

## Appendix D: Codebook Content Analysis Self-Disclosure

Chatbots as regular and personalized interaction partners

Version 2.2

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### Content Analysis - Coding Instructions

#### Introduction

To code the conversations between participants (P) and the chatbot (C), there are a couple of definitions to take into account:

1. Utterance = A (part of a) sentence. Also defined as 'idea units': the expression of a one whole idea or propositional utterance (similar to a subject-predicate construction, but often including grammatical fragments and run-ons). (Weisband, 1992 in Walther, 1995).
2. Question log = all utterances within one answer to a question of the chatbot (e.g., all pieces of information when answering to the question "in which ways do you make up for lost sleep during the week?").
3. Conversation log = all utterances within one conversation with the chatbot (e.g., all answers during T1).
4. Participation log = all utterances within the total conversations with the chatbot (i.e., all answers during T1-T6).

This codebook is about coding the utterances, more specifically utterances regarding self-disclosure. Below, you will find a description of what we mean by self-disclosure and examples of what we mean by self-disclosure. It is of utmost importance to first carefully read these instructions before starting to code.

Some general remarks:

- In this study, participants answered questions asked by the chatbot. This means that self-disclosure is always in the form of answers to specific questions. To understand and code the answer, always check first to which question participants are responding.
- It is (therefore) important to think in full sentences. In online conversations via chat applications, people often do not use full sentences, especially when answering questions.
- The participation log is divided in conversation logs, which are divided in question logs. The question logs can contain multiple utterances.
- Every conversation log consists of 12 question logs (i.e., participants answered a total of 12 questions - that were posed in a random order - divided over 3 conversation sessions). There were 4 questions per conversation, always consisting of 2 sleep-related questions (1 sensitive, 1 non-sensitive question) and 2 sleep-unrelated questions (1 sensitive, 1 non-sensitive question).

## **Coding Self-disclosure**

Self-disclosure reflects the amount of true information people reveal about themselves (Jourard, 1964). Personal information refers to, but is not limited to, demographic information, feelings, opinions, experiences, thoughts, etc. The information disclosed should be linked to the individual him/herself (e.g., “I had a bad night sleep” = self-disclosure; “My mother typically sleeps well” = no self-disclosure).

For every question log, we will code the following:

### ***PHASE 1***

1. Self-disclosure
2. Number of utterances

### ***PHASE 2***

3. Breadth
4. Depth
5. Taboo

It is important to note that we will code in two phases. In **Phase 1**, you will first code self-disclosure, the number of utterances, and split the utterances in columns (e.g., utterance1, utterance2, utterance3) in the same file. You will do this in the designated Excel Sheet (dataset\_disclosure\_coding\_students - phase 1.xlsx). For **Phase 2**, you will receive an Excel Sheet with the question logs that contain more than 1 utterances split into additional rows, so that each row in the Excel Sheet contains one utterance only. In this Excel Sheet, (dataset\_disclosure\_coding\_students - phase 2.xlsx), you will do the codings for **Phase 2**, which includes coding for breadth, depth, and taboo. All of these codings are explained in detail below.

## **1. Self-disclosure**

First code whether self-disclosure took place at all (1 = yes; 0 = no)

### **0 = no**

When a participant literally says “no” to a question that prompts them to self-disclose (e.g., C: “can you describe your worst nightmare that causes you trouble sleeping?” P: “no”), but also when a participant doesn’t know (e.g., P: “I don’t know”) or when a participants provide a nonsensical answer (e.g., C: “what have you done in your life that you feel most guilty about?” P: “yes”). Please be aware that for some questions a form of “no” (e.g., “none”) can be a form of self-disclosure (e.g., C: “what has been the biggest disappointment in your life?” P: “none”)

### **1 = yes**

Any form of sensical disclosure can be coded as 1 = yes. There is no distinction made here in the length of the disclosure, in other words, it does not matter if the disclosure consists of one word or a very long sentence. Both are coded as 1 = yes.

*Only continue to code the number of utterances, breadth, depth, and taboo when you code “1 = yes” here.*

## 2. Number of utterances

Then code how many utterances are present in each question log. This may range from 1 to any number. Zero does not exist here, because then you should have coded a “0 = no” under self-disclosure. An utterance is a sentence or part of a sentence of a participant in which it is about one topic.

Note:

- Multiple descriptions about oneself are multiple utterances (e.g., P: “I am John, I am 22 years old, I live in Amsterdam, and love cats” → these are 4 utterances).
- Descriptions about other people count as one utterance.
- An utterance in combination with an emoticon, filler words (e.g., haha, lol) are seen together as one utterance (e.g., P: “when I was in the zoo, haha”).
- Clarification of the same topic is seen together as one utterance (e.g., P: “I live in Amsterdam, on the corner of Artis”).
- If the word “and” is used in a sentence, then this indicates two separate utterances.
- In case of vague, meaningless sentences of which it is hard to identify the meaning, code as one utterance.

## 3. Breadth

Then code the topic of each utterance. A list of topics is given below. Note that this is a preliminary list and could be extended during the coding process. When utterances contain more than one topic, inconcrete topics (such as 9. moods) code all of them. For example: “I feel bad about my body” is coded as 1 and 9. If you are unsure about the topic, then code more than one topic and highlight this coding.

Note:

- When coding, consider the self-disclosure, not the question. Only use the question to gain context. Else, all sleep-related questions would automatically result in sleep-related answers (which would be untrue).
- If people say “none,” “nothing” etc., then code as other.
- Only code manifest expressed disclosures, so do not code implicit thoughts or feelings as moods (e.g., “failing my exams”). Only if people explicitly mention a mood (e.g., “I feel worried about failing my exams”).
- Codes about stress can be coded in different categories, depending on the way stress is used. For example, using stress to indicate you are worrying about something can be labelled as 9 (mood). Saying that you are (currently) very stressed in general can be labelled as 6 (mental health). And saying that stress is part of who you are (e.g., I am a stressing type of person) would say something about someone’s personality and should be coded as 2 (personality).

### 1. Demographics, physical appearance characteristics

All kinds of descriptions of the self (e.g., “I am 22 years old”, “I am fat”, “I have blond hair”).

## 2. Personality

Identity and character, specifying traits of one's character (e.g., "I am not very cool", "I and very extravert", "I am very pessimistic", "I am typically very calm", "I usually do not stress as lot").

## 3. Hobbies and sports

Sports and leisure activities (e.g., "I collect stamps", "I love to travel", "I usually go for a run 3 times a week").

## 4. Study or work

Things related to job and/or study activities (e.g., "I love my job", "Learning new information every day").

## 5. Physical health

Disease, pain, injuries ("I had a broken leg last year", "I suffer from chronic back pain").

## 6. Mental health

Psychological complaints, mental health issues, specifying states, current mental states of a person (e.g., "I am (currently) very stressed", "I have a personality disorder").

## 7. Finance

Financial situation, monetary topics (e.g., "Money", "I don't have much money to spend every month").

## 8. Friendships, family, personal relationships

(e.g., "My marriage was a disappointment", "I love my kids", "I never had a real boyfriend", "With my grandfather").

## 9. Moods

A mood is an affective state that someone has during a certain period of time, which can consist of emotions, problems, concerns, and fears. Someone's mood can be positive (e.g., "I am happy", "I am excited"), or negative (e.g., "I feel sad", "It made me so angry", "I am worried about my wife", "I am stressed about work").

## 10. Criminality or violence

Any form of criminal and/or violent activities performed in the past (e.g., "I used to steal things", "I forged a signature once", "I once hit my little brother"). Morally unaccepted activities (e.g., lying) are not included in this category (code as "99. other").

## 11. Sleep

Any sleep-related activity that cannot be linked to any other topic (e.g., "I went to bed very late last night", "I often wake up during the night"). Do not consider the question in determining the code for sleep here. Else all sleep-related questions would result in sleep-related answers.

## 12. Ideals

Norms and values, what you as a person believe/stand for (e.g., “I am against the bio industry”, “I don’t like unfairness”).

## 13. Politics or religion

Political and/or religious opinions, values, etc. (e.g., “I am not interested in politics”, “I go to church every Sunday”).

## 14. Death

Dreams about dying, or death in general (“I have this recurring dream that I am drowning”).

## 98. Chatbot

Everything related to the chatbot (e.g., “I don’t like you Robin”, “Why do you keep asking me dumb questions?”).

## 98. Experiment

Everything related to the study they are participating in

## 99. Other

All utterances that cannot be placed in the categories above. If you notice a certain “other” topic occurs quite often, please make a suggestion for a new category.

## 4. Depth

As a next step, the depth will be coded. The depth refers to the level of intimacy of the self-disclosure. There are three levels of intimacy: not intimate, moderately intimate, very intimate. The focus here is on the description of what 1, 2 and 3 mean, not so much on the labels (i.e., not intimate, moderately intimate, very intimate).

Note:

- If you are unsure about the meaning of the answer, check the question the chatbot posed to gain some context. However, the fact that a sensitive question (e.g., what is your biggest nightmare) was answered, does not automatically mean it is a very intimate disclosure.
- If there are more than one utterances in a question log, then take the highest intimacy score.
- In contrast to only coding explicit disclosures under breadth, interpretation of disclosures can be made to some extent here under depth. If people not explicitly say that they are worried/have certain fears, but the disclosure implies this (e.g., “If something were to happen with my family”), then code as very intimate.
- Utterances such as “nothing (yet)”, “I did not have that”, “none” should be considered as 1, as this is an objective observation. If someone adds, e.g., that he/she would never ever do that in their lives, it is more an attitude, so considered it a 2.

### 1. Not intimate

Basic descriptive information/objective facts about a topic (e.g., “I am 22 years old”, “I went on holidays to Greece”, “I have a dog”).

### 2. Moderately intimate

Information that relates to attitudes (how you think about something), evaluations, opinions (e.g., “I love my dog”, “I don’t like the Dutch government”, “I feel good about my body”).

### 3. Very intimate

Information related to personal beliefs, emotions (feelings), needs, fears, secrets, and things you are ashamed of (e.g., “I am concerned about my poor grades”, “I am worried about my mom who is sick”).

## 5. Taboo

As a next and final step, please code the extent to which each utterance contains sensitive information. To do so, please consider the Dutch culture and indicate whether the information shared by the participant in the utterance would be socially and culturally accepted to be shared with:

Note:

- If you are in doubt between 1 or 2 or between 2 and 3, then pick the highest one (so, only when you are in doubt).
- In contrast to only coding explicit disclosures under breadth, interpretation of disclosures can be made to some extent here under taboo. So, the implicit meaning of the disclosure (utterance) can be considered here more.

### 1. Anyone

This is information you would share with anyone (e.g., “I have a dog”, “I live in Amsterdam”, “I love my kids”).

### 2. Acquaintances/co-workers

Information you would share with people you moderately know (e.g., “I work at the UvA”, “My parents died 10 years ago”).

### 3. Very good friends

Information you would only share with people really close to you (e.g., “I am afraid of ending up alone”, “I have once stolen money from my parents”. “Sometimes I want to leave my kids at the day-care and not pick them up”).