the patient's experience or even their health outcomes. Finding which factors play a role in these differences in perception of NB, especially when it comes to minority groups, could mean the beginning of better provider-patient communication and overall relationship.

Strengths and limitations

This study has multiple limitations linked to the sample. The sample size is low, this causes the sample to be inadequate for most parametric tests, making the results from them unreliable. The results from the study can also not be generalized to the general population, this is both because of the size of the sample and the sampling method. For this study convenience sampling was the main method of data collection, because of this, students are the main

demographic known. Still, there is no way to know where most participants found the online study. There is also a difference in group sizes between the NB condition groups, possibly leading to a loss of statistical power. In phase two, the NB conditions were grouped together as an attempt to reduce some of the differences. Still, the 'positive' NB condition had 53 participants, 'negative' NB had 58 participants and 'neutral' NB group had only 13 participants. The same problem occurs when looking at the collectivism and individualism groups where the 'positive' and 'negative' NB groups have relatively similar sizes (n= 23-33), while the 'neutral' group only has 5-8 participants. These differences in groups make it more difficult to find significant effects.

One major limitation in phase one is that the coders were already aware of the intended NB in each condition. Additionally, the group picked out which videos portrayed the NB most clearly to edit them for coding and further use in the study. Even though the coders were instructed to rate the NB in the videos based on their first impression, it is possible that this prior knowledge resulted in biased ratings. Future research on the subject should consider having one group of people pick the best videos and another group code them to minimize this risk. Something to add as a positive is that there were multiple coders, Blanch- Hartigan et al. (2018), suggests 3-4, and that adding more increases the reliability of the coding process and results.

The online study in phase two was created by five bachelor students who all had their own research questions. All data had to be collected in one online survey, cramming this much material in one survey could have made it confusing to participants. 312 people opened the online survey while only 139 completed the entire survey. This drop in participants could be an indication that the survey was too long for people to finish or that it had too much information,

making it too overwhelming to finish. In following research, the survey should only focus on culture and nonverbal behavior, this way, the confusion of participants could be mitigated.

To keep the study anonymous and without having to file for ethical approval it was important to find a way to measure culture that would not require the participants to give any identifiable information. According to SIKT, racial and ethnic origin are personal information and collecting this information would mean an obligation to report the study to SIKT (SIKT, n.d.). This called for an alternative way to measure culture. As mentioned in the method section of this thesis, the scale used to measure cultural affiliation as originally developed to measure the horizontal and vertical aspects of the collectivism and individualism dimension. Originally the design for the second phase was made to investigate these four dimensions, but because of the small sample size, and the time limit, it was necessary to limit the study to only the collectivism and individualism dimension. Creating two groups ranging from high to low was an attempt to retain the multidimensionality the scale had intended, while keeping to only two groups. On the one hand, these decisions made it possible to run the study without collecting personal information and have enough participants in each group to still run analysis. On the other hand, changing the outcome from the scale, can hurt the validity of the results, because it is difficult to determine whether it measures what it is intended to measure.

Conclusion

The overall aim of the study was to investigate the influence of culture on the interpretation of NB of videotaped healthcare providers, this was done in two phases. The intent of the first phase was to test the validity and reliability of several NB expressed by the videotaped healthcare providers. Both validity and reliability were confirmed through the results, which shows that it is possible to successfully manipulate the NB of an individual, and that the intended NB can be perceived correctly by another individual.

The second phase of the study was developed with the goal of investigating if culture plays a role in differing perceptions of NB. It was found that there is a difference between high and low collectivism and high and low individualism when it comes to the perception of NB in the videotaped healthcare providers (H5). Though, there was no support for the hypothesis (H6) that culture is the mediating factor causing these differences.

Even with the limitations, the study does provide interesting insight into differences in the perception of nonverbal behavior. Further research on the topic is needed to conclude whether there are significant cultural differences in the perception of NB. A deeper understanding of the differences in communication between cultures can potentially be used in the education of healthcare providers and give them the interaction skills needed to feel culturally competent. More efficient and aware communication between healthcare provider and patient, regardless of cultural background, could potentially increase the quality of minority healthcare.

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APPENDIX A

Scale measuring cultural affiliation by Faheti et al., (2020)

Please rate the following statements from 1 (complete disagreement) to 9 (complete agreement).

These statements ask about cultural attributes, relating to your values and beliefs.

1. I'd rather depend on myself than others
2. If a coworker gets a prize, I would feel proud
3. It is important that i do my job better than others
4. Parents and children must stay together as much as possible
5. I rely on myself most of the time; I rarely rely on others
6. The well-being of my coworkers is important to me
7. Winning is everything
8. It is my duty to take care of my family even when i have to sacrifice what i want
9. My personality independent of others is very important to me (It is important to me that my personality is not affected/influenced by the people around me, i am my own person)
10. To me, pleasure is spending time with others
11. Competition is the law of nature (e.g. it is natural that everyone competes to be the best)
12. Family members should stick together no matter what sacrifices are required
13. I prefer to be direct and forthright when discussing with people
14. feel good when i cooperate with others
15. When another person does better than i do, i get tense
16. It is important to me that i respect the decisions made by my groups (e.g. friend groups, family, at work)



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