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# Behavior and emotion regulation of socially inhibited individuals in uncomfortable social situations: A mixed methods study

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ABSTRACT

The current study aimed to identify patterns of emotion regulation and behaviors in specific uncomfortable situations using a sequential exploratory mixed methods design and to examine how the trait social inhibition (SI) is related to these patterns. The sample (N = 451, 66% female, $M_{age}$ = 34 (SD=17.2)) collected in 2016-2017 completed the social inhibition questionnaire (SIQ15) and open-ended questions on self-indicated uncomfortable situations and the regulation of emotions and behaviors in those situations. The open-ended questions were analyzed and coded into quantitative data, after which a latent profile analysis (LPA) was performed to (A) identify latent profiles of emotion regulation and behaviors in specific situations, and (B) to examine how SI and facets are related to these profiles. LPA revealed seven profiles that differed in the type of situation described and how people regulated their emotions and behaved in the situation. The results show that it is the type of situation which determines regulation style and behavior. Additionally, SI was found to rely on active avoidance to deal with uncomfortable social situations, while not using emotion regulation to modify how they feel in that situation. In conclusion, our findings show that context seems to be the most important factor that drives the choice or decision of how emotions are regulated. SI individuals tend not to use emotion regulation strategies but rely on active avoidance in dealing with uncomfortable situations. Importantly, the sample was mainly female and highly educated, suggesting that our results may not generalize to other populations.

## Introduction

The need to belong and to be accepted by others are fundamental concerns for human beings (Baumeister, 2012). Consequently, the threat of negative evaluations is a main source of social stress (Smith et al., 2012). Some individuals are more sensitive to this threat than others, making them more susceptible to the negative consequences of stress (e. g., Denollet, 2013; Duijndam et al., 2020b). This interpersonal sensitivity can be defined by ongoing concerns about negative social evaluation, which may lead to the inhibition of expression of emotions to avoid negative evaluations, and the avoidance of social situations altogether. The combination of these traits is referred to as social inhibition, a personality trait that describes individuals who have trouble engaging in interpersonal contact (behavioral inhibition), are afraid of negative responses from others (interpersonal sensitivity), and tend to avoid social situations (social withdrawal) (Denollet & Duijndam, 2019; Duijndam & Denollet, 2019).

Extant research found social inhibition to be associated with enhanced vigilance to perceived social threats (Kret et al., 2011). This threat sensitivity may lead to higher levels of anxiety in social situations, and thus to a higher vulnerability to social stress and fear of rejection (Ayduk et al., 2000; Denollet, 2013). This has been associated with the development of disorders such as social anxiety disorder (Chronis-Tuscano et al., 2009; Clauss et al., 2015; de Moor et al., 2018). These vulnerabilities and fears lead to avoidance behaviors and the employment of suppressive emotion regulation (Ayduk et al., 2000; Bogels & Mansell, 2004; John & Gross, 2004). Little is known about the specific behaviors and strategies socially inhibited individuals engage in when in social situations. Previous research found that socially inhibited individuals rely on a pattern of avoidance of social interaction and a high frequency of employing control modification behaviors to gain control over an uncomfortable social situation (Duijndam et al., 2021). These behaviors are characteristic of social anxiety (Bogels & Mansell, 2004; Wells et al., 2016) and may therefore be considered maladaptive.

However, this was assessed with a standardized questionnaire measuring certain behaviors a person can engage in whilst in an unspecified uncomfortable situation. A limitation of this approach is that it cannot say anything about the kinds of behaviors and regulatory strategies people actually use in a specific situation they have experienced, nor does it say anything about what situations people perceive as uncomfortable. This is particularly important because the adaptiveness or fit of emotion regulation strategies is highly dependent on situational context (e.g., Aldao, 2013; De France & Hollenstein, 2022). Shedding light on which situations are experienced as uncomfortable by socially inhibited individuals and the behavioral and regulatory patterns associated with those, may give us more insight in important behavior and (mal)adaptive regulation patterns in daily life.

Most research on social inhibition or emotion regulation has been variable-centered, thus examining how variables as predictors contribute to a specific outcome (Laursen & Hoff, 2006). A limitation of this approach is that it assumes that samples are homogeneous and it does not take into account individual differences in patterns of traits, regulation or behaviors. On the other hand, a person-centered approach examines profiles of variables within a person and patterns of these profiles in populations (Laursen & Hoff, 2006). Some research on emotion regulation already implemented this method primarily to identify distinct groups differentiated by the frequency of employment of a range of emotion regulation strategies (e.g., Chesney et al., 2019; Dixon-Gordon et al., 2015; Duijndam et al., 2021), with one study specifically identifying the role of social inhibition (Duijndam et al., 2021). The current study aims to build upon this research by implementing a person-centered approach to account for the dynamic interaction between specific uncomfortable situations and the available emotion regulation strategies and behaviors associated with these situations. This enables us to identify which situations trigger which regulatory and behavioral strategies, if these strategies are situation specific, and the likeliness of socially inhibited individuals to employ such combinations of strategies.

In addition, research on emotion regulation in socially inhibited individuals is predominantly based on retrospective self-report (Duijndam et al., 2020a; Garnefski & Kraaij, 2007; Gross, 2015; Messerli-Bürgy et al., 2012), and research is to a lesser extent focused on which specific situations trigger which regulatory strategies and how social inhibition is associated with this. Therefore, the current study used open-ended questions to (a) identify situations socially inhibited individuals perceive as uncomfortable, and (b) examine whether they did something to change the way they felt about the situation, both emotionally and behaviorally as a way to capture their regulation strategies.

Thus, the aim of the current study is to identify patterns of emotion regulation and behaviors in specific uncomfortable situations using a sequential exploratory design with two distinct phases: a qualitative phase followed by a quantitative phase (Creswell & Plano Clark, 2018; Greene et al., 1989). We will use the data of open-ended questions (qualitative) to apply a person-centered approach (quantitative) to identify patterns of emotion regulation and behaviors in specific situations, and to examine how social inhibition is related to these patterns. Given the avoidant nature of socially inhibited individuals (Denollet, 2013; Duijndam et al., 2021), we expect social inhibition to fit within a more avoidant emotion regulation and behavioral pattern in response to uncomfortable or awkward social situations. The multi-faceted nature of social inhibition (Denollet & Duijndam, 2019) combined with previous research on social inhibition and emotion regulation revealing important differences between facets of social inhibition (Duijndam et al., 2020a; Duijndam et al., 2021), underscores the importance of also examining how the underlying manifestations (behavioral inhibition, interpersonal sensitivity, and social withdrawal) of social inhibition are related to these patterns. Additionally, we will explore how the patterns are associated with the *location* of the situation, *who* was there, what *other people* thought of the individual, and how the individual *felt* during such situations.

## Methods

### Study design

This study uses a sequential exploratory mixed methods design consisting of two consecutive phases: a qualitative and quantitative phase with the primary focus on the quantitative part (qual –> QUAN; Creswell & Plano Clark, 2018; Greene et al., 1989). Following the exploratory nature of the design, the researchers first collected and analyzed the qualitative (text) data to identify important variables to study quantitatively (numeric) secondly. After analyzing the answers to the open-ended questions using a deductive qualitative approach, the resulted codes were used in quantitative latent profile analysis to identify patterns of behavior and regulation in association with specific situations. Both strands and their sequencing will be further described below.

### Participants & procedure

In 2016 and 2017, the data was collected in three independent cross-sectional samples. The first sample included 208 undergraduate students (77% female, $M_{age} = 20.3 \pm 2.1$) from Tilburg University. The second sample was recruited through the Alumni Research Panel at Tilburg University (N = 15, 73% female, $M_{age} = 45.9 \pm 10.7$). The last sample comprised a non-random selection of adults from the general Dutch population (N = 591, 54% female, $M_{age} = 47.8 \pm 16.2$), for which research assistants were responsible for the distribution of questionnaires and were instructed to collect an equal number of questionnaires from each age and sex sub-cohort. In all samples, participants above the age of 18, with sufficient understanding of the Dutch language, were eligible to participate. All samples filled out several questionnaires for a larger survey study and the study protocols and its amendments were approved by the Ethics Review Board of the Tilburg School of Behavioral Sciences (protocol numbers: EC-2015.64, EC-2015.64a, and EC-2016.26a).

The survey was administered online via Qualtrics (www.qualtrics.com).The invitation for participation was sent out via e-mail and included the informed consent form. After agreeing to participate, participants filled out all the questions (see materials) and after participation they were thanked and debriefed. The sample of undergraduate students received course credits for their participation, and the other samples participated on a voluntary basis, without any reward.

### The qualitative phase

### Materials and analyses

*Uncomfortable social situation.* The survey contained open-ended questions to ask about an uncomfortable social situation participants had recently encountered. Since social inhibition is closely related to social anxiety (Kupper & Denollet, 2014), and socially inhibited individuals tend to feel nervous and tense around others, the open-ended questions were based on the protocol "Cognitive Therapy in Social Anxiety" (Voncken & Bögels, 2010). Specifically, the exercise "Thought Record" was adopted as it is a tool to teach about the interactions between thoughts, feelings, and behaviors, used for people to record their own experiences. In the protocol Cognitive Therapy in Social Anxiety, Thought Records include 1) the *situation* someone was in, 2) the *feelings* associated with that situation, 3) the *thoughts* someone had during that situation, 4) the person's *behavior* during that situation, and 5) *alternative thoughts* that could help in changing or improving the situation. Because we were interested in *social* situations, we added questions about *whom* the participant was with, and what they thought *the other(s) thoughts* were in that situation. Concretely, the following questions were asked:

*"Describe a situation you have experienced yourself in which you did not feel comfortable while with other people. 1) Where were you? 2) With whom? 3) What happened? 4) How do you think the other(s) thought about you in this situation? 5) How did you feel? 6) Did you do anything to change the way you felt? 7) How did you respond to the situation?"*

Three of the authors [SD, AK, NK] coded the answers to each of the open-ended questions. We started with a deductive content analysis (Bengtsson, 2016). Prior to the analyses, we developed a coding framework derived from existing theory and previous knowledge (Elo & Kyngäs, 2008). We used the protocol of "Cognitive Therapy in Social Anxiety" (Voncken & Bögels, 2010) and the "Composite International Diagnostic Interview" (CIDI; Robins et al., 1988), to define categories for each open-ended question. These categories were based on the most common uncomfortable situations of individuals with social anxiety or social phobia as mentioned in the protocol and interview. The codes to the question *"Did you do anything to change the way you felt"* were based on the most common emotion regulation strategies adopted from the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) and the Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski & Kraaij, 2007). An overview of the categories defined for each of the questions is given in Table 1.

At the start of the coding process, SD, AK and NK divided the workload so each of them coded the answers to questions 1 (*Where were you?*) and 2 (*With whom?*) separately, as answers to these questions were straightforward. An Excel file was created to log codes the authors were unsure of, and these were discussed during meetings until everyone agreed to the given categorization. For example, for the question '*with whom*' one of those discussed codes was whether 'roommates' would be coded as 'acquaintances' or 'friends'. This depended on whether these were new roommates (e.g., just met them) or whether participants were living with them for a long time, so the context of the situation was used to reach consensus about the relationship the participant had with the person in question.

Due to the large variety in responses on the questions 4 through 7 (i. e., How do you think the other(s) thought about you in this situation? How did you feel? Did you do anything to change the way you felt? How did you respond to the situation?), which made it less straightforward to code the answers, the researchers changed strategy and coded all responses with the three coders together. Meetings were planned to go over each of the questions, one at a time (i.e., first code all answers to question 4, then question 5, etc.), and code the answers. For some participants it was not clear-cut which category the answer belonged to, and thus it was discussed among the three authors until consensus was reached. For example, one participant described '*I could not keep up with their drinking* [alcohol] *tempo*' as the situation. It was not immediately clear to the authors how to code this situation. After discussing the situation and looking at the context of the other answers more closely, the authors decided to code this as 'Intimidating/inappropriate (social) behavior', because the participant was forced to do something they were not comfortable with.

During the coding process, it became clear that the predefined categories were not sufficient to code all the answers. Either some of the predefined codes were very rare, not described, or they did not cover the complete essence of the answers given. Therefore, we subsequently adopted an inductive process, defining new codes as we went through the data (Elo & Kyngäs, 2008). In addition to defining new codes, we also created one new variable, because we noticed that some individuals indicated a situation in which they had social support. Thus, we included a category to identify whether someone was there to give the participant social support in the uncomfortable situation. Lastly, answers to the question how participants felt in the situation, often consisted of more than one feeling. Therefore, for pragmatic reasons, we included only the first two responses reported in the "How did you feel" category. We assumed the order of responses reflected the answers that came to mind first, which we interpreted as the most important feelings.

**Table 1**
Code book for open-ended questions.

| Question | Codes | Example answers for a code | Codes for quantitative analyses |
|---|---|---|---|
| Where were you? | 1 = Own home | "At home, in my room" | N/A |
| | 2 = At family home | "At my brother's house" | N/A |
| | 3 = At friends/ acquaintances home *(includes parents of (ex) partner)* | "At the house of my in-laws" | N/A |
| | 4 = At work or place of study | "In class at the university" | N/A |
| | 5 = Public space (library, café, *square or street*) | "At a funeral" | N/A |
| | 6 = At a party (unspecified) | "At a birthday party" | N/A |
| | 7 = At a club (sports or hobby) | "At the gym of the university" | N/A |
| | 8 = *At a stranger's house* | "In the house of a friend of a friend" | N/A |
| | 99 = Missing | "When people don't hear what you are saying" | N/A |
| | | | N/A |
| With whom? | 0 = Alone | Not applicable, since we only coded those in social situations | N/A |
| | 1 = With partner | "With my wife" | N/A |
| | 2 = With ex-partner | "With my ex-husband" | N/A |
| | 3 = With 1 or more family members (siblings/parents) | "With my parents" | N/A |
| | 4 = With family | "With my uncles and aunts (and parents)" | N/A |
| | 5 = *With in-laws* | "With my boyfriend and his family" | N/A |
| | 6 = With friends | "With a few friends" | N/A |
| | 7 = With acquaintances | "With my ex-colleague and my neighbor" | N/A |
| | 8 = With peers (school friends, *sport class, hobby club*) | "With my classmates and teacher" | N/A |
| | 9 = With strangers | "With clients at work" | N/A |
| | 10 = Someone with whom there is a hierarchical relationship (e.g., boss) | "With the team leader" | N/A |
| | 11 = With colleagues | "With a few colleagues" | N/A |
| *Was there social support?** | *0 = No* | "I was with my brothers […] We had a fight" | N/A |
| | *1 = Yes* | "I was with a good friend […] While running into my ex-boyfriend" | N/A |
| What happened? | 1 = Presenting, performing, sport match, playing a game | "I had to perform, but was so nervous that the nerves hit my voice and I had no control over the vibration I could or could not put into this song" | 1 = Presenting/ performing |
| | 2 = Getting to know new people | "I met his [Boyfriend] friends for the first time" | 2 = Getting to know new people |

(*continued on next page*)

**Table 1** (*continued*)

| Question | Codes | Example answers for a code | Codes for quantitative analyses |
|---|---|---|---|
| | 3 = Talking with person in authority (boss, professor, doctor, etc.) | "I had to talk with them [teachers] about my internship" | 3 = Talking with person in authority |
| | 4 = Superficial conversation, small talk | "I had to talk to my family, but I did not feel comfortable" | 4 = Superficial conversation/small talk/social silence |
| | 5 = Dating (first date to intimacy) | "I was told that my boyfriend had cheated on me" | 5 = Other |
| | 6 = Writing or eating while others watch | "I was offered some food, but I was not hungry. But since I don't speak their language, I wasn't quite sure how to politely decline. I then ate the food anyway." | 5 = Other |
| | 7 = Give opinion | "I have to constantly point out to my team the mistakes they make" | 5 = Other |
| | 8 = Use public toilet (*also in café/bar*) | Not coded | N/A |
| | 9 = *Intimidating/inappropriate (social) behavior, shutting down* | "A few girls started throwing pebbles our way" | 6 = Inappropriate social behavior |
| | 10 = Arguing, having conflict, *being there when family or friends argue with each other, or being angry in silence* | "My uncle got mad at me for not addressing my grandfather properly" | 7 = Getting emotional |
| | 11 = *Awkward (medical) procedure* | "There was talk of a colleague liking me while that colleague was sitting right there." | 5 = Other |
| | 12 = *Getting emotional* | "I burst into tears during an assignment […]" | 7 = Getting emotional |
| | 13 = *Social silence* | "The topic of conversation was soon exhausted." | 4 = Superficial conversation/small talk/social silence |
| | 14 = *New in group and people look at me* | "Everyone looked back when we entered and throughout the party I felt embarrassed." | 2 = Getting to know new people |
| | 15 = *Being/feeling excluded* | "I was not included in the discussions" | 6 = Inappropriate social behavior |
| How do you think the other(s) thought about you in this situation? | 1 = Others think participant is incompetent (activity) | "That I was too stupid to get myself out of this situation." | N/A |
| | 2 = Others think participant is socially incompetent / avoid contact | "I think people thought I was a huge wimp/weak person […]" | N/A |
| | 3 = Others think participant is boring/shy/quiet/no fun | "That I was not very sociable." | N/A |
| | 4 = Others think participant is strange/not normal/pathetic/weird | "That I was annoying and weird." | N/A |
| | 5 = Others think that participant does not belong | "That they preferred not to have me there." | N/A |
| | 6 = Others pity participant | "They felt sorry for me." | N/A |
| | 7 = Others understand participants behavior | "I think others sympathized with me." | N/A |
| | 8 = Others think participant is angry/annoyed/no understanding/fight or conflict | "My parents were shocked and also angry." | N/A |
| | 9 = Others don't think anything/are neutral | "Nothing special." | N/A |
| | 10 = Others think participant is nice/friendly | "I think they thought I was a nice girl." | N/A |
| | 11 = Others think participant is competent | "That I was trying very hard." | N/A |
| | 12 = Others think/feel that participant is nervous/insecure | "That I am vulnerable and insecure." | N/A |
| | 13 = Others think participant is too assertive/harsh/strict | "I think others found me coarse and rude, but also brisk and firm." | N/A |
| | 14 = *Interpretation of situation* | "I think others would feel anxious and very uncomfortable in this situation and would prefer to leave." | N/A |
| | 15 = *Others think participant is willing victim* | "I think they just liked making fun of me rather than thinking I was really weird." | N/A |
| | | | N/A |
| How did you feel? | 1 = Awkward / uncomfortable | "Uncomfortable and awkward." | N/A |
| | 2 = Insecure | "Uncertain about my figure and stamina." | N/A |
| | 3 = Nervous / Tense | "Very nervous." | N/A |
| | 4 = Ashamed | "Embarrassed." | N/A |
| | 5 = Lonely | "I felt alone." | N/A |
| | 6 = Angry | "Angered inside." | N/A |
| | 7 = Anxious / panic | "Completely panicked." | N/A |
| | 8 = Sad / disappointed | "Sad, and I wanted to leave the party." | N/A |
| | 9 = Rejected/belittled/ignored | "Unwanted." | N/A |
| | 10 = Guilty | Not coded | N/A |
| | 11 = Excluded | "I felt left out." | N/A |
| | 12 = Not supported | Not coded | N/A |
| | 13 = Supported | "Strengthened by the others." | N/A |
| | 14 = Regret | Not coded | N/A |
| | 15 = Frustrated | "I was slightly frustrated." | N/A |
| | 16 = Used | "I felt I was being used." | N/A |
| | 17 = Want to get away | "I don't want to be here." | N/A |

**Table 1** (*continued*)

| Question | Codes | Example answers for a code | Codes for quantitative analyses |
|---|---|---|---|
| | 18 = *Inferior / worthless* | "I felt underappreciated." | N/A |
| | 19 = *Hopeless* | "I felt hopeless and alone." | N/A |
| | 20 = *Self pity* | "Stupid, a poser." | N/A |
| | 88 = No feeling reported | "Not nice." | N/A |
| | | | N/A |
| Did you do anything to change the way you felt? | 0 = No regulation | "I went home." | 0 = No regulation |
| | 1 = Suppression | "I pretended like it was no big deal." | 1 = Suppression |
| | 2 = Reappraisal | "I tried to gather courage by thinking that everyone found it scary to meet new people." | 2 = Reappraisal |
| | 3 = Acceptance | "I accepted it and tried to make the best of the situation" | 3 = Acceptance |
| | 4 = Rumination | "Worrying" | 4 = Rumination |
| | 5 = Positive refocus | "Trying to breathe calmly and keep thinking carefully and give each part another chance." | 5 = Positive refocus |
| | 6 = Support seeking | "I talked about it with other people." | 6 = Support seeking |
| | 7 = Catastrophizing | "I drove myself crazy by thinking I was going to end up alone." | 7 = Catastrophizing |
| | 8 = *Reappraisal & Suppression* | "Trying to appear calm and telling myself I could do it." | 8 = Multiregulation |
| | 9 = *Reappraisal & Support seeking* | "See the relativity and talk to my husband to find confirmation." | 8 = Multiregulation |
| | 10 = *Refocus & Acceptance* | "I tried to put it aside and focused on […]." | 8 = Multiregulation |
| | 11 = *Acceptance & Blaming others* | "Accept that they will not do it better than me." | 8 = Multiregulation |
| | 12 = *Reappraisal & Acceptance* | "I let it wash over me. I should have acted over the top to change it, but didn't think it was a good moment, because it would spoil the mood." | 8 = Multiregulation |
| | 13 = *Support seeking & Acceptance* | "Talk about it with others and accept the situation as is." | 8 = Multiregulation |
| How did you respond to the situation? | 0 = No action | "I didn't really respond." | 0 = No action |
| | 1 = Active approach | "Making sure I would memorize that text as soon as possible." | 1 = Active approach |
| | 2 = Self-control | "Trying to stay as calm as possible." | 2 = Self-control |
| | 3 = Passive avoidance | "Turned inside myself." | 3 = Passive avoidance |
| | 4 = Active avoidance | "I walked away from the situation." | 4 = Active avoidance |
| | 5 = Expression | "I expressed my feelings." | 5 = Expression |
| | 6 = *Active approach & Active avoidance* | "Became less talkative and tried to find | 6 = Multibehavior |

**Table 1** (*continued*)

| Question | Codes | Example answers for a code | Codes for quantitative analyses |
|---|---|---|---|
| | | someone else to talk to." | |
| | 7 = *Active approach & Self-control* | "Tried to stay calm and engage in the conversation." | 6 = Multibehavior |
| | 8 = *Active approach & Expression* | "I showed anger and talked to my colleague about her behavior." | 6 = Multibehavior |
| | 9 = *Active avoidance & Expression* | "I started crying and avoided other people all day." | 6 = Multibehavior |
| | 10 = *Active avoidance & Self-control* | "I clung to the meeting agenda, saying with every comment that I would come back to it later. As a result, I tried to regain my composure." | 6 = Multibehavior |
| | 11 = *Passive avoidance & Self-control* | "I grabbed my phone and waited for my colleague to return." | 6 = Multibehavior |
| | 12 = *Self-control, Active avoidance, Active approach* | "I took a few deep breaths, talked to my husband about what I needed, and walked away." | 6 = Multibehavior |
| | 13 = *Support seeking, Self-control* | "My boyfriend calmed me down, and I regained my composure." | 6 = Multibehavior |
| | 14 = *Active approach & Passive avoidance* | "I talked about it with my supervisor and remained in the background." | 6 = Multibehavior |
| | 15 = *Passive avoidance & Expression* | "I tried to remove myself from the task for a bit, after which I expressed my anxiety." | 6 = Multibehavior |

*Note.* The codes written in cursive are established through inductive process and were added while going through the data. All other codes were established through deductive process. All examples are translated from Dutch to English. *This question was not specifically asked, but this category was created to gain insight in whether the participant had social support in the uncomfortable situation. We derived that information based upon the answer to the question "with whom".

After a new category or code was created, we recoded all data to check whether the newly identified codes were not 'missed' in the earlier coding rounds. We supplemented and adapted the list of codes over the course of the analytic process. In Table 1, all inductive categories are listed in cursive.

Data was coded as 'missing' or 'unknown', if 1) the answer to the question was vague or not clear (e.g., if the answer on the question *where were you* was "In a room with highly-educated people"), 2) individuals answered with "Not applicable", "I can't think of anything", or "I don't want to answer the question", or 3) if the situation was not a social situation (e.g., "I was by myself").

*The quantitative phase*

*Materials*

Socio-demographic questions include age, biological sex, partner status (married or being in a relationship vs. no partner), education level (low vs. high (higher than high school)), and whether or not participants were in psychological/psychiatric treatment (yes/no).

*Social inhibition.* The personality trait social inhibition was assessed

with the 15-item Social Inhibition Questionnaire (SIQ15; Denollet & Duijndam, 2019; Duijndam & Denollet, 2019). This scale is designed to assess the broad social inhibition personality trait and its three underlying facets. Behavioral inhibition refers to difficulties to initiate conversation topics and to get the conversation going (e.g., "I have difficulty talking to other people"), interpersonal sensitivity to pervasive social-evaluative concerns (e.g., "I often worry that others may disapprove of me"), and social withdrawal to avoiding engagement in intense social or emotional situations (e.g., "I avoid getting close to other people"). Items were rated on a 4-point Likert scale ranging from false (0) to true (3). Cronbach's alpha for the current study yielded .95 for the total score, .93 for behavioral inhibition, .90 for interpersonal sensitivity, and .88 for social withdrawal, which indicates high internal consistency.

### Statistical analyses

Analyses were conducted using LatentGOLD 6.0 (Vermunt & Magidson, 2021) and SPSS version 28 (IBM Corp., 2021). First, descriptive statistics for the variables of interest were run in SPSS. Additionally, for the purpose of the quantitative nature of this study, some codes that were low in response but alike were combined to not lose power in the analysis (see Table 1, right column for new scoring). Because we were interested in the patterns of behavior and regulation in association with specific situations, only the codes for *what happened, emotion regulation*, and *behavioral modification* were included in the latent profile analysis.

### Data pre-analysis & analysis

We performed a three-step latent profile analysis in LatentGOLD 6.0 (Vermunt & Magidson, 2021). Due to non-normal distributions of our nominal variables (histogram inspection, skewness and kurtosis calculation), we chose ML estimation with robust standard errors (MLR; Vermunt & Magidson, 2002). Missing data was handled by listwise deletion, as there was a relatively little number of missings (n=59), and for imputation there was too little other information present (2 out of 3 nominal variables missing for all).

In the first step, we countered the risk of finding a local maximum by using 1000 random starts and 500 iterations for each random start. We used the Vuong-Lo-Mendell-Rubin adjusted likelihood ratio test (VLMR-LRT) to find out whether adding a class led to a statistical improvement in model fit. We kept adding classes (k) until the VLMR associated p-value became non-significant, which lends support to the smaller model (k-1) in the comparison. For the final k-class model, we performed a qualitative content analysis to see whether the profiles provided theoretically interesting information (Vermunt & Magidson, 2002). We ran subsequent models up to a maximum of 10 classes. Another issue of meaningfulness is class size, and if the additional profile was smaller than 3%, or n=15 we considered whether to keep the class (Lubke & Neale, 2006). If the small class was there from the start and remains there when classes are added, we decided to keep the class in as it may have important theoretical relevance. In addition to model fit characteristics, we recorded entropy. This is a measure of separation between classes, with higher entropy denoting better separation among classes. An entropy >.80 is considered good.

In the second step, posteriors were exported for the best fitting model (i.e., profile membership probabilities and corresponding class assignments) and exported to the SPSS data file. In the third step, associations between covariates and profile membership were evaluated by regressing the latent profiles on the covariates in LatentGOLD. Proportional ML was used as classification type, and bias ML for parameter bias adjustment. We first added the social inhibition total score, then replacing that with the three subscale scores for social inhibition. Then, we tested the effect of sample, and in a final step added socio-demographic subject variables, including sex, age, marital status, and educational level to the social inhibition total score model. When the lower bound of the 95%CI was >.99 but smaller than 1.00, we calculated the 90% CI boundary as well, to find out whether there was a trend

effect.

Lastly, to explore whether the codes for *location, with whom, other(s) thoughts*, and *feelings* were associated with specific profiles, we used frequency analyses to determine the prevalence of each code within a profile and described the outcomes in the supplemental materials (Figure S1).

### Transparency and openness

We report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures in the study. The study design, hypotheses and analysis plan were not preregistered. Data cannot be made publicly available, because this was not explicitly approved by the participants at the moment of assessment. A preprint of this article was posted on OSF on September 23$^{rd}$, 2024 (https://osf.io/preprints/osf/k34se).

## Results

In Fig. 1, we present the flow-chart of the inclusion process of all participants of the study. Out of the 814 participants who filled out the questionnaire, we analyzed and coded the open-ended questions for 518 participants. One participant from the student sample had missing data on the open-ended questions, and 295 participants from the general population sample had missing data on the open-ended questions, due to early drop-out and were thus removed from the dataset. The large number of drop-outs in the general population compared to the student population, may be explained by the credit compensation that students received for their participation, and that individuals from the general population participated voluntarily. This may have affected their motivation for filling out the open-ended questions. Additionally, of 67 participants data was coded as 'missing' or 'unknown' on two or more variables; these participants were therefore not included in the main quantitative analyses. The total sample size for the latent profile analysis was 451, which approaches the sample size suggested in past research, considering the number of indicators in the model (Spurk et al., 2020).

In Table 2, we present the characteristics of the analyzed sample and tested the differences between samples on socio-demographic variables. The student and adult sample differed on all socio-demographic variables. As expected, the student sample was younger, scored higher on the social inhibition (sub)scales, and consisted of more females, more higher educated individuals, and were more often not in a relationship (see Table 2).

### Frequencies of codes

Most of the uncomfortable situations took place at work or a place of study (33.6%), in a public place (20.3%) or at a party (13.9%), and included strangers (27.2%), peers (18.7%), colleagues (9.3%) or someone with whom there was a hierarchical relationship (9.3%). The majority of situations were without social support (64.7%). The situations described as uncomfortable mostly included experiencing intimidating or inappropriate (social) behavior (16.8%), getting to know new people (15.4%), or arguing / having a conflict (11.2%). There was a bit more variation in the description of what participants thought that other people thought of them during the uncomfortable situation. Most participants indicated that others did not think anything of them or have neutral thoughts (14.7%). However, if participants were concerned with other's thoughts of them, they indicated that others thought that the participant was strange (7.9%), boring or shy (7.3%), did not belong (6.9%), or was incompetent (6.3%) in that situation. The uncomfortable situations were mostly paired with feelings of awkwardness or being uncomfortable (34.9%), nervousness or tension (8.9%), or sadness (7.9%). Interestingly, when asking participants if they did anything to change the way they felt, the majority indicated that they did not regulate their emotions (69.9%). If emotion regulation was applied,
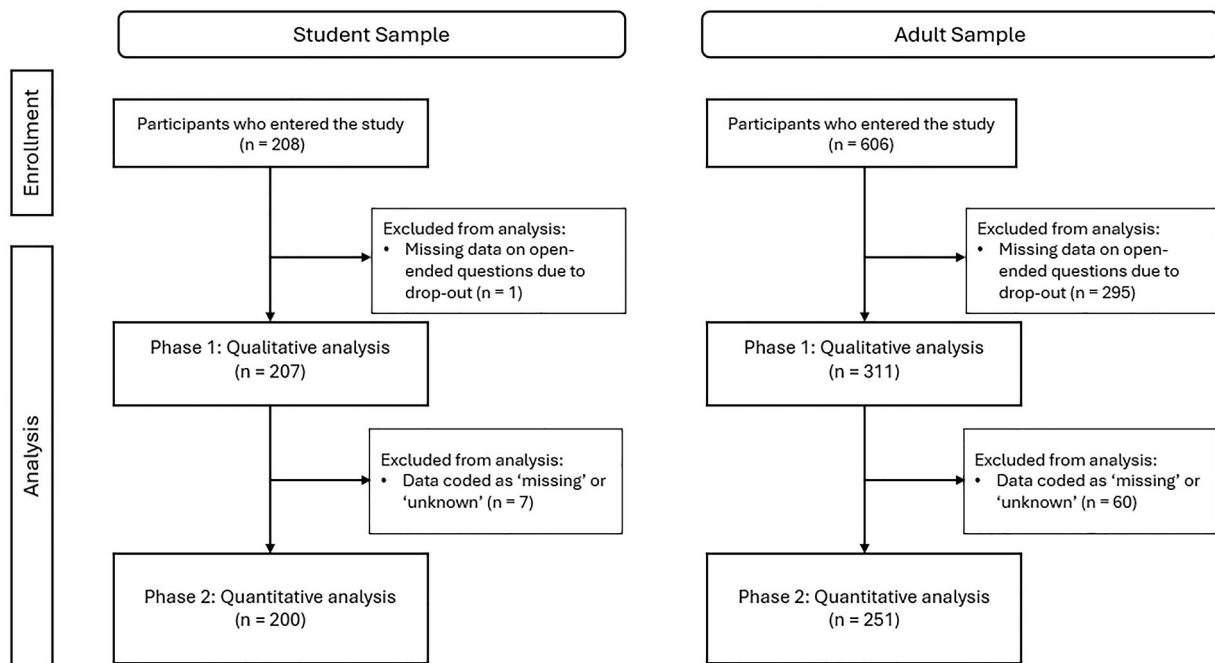
**Fig. 1.** Flow-chart of participant inclusion and exclusion of the study for the student and general population samples separately.

**Table 2**
Characteristics of the sample.

| | Total n=451 | | | |
|---|---|---|---|---|
| | Student population (n = 200) | Adult population (n = 251) | Test statistic[¥] | p-value |
| Age mean (SD) | 20.3 (2.03) | 44.7 (16.0) | -21.42 | <.001* |
| Biological Sex (Female) | 153 (76.5%) | 146 (58.2%) | 16.74 | <.001* |
| Education level (High) | 200 (100%) | 214 (85.6%) | 31.30 | <.001* |
| Marital status (Partner) | 83 (41.5%) | 193 (76.9%) | 58.72 | <.001* |
| Social inhibition total score mean (SD) | 14.2 (9.1) | 11.5 (9.5) | 3.14 | <.001* |
| Behavioral inhibition score mean (SD) | 4.4 (3.6) | 3.3 (3.4) | 3.26 | <.001* |
| Interpersonal sensitivity score mean (SD) | 5.2 (3.5) | 4.4 (3.9) | 2.52 | .006* |
| Social withdrawal score mean (SD) | 4.6 (3.2) | 3.8 (3.4) | 2.53 | .006* |

*Note.* [¥] Student's t tests were then done in case of continuous variables, and chi-square tests in case of categorized variables to compare the groups. *P-value < .050.

reappraisal (6.9%) or suppression (3.3%) were most likely used. Similarly, answers to the question about behavioral modification indicated that most did not take any action (25.1%), but if they did, active approach (18.1%), self-control (12.7%), and active avoidance (10.6%) were most often mentioned.

*Model fit*

An overview of the model fit of the 10 subsequent models with increasing classes is presented in Table 3. The LPA on the full information sample (N = 451) provided mixed evidence for the 5-, 7-, and 10-profile solutions. For all three solutions bivariate residuals were small (<3) which is a confirmation of the local independence assumption. The

10-profile solution showed maximal entropy (.78), but included profiles containing 1.6% of the data, and was not showing favorable fit indices. The 5-profile solution came with the lowest BIC and AIC, but the VLMR for robust ML showed that models with 6 and 7 profiles were significant improvements (see Table 3). Additionally, based on the recommendation to not only rely on statistical fit values, but also on theoretical and content-related considerations (e.g., Sinha et al., 2021; Vermunt & Magidson, 2002), we observed that the 7-profile model added much more relevant detail compared to the 5-profile model. Together, given the statistical significance, the theoretical and content-related considerations, and that profiles were larger than 3% of the data, the 7-profile model garnered more support in total and was thus selected as the best fitting model.

*Profile characteristics*

Fig. 2 shows a graphic representation of the 7-profile model in three panels. The largest profile (Profile 1: 26%) contained participants who described uncomfortable situations in the categories *Getting to know new people* and *Inappropriate social behavior* during which they mostly indicated not to regulate their emotions and to display a mix of approach and avoidance behaviors. The second profile (22%) described uncomfortable situations in the categories *Presenting and performing* and to a lesser extent *Getting to know new people*, during which they mostly indicated not to regulate their emotions, or to apply reappraisal, and to display either no behavior or self-control. Profile 3 (18%) described participants who reported uncomfortable situations in the category *Getting emotional* during which they did not regulate their emotions, and displayed emotion expression or a combination of behaviors. The fourth profile (18%) described uncomfortable situations in the category *Small talk / social silence* during which participants mostly indicated not to regulate their emotions and to display active avoidance. Profile 5 (8%) comprised participants who described uncomfortable situations in the category *Small talk / social silence* during which they mostly applied reappraisal and displayed active approach behavior. The sixth profile (5%) comprised participants who described uncomfortable situations in the categories *Inappropriate social behavior* and *Talking with a person of authority* during which they mostly applied suppression as an emotion regulation strategy and displayed self-control and somewhat passive

**Table 3**
Model fit evaluation information.

| Model | LL | BIC | AIC | NPar | Max BVR | VLMR | P value | Class error (%) | Entropy R$^2$ |
|---|---|---|---|---|---|---|---|---|---|
| 1 profile | -2051.21 | 4224.64 | 4142.42 | 20 | 2.04 | | | 0 | 1 |
| 2 profiles | -2022.75 | 4296.06 | 4127.49 | 41 | 2.21 | 56.922 | .009 | 17 | .50 |
| 3 profiles | -1996.44 | 4371.79 | 4116.88 | 62 | 0.97 | 52.616 | .210 | 12 | .67 |
| 4 profiles | -1980.50 | 4468.24 | 4126.99 | 83 | 0.74 | 31.888 | .003 | 14 | .70 |
| 5 profiles | -1968.99 | 4573.57 | 4145.98 | 104 | 0.68 | 23.01 | .013 | 21 | .66 |
| 6 profiles | -1956.82 | 4677.58 | 4163.64 | 125 | 0.60 | 24.337 | .012 | 20 | .71 |
| *7 profiles* | *-1946.91* | *4786.10* | *4185.82* | *146* | *0.47* | *19.822* | *.018* | *18* | *.74* |
| 8 profiles | -1940.61 | 4901.84 | 4215.22 | 167 | 0.45 | 12.602 | .119 | 19 | .73 |
| 9 profiles | -1934.37 | 5017.69 | 4244.73 | 188 | 0.37 | 12.491 | .090 | 17 | .77 |
| 10 profiles | -1928.42 | 5134.14 | 4274.85 | 209 | 0.34 | 11.882 | .031 | 16 | .78 |

Note: Italic = best fitting model. Fit was evaluated with the Vuong-Lo-Mendell-Rubin adjusted likelihood ratio test (VLMR-LRT) to find out whether adding a class leads to a statistically improvement in model fit. We kept adding classes (k) until the VLMR associated p value became non-significant, which lends support to the smaller model (k-1) in the comparison. LL = log likelihood; BIC = Bayesian information criterion; AIC3 = Akaike information criterion 3; Npar = number of estimated parameters; Class. Err. = classification error.

avoidance. Finally, the seventh profile containing 4% of the participants, described uncomfortable situations in the categories *Getting emotional* and *Other* (mix of rarer (more phobic) situations like medical appointments, dating, eating in front of others, and giving your opinion) during which they mostly applied acceptance and positive refocus, and displayed self-control, and somewhat active approach behavior.

*3-step analysis: Examining correlates of the seven situation-emotion regulation-behavior profiles*

Higher social inhibition total scores were significantly associated with *Profile 4* (OR = 1.05; 95%CI = 1.02-1.08), characterized by social situations like having to engage in small talk, or experiencing social silence, which was combined with active avoidance. Examining the three subscales, it became apparent that this effect was shared between the behavioral inhibition and the interpersonal sensitivity component, both bordering on significance (OR$_{inhibition}$ = 1.10; 95%CI = .99 – 1.22; OR$_{sensitivity}$ = 1.10; 95%CI = .99 – 1.20). Both effects were trend effects, with the 90%CI being significant. Higher levels of behavioral inhibition were also related to increased likelihood of belonging to *Profile 5* (OR = 1.30; 95%CI = 1.04-1.56), and showed a negative trend association, so a reduced likelihood of belonging in *Profile 6* (OR = .87; 95%CI = .73-1.00).

Before examining the covariates in the subjects variable model, we tested the effect of sample (adult vs. student sample). The student sample was more likely to be present in *Profile 2* (OR = 1.30; 95%CI = 1.04-1.56), *Profile 4* (OR = 1.57; 95%CI = 1.28-1.85), and *Profile 5* (OR = 1.60; 95%CI = 1.22-1.97). Keeping this confounder in the model, we then examined the full model including the social inhibition total score and the subject variables. As Table 4 shows, the effect of social inhibition remained of equal size, and significant, independent of the added covariates. Sex was unrelated to the seven profiles, and so was educational level. A higher age was associated with belonging to *Profile 7* (OR = 1.02; 95%CI = 1.002-1.06), and reduced likelihood of belonging to *Profile 1* (OR=.97; 95%CI = .95-.99). Being in a relationship increased the odds of belonging to *Profile 4* (OR = 1.41; 95%CI = 1.06-1.76).

**Discussion**

The current study applied a sequential exploratory mixed methods design, in which qualitative coding of participants' open responses was fed into quantitative data analysis to shed light on the complex dynamics of emotion regulation and behavioral responses in uncomfortable social situations. Latent profile analysis revealed the presence of seven profiles, which highlight the variability in individuals' responses to uncomfortable social situations. The seven profiles differed in the type of situation that was described, and how people regulated their emotions and behaved in those situations, which shows the subjective nature of social

awkwardness. The results show that it is the situation which determines whether a (and if so which) regulation style is applied and which behavior is displayed. In other words, context seems to be the most important factor in the choice of regulation and behavior.

Regarding social inhibition, our results showed that higher social inhibition scores were associated with a higher odds of belonging to *Profile 4*. This profile is characterized by small talk / social silence as the uncomfortable situation, while not regulating emotions, though displaying active avoidance to deal with the social situation. In the anxiety literature this is considered maladaptive as it may maintain unrealistic beliefs about a threatening situation (Aafjes-van Doorn et al., 2019; Funayama et al., 2013). This aligns with the tendency of socially inhibited individuals to engage in avoidant behaviors during social interaction, because they anticipate criticism or rejection from others (Denollet & Duijndam, 2019). As a consequence, their increased anxiety levels may hinder them in effectively regulating their emotions because they either do not feel the need to regulate, believe that they will not be successful at regulating their emotions, or simply do not know how to regulate (Webb et al., 2012). As this is considered detrimental to (mental) health (e.g., John & Gross, 2004), these results may imply that socially inhibited individuals could benefit from treatment focusing on emotion regulation. For example, cognitive behavioral therapy has been successful in decreasing social anxiety symptoms, which was found to be mediated by the increase of adaptive emotion regulation and decrease maladaptive emotion regulation strategy use (Aldao et al., 2014; Goldin et al., 2012). Thus, socially inhibited individuals could benefit from this therapy in managing their responses in situations of small talk / social silence more effectively. Additionally, most situations reported within *Profile 4* took place in a public space with friends, acquaintances or strangers, shedding more light on which situations are most uncomfortable for socially inhibited individuals. The feelings they reported were feelings of awkwardness or feeling uncomfortable, and they were concerned that others thought they were boring, shy or no fun. This further highlights the worry socially inhibited individuals have with respect to negative evaluations by others (Denollet, 2013).

With respect to the underlying facets of social inhibition, we found a trend of significance for both behavioral inhibition and interpersonal sensitivity with a higher likelihood of belonging to *Profile 4*. Although these results were not significant, it does imply that these two facets together carry the effect of social inhibition belonging to *Profile 4*. Interestingly, behavioral inhibition was associated with a higher odds of belonging to *Profile 5*. This profile also described small talk / social silence as the uncomfortable situation and because behaviorally inhibited individuals have difficulty in expressing themselves verbally, it is understandable that they specifically find *small talk* to be difficult and uncomfortable (Duijndam & Denollet, 2019). However, the profile differed from *Profile 4* in that they also tended to apply reappraisal, and instead of active avoidance used active approach to deal with the
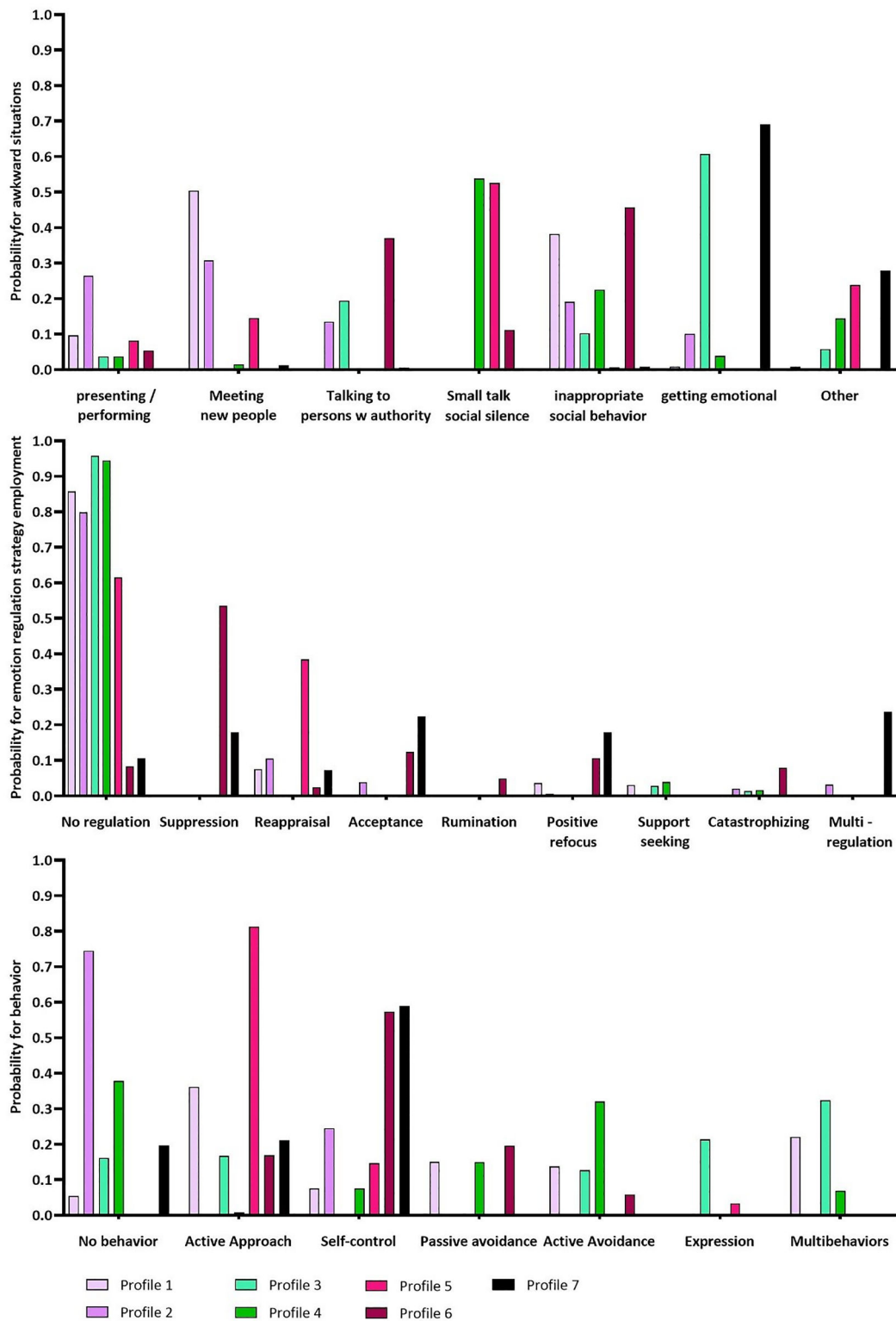
**Fig. 2.** Graphical display of probability means of indicators by cluster. The seven profiles all have their own color, and are dispersed over three topical panels: The top panel shows the socially uncomfortable situations, and the extent to which these were described in the seven profiles. The middle panel contains emotion regulation strategies that were employed, and finally, the bottom panel contains the executed behaviors in the various profiles. The x-axis lists the names of the situation, emotion regulation strategy, and behaviors, respectively. The y-axis shows the average probability of class membership for each of the indicators, with higher values indicating higher probability of class membership.

**Table 4**

Correlates of the Situation – Emotion Regulation – Behavior profiles.

| | Profile 1: | Profile 2: | Profile 3: | Profile 4: | Profile 5: | Profile 6: | Profile 7: |
|---|---|---|---|---|---|---|---|
| *Model 1: Crude SI model* | | | | | | | |
| Social inhibition | 1.00 (.97-1.03) | 1.00 (.97-1.02) | 1.01 (.98-1.04) | **1.05 (1.02-1.08)** | 1.03 (.99-1.06) | .96 (.91-1.02) | .96 (1.02-.90) |
| *Model 2: Crude SI subscale model* | | | | | | | |
| Social withdrawal | .96 (.82-1.10) | 1.02 (.91-1.12) | 1.12 (.99-1.24) | .96 (.84-1.08) | .83 (.57-1.08) | 1.04 (.83-1.26) | 1.11 (.97-1.26) |
| Behavioral inhibition | 1.02 (.89-1.15) | .99 (.88-1.11) | .89 (.77-1.01) | *1.10 (.99-1.22)** | **1.30 (1.04-1.56)** | *.87 (.73-1.002)** | .89 (.74-1.05) |
| Interpersonal sensitivity | 1.02 (.92-1.12) | .99 (.90-1.08) | 1.04 (.93-1.14) | *1.10 (.99-1.20)** | .99 (.86-1.13) | .99 (.79-1.19) | .89 (.69-1.08) |
| *Model 3: Crude sample effect model* | | | | | | | |
| Sample (students) | .91 (.65-1.17) | **1.30 (1.04-1.56)** | .93 (.66-1.20) | **1.57 (1.28-1.85)** | **1.60 (1.22-1.97)** | .57 (.02-1.13) | .63 (.05-1.21) |
| *Model 4: Fully adjusted subject variable model* | | | | | | | |
| Social inhibition | 1.00 (.97-1.03) | .99 (.96-1.02) | 1.01 (.98-1.04) | **1.05 (1.01-1.08)** | 1.02 (.98-1.06) | .97 (.91-1.02) | .97 (.91-1.03) |
| Sex | 1.13 (.88-1.14) | .99 (.71-1.28) | .89 (.62-1.16) | 1.24 (.82-1.61) | .94 (.53-1.34) | .85 (.33-1.37) | 1.01 (.47-1.56) |
| Age | **.97 (.95-.99)** | .87 (.96-1.01) | 1.02 (.996-1.04) | 1.01 (.96-1.06) | .996 (.97-1.02) | .996 (.95-1.04) | **1.02 (1.001-1.06)** |
| In a relationship (yes) | 1.21 (.91-1.50) | .93 (.63-1.24) | .89 (.57-1.23) | **1.41 (1.06-1.76)** | 1.07 (.70-1.45) | .80 (.22-1.39) | .81 (.10-1.52) |
| Educational level (high) | 1.08 (.71-1.44) | 1.03 (.67-1.38) | 1.01 (.65-1.37) | .75 (.33-1.17) | .70 (.33-1.07) | 1.52 (.47-2.56) | 1.12 (.40-1.84) |
| Sample (students) | .70 (.32-1.07)) | 1.03 (.61-1.45) | 1.14 (.70-1.57) | 1.63 (.86-2.38) | 1.32 (.85-1.79) | 1.58 (.68-2.48) | 1.12 (.26-1.97) |

Note: Results are presented as Odds Ratio (95% Confidence Interval); Bold values are significant; italic values * significant at 90%CI and therefore a trend effect

situation. Active approach involves directly engaging with the situation, while reappraisal involves reframing the situation in a more positive or neutral light (Gross, 2015). By combining these strategies, individuals are equipped with both behavioral and cognitive tools to effectively manage their emotional responses and handle the uncomfortable situation. So, despite their difficulty in engaging with interpersonal contact, these behaviorally inhibited individuals might be able to use reappraisal as a strategy to overcome their awkwardness and actively approach the situation. This distinguishes them from those high in interpersonal sensitivity or social withdrawal, as those individuals might actively avoid situations (Denollet & Duijndam, 2019). Herewith, the current study again underscores the importance of examining the underlying manifestations of social inhibition separately.

Another important finding of the current study is that the five largest profiles (1-5) were all characterized by not regulating emotions. The question is whether these individuals actually did not regulate their emotions, or whether they are not aware of using emotion regulation strategies or do not recognize it as such (Webb et al., 2012). Importantly, this result may suggest that the majority of people might not use emotion regulation strategies to change how they feel during uncomfortable social situations, or at least not explicitly. The profiles differed in the type of uncomfortable situation described and how they behaved during those situations. Individuals who are more likely to belong to *Profile 1* mostly described 'getting to know new people' and 'inappropriate social behaviors' in public spaces, at work or a place of study with strangers, friends or acquaintances, as uncomfortable situations. Our findings suggest that individuals who perceive these situations as awkward tend to employ a combination of avoidance and approach behaviors in their attempts to manage their emotions and deal with social interactions. While avoidance behaviors may initially serve as a means of reducing discomfort and anxiety associated with these situations (Ng & Lovibond, 2017; Thuillard & Dan-Glauser, 2017; Vujovic et al., 2014), approach behaviors may be driven by a desire to overcome social challenges, gaining control over the situation and establish connections with others (Moscarello & Hartley, 2017). The apparently simultaneous engagement of these contrasting strategies reflects the complexity of individuals' coping mechanisms in the face of social discomfort (Lazarus, 2006). For example, the inappropriate social behaviors included situations in which participants were excluded or intimidated by others. The variety of regulatory behaviors aligns with the notion that some individuals might stand up for themselves and actively address it, whereas others might feel too intimidated and tend to withdraw.

Although those in *Profile 2* also described 'getting to know new

people' as being an awkward situation, they additionally described 'presenting/performing' as uncomfortable and feeling nervous or tense. People in *Profile 2* did not use any emotion regulation strategies, but additionally, also did not engage in any regulatory behaviors. They instead passively endured the discomfort without taking proactive steps, be it dressing or avoiding the situation. This passive response style might stem from a lack of confidence in the ability to do something about the situation or a fear of rejection (Ford & Collins, 2010). However, some *Profile 2* individuals did engage in reappraisal and self-control behaviors to deal with the situation, which is a demonstration of adaptability in managing social challenges.

For those in *Profile 3* 'getting emotional' was considered to be the awkward situation, and they dealt with their feelings of awkwardness, sadness, disappointment, and anger by using emotion expression or a combination of behaviors. The expression of emotions serves as a fundamental aspect of human communication, social interaction, and psychological functioning, and plays a role in establishing meaningful connections with others (Hwang & Matsumoto, 2017). In addition, the suppression of emotions has been found to be linked to adverse (mental) health outcomes (Gross, 2015), so although these individuals felt uncomfortable while getting emotional, expressing these emotions might be a better strategy fit for the situation. Moreover, individuals in this profile reported a variety of locations where the uncomfortable situation took place. Including being at home with family, which may have given them the confidence and opportunity to express the emotions. While they reported being concerned about others deeming them incompetent or not belonging, they engaged in an array of behaviors, indicating that when individuals get emotional, they tend to do something to change the situation they are in.

The categories 'inappropriate social behavior' and 'talking with a person of authority' were described as uncomfortable situations in *Profile 6*. Applying suppression, in addition to self-control and passive avoidance behaviors, might make sense in these social contexts. Given that there are certain social norms on acting around people with authority, it might be appropriate to not show emotions or give opinions about the situation, even though they felt uncomfortable, nervous, or sad. In addition, it might be beneficial to not show vulnerability in these situations, but save the emotional response to a later time. Although suppression is generally considered a maladaptive emotion regulation strategy, specific contexts may ask for (temporary) suppression and could thus be considered a situation specific fit (Aldao, 2013).

Lastly, in *Profile 7* individuals described awkward situations in the categories 'getting emotional' and less prevalent situations (awkward dating, eating in front of others, medical situations, or giving an

opinion), which made them feel sad, disappointed, nervous, and tense. Their applied strategies (i.e., acceptance and positive refocus), and behaviors (i.e., self-control, and somewhat active approach) are considered a good strategy fit in most situations (Dixon-Gordon et al., 2015). This profile is thus considered to be the 'adaptive regulator' group.

With respect to sample, our results showed that the student population was more likely to belong to *Profiles 2, 4,* and *5*. What these profiles have in common is the type of situation, which indicates that students (compared to individuals from the general population) find situations of getting to know new people, presenting / performing, and small talk / social silences most uncomfortable. These profiles are mostly characterized by lack of emotion regulation. The profiles differ in the behavioral strategies, indicating that students use a variety of behaviors including self-control, avoidance, and approach. Younger individuals of our sample were more likely to belong to *Profile 1*. With younger age, instead of regulating emotions, people could be more likely to engage in a combination of avoidance and approach behaviors in an attempt to manage their emotions and deal with social interactions (Duijndam et al., 2021). Emotion regulation skills typically develop and become more refined during adolescence and young adulthood. Therefore, the engagement in a variety of contrasting behaviors to navigate challenging situations may explain why younger individuals are more likely to belong to this profile (Whitmoyer et al., 2024). In support of this argument, we found that older individuals more likely belonged to the more adaptive *Profile 7*. This may indeed indicate that as people get older, their emotion regulation skills may improve and they learn how to more appropriately display behaviors in uncomfortable situations due to life experience (Charles, 2010).

*Strengths, limitations and future directions*

The results of this study should be viewed in light of its limitations and strengths. It is important to recognize that the majority of our sample was female and highly educated, suggesting that our results may not generalize to other populations. However, in addition to the student population, we recruited participants from the general population, with an equal number of questionnaires from each age and (biological) sex sub-cohort to enhance generalizability. Furthermore, although our study has some implications on social anxiety research, we did not include social anxiety diagnostic assessments in our study and are thus unable to draw our conclusions on this clinical sample. Future research is necessary to identify whether these results also hold for individuals diagnosed with social anxiety disorder. In addition, we relied on retrospective descriptions of uncomfortable situations, which may not fully reflect what participants actually felt or did to change their feelings in the moment. However, using open-ended questions enriched our data because participants were not restricted to reporting specific strategies. It gave us insight in which specific situations trigger which regulatory strategies and behaviors. In addition, the use of a person-centered approach to identify within-person patterns is another strength.

The mixed methods design allowed for a systematic and large-scale analysis of subjectively experienced uncomfortable situations The quantitative analyses, which were the primary focus of the study, permitted to map a general picture of patterns of emotion regulation and behaviors in specific situations, and could identify several distinct profiles that show important interindividual differences. However, unidentified intraindividual variations can be assumed, and should be further explored. Therefore, it could be informative to use Ecological Momentary Assessment (EMA) studies to collect repeated inputs of thoughts, feelings, and behaviors close in time to the experience and in real-life contexts, and thus to come closer to capturing which strategy was used for what situation in real time (Colombo et al., 2020). Most EMA studies on emotion regulation thus far are limited in that the regulatory strategies participants can choose from are predefined, and because emotion regulation can be implicit (Koole & Rothermund, 2011) it is often difficult for people to recollect which strategy they

consciously used to regulate. Thus, applying the open-ended questions used in this study in an EMA design, could enhance our understanding of strategies in specific situations even more. Additionally, more in-depth understanding of people's attitudes and behaviors during specific situations, and in relation to the personality trait social inhibition is warranted. Therefore, we recommend using qualitative research to further refine and explain the different patterns of behavioral and emotional responses found in our statistical results by exploring participants' experiences and subjective contexts in even more detail (Creswell & Plano Clark, 2018).

In conclusion, our findings show that it is the situation which determines whether (and if so which) emotional regulation is applied and which behavior is displayed. In other words, context seems to be the most important factor that drives the choice or decision of how emotions are regulated and whether the strategy is a good fit for that situation. Additionally, the trait of social inhibition was found to rely on active avoidance to deal with uncomfortable social situations, and at the same time not using emotion regulation to modify how they feel in that situation. Future research is encouraged to apply qualitative analyses for more in-depth understanding of the current findings, and to apply an EMA design with open-ended questions to identify which strategy was used for what situation in real time.

**Supplementary materials**

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.ijchp.2024.100532.

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