

Feeler coding scheme - Based on Zimmerman and Moylan model (2009)

Code	Description for Feeler interviews analysis	Coding rules
FORETHOUGHT PHASE		Participants' thoughts and actions before the session.
<b>TASK ANALYSIS</b>	<p>Task analysis are expressions where the participants present their thoughts on setting goals, plan their studies, as well as how and when to do different tasks.</p> <p>EXAMPLES</p> <p>“My plan was to specify the theme, the topic of my research. (...) so I took the favorite text from like couple of other essays or like favorite references, like recent and then try to find some new stuff.”</p> <p>“Well, I was thinking I'm gonna look into Sufi traditions in Tunisia.”</p> <p>“Not really [question was if she had a clear idea about what to search]. I just instantly, when I kind of had, I didn't have anything else, then... maybe ok, it's about my research so let me, you know? Look up and generally scroll through information.”</p>	<ul style="list-style-type: none"> <li>- Specific strategies that participants develop in advance in order to successfully complete a task.</li> <li>- Actions connected to future planning and task analysis happen before a study session using Feeler.</li> <li>- Negative assertions (such as, admitting not having a plan beforehand) might be coded as “task analysis”</li> </ul>
<b>SELF-MOTIVATION BELIEFS</b>	<p>In self-motivation beliefs participants present their persona/individual beliefs on their abilities, interests and motivation in general. The participants may also express goals and outcomes that motivate them. These can be such as learning a new skill or knowledge or getting study credits, degree or some position.</p> <p>EXAMPLES</p> <p>“Yeah, I'm highly motivated like at the meta-level, but at this point the task is very easy”</p> <p>“There will be a point when I'm writing this and if I'll get stuck, and if I'm stuck for enough time, then other thoughts would start flipping into mind”</p> <p>“Maybe it's if I have (...) have to do something in a specific time, if I give myself, ok I need to do</p>	<ul style="list-style-type: none"> <li>- Reference to self-perceptions and beliefs about themselves.</li> <li>- Participants express interest in the task.</li> <li>- Participants aim to reach goals that cannot be accomplished in just one session</li> <li>- Self-motivation expressions are not necessarily referring to a specific session.</li> </ul>

	<p>this not in an hour, but I need to complete this thing, I don't really do other stuff meanwhile.”</p> <p>“Because I procrastinate a lot, a lot, and I'm very lazy (...) Given a chance, I would go into this state of, kind of, blankness (...) personally, I'm kind of a person who can stare into a blank wall and have like enormous amount of thoughts.”</p> <p>“There are people who is tense almost all the time. I think that I tend to be that kind of person. It's difficult to relax.”</p>	
<p>PERFORMANCE PHASE</p>		<p>Participants' comments focus on their work and states during a study session in which they use Feeler.</p>
<p><b>SELF-CONTROL</b></p>	<p>Self-control refers to participants' efforts to control certain aspects of their behavior and mental states to improve their performance. Self-control strategies can include time management, self-instruction, environmental structuring, help seeking, interest incentives and self-consequences. Task specific self-control strategies refer to participants' systematic processes for successfully completing a task.</p> <p>EXAMPLES</p> <p>“Like I said, I've been doing the 20-25 minutes blocks of work as well, and that's perfect, cause at this point if I open up the document I would probably write for another 4 or five minutes and then I will (...) I'll naturally tend to procrastinate, so like, that's why this kind of chunks of time works because you can tell, (...) “just five more minutes”, you know?”</p> <p>“Through the task I was only thinking about this, like I was kind of wrestling about these things, so actually during that 20 minutes I didn't think too much about "oh, I'm travelling, I have to print some tickets, I have to check in ..." or anything of that. I was just thinking about this and that school, what they are doing... that kind of thing, things relevant to the task.”</p> <p>“I actually knew that these lights were going, so couple of times I checked, but then, then I got actually into what I was doing and I stopped checking.”</p>	<ul style="list-style-type: none"> <li>- Reference to self-control actions or strategies that took place while trying to study/work using Feeler.</li> <li>- Participants might report successful actions, as well as challenges or failures for self-controlling their behavior.</li> <li>- The self-control actions can be performed by participants or by the Feeler.</li> </ul>

	<p>“Specially in the end of the meditation I started to feel that I had to see when the time is ending, so I didn't focus completely to the meditation, I was also focused a bit on when does the light light up, but otherwise... here I almost forgot to check and then here because there is no timing I just continued until I felt.”</p> <p>“Last time I checked only Google scholar and this time I went to journal pages also.”</p>	
<p><b>SELF-OBSERVATION</b></p>	<p>In self-observation participants acknowledge self-monitoring their actions and assessing their effectiveness for learning. As a result of self-observation, participants develop awareness on their behavior and mental states during a study session.</p> <p>EXAMPLES</p> <p>“I wasn't sure how, like..., how far I am, so I opened my eyes and tried to focus on this, but I felt more, like the meditation feeling and relaxation and all that was higher when I had my eyes closed.”</p> <p>“I was reading this text and I was trying to focus to follow what she is actually saying, but I didn't feel... my interest was falling quickly.”</p> <p>“Well, I guess that in the beginning of the study part, the sort of breathing of the meditation part applied. I would say so, that the sort of breathing practice continued towards the study.”</p> <p>“No, I didn't feel awkward [playing with game box]. I was thinking why to play it”</p> <p>“At the beginning I was a bit anxious because I had to keep looking at the boxes and, it's interesting how I was more conscious about those boxes than the device on my head. (...) I didn't feel like I had the device on my head, but I was consciously looking at that [the box] for the instructions, (...) when it stops and all that, but towards the end, towards the third test, (...) I didn't had to look at it at all because I got the sense of time (...). I just wanted to see the learning curve as well in the, in all my three data sets and I could see that, you know? it was not very difficult to get used to it”</p> <p>“I think the meditation session was a little off today, like I wasn't able to focus at all, like I kept</p>	<ul style="list-style-type: none"> <li>- Comments connected to awareness or self-awareness during the study session.</li> <li>-“Self-observation” can be considered as a mental process while self-control implies the participant has taken an action.</li> <li>- Self-observation can be performed by the participant or by Feeler and it always takes place during the study/work session.</li> <li>- Comments coded as part of “self-observation” refers to the immediate effects of a particular behavior on learning.</li> </ul>

	<p>jumping between things like "oh, I have to pack in the afternoon, which suitcase should I ..." you know, it's like, in that moment of calm I was thinking about what I have to do next, so I was not able to focus at all and hence I guess, this stuff."</p> <p>"It was a moment when I read this article about women gathering in a (...) shrine in the south of Tunis and one woman was giving this personal account how she felt there that she is somehow in a good place for her and then she wants to live in Tunisia, I think. So, for me this kind of information is always very powerful, when someone gives personal accounts."</p>	
<p><b>SELF-REFLECTION PHASE</b></p>		<p>Participants reflect their past performance during a study session. Participants refer or make inferences about the future based on their previous experiences using Feeler.</p>
<p><b>SELF-JUDGMENT</b></p>	<p>Self-judgment are statements where participants self-evaluate their performance against a standard. When self-judging their actions, participants make comparisons and create hypothesis in order to identify the causes of their behavior.</p> <p>EXAMPLES</p> <p>"I think I did a lot better also. (...) Also, I got lucky with the sequence cause it was sort like this, you know, didn't jump around too much so I always had to just remember some specific points, but, yeah, I was able to understand and play the game better"</p> <p>"Definitely, the first session was probably my worst because I was all over the place that day, it was the end of the day (...). I feel that today's session I was the most focused on the task and I was able to do it properly."</p> <p>"I feel like that in the afternoon I'm more somehow in this situation, but in the morning I don't like, I'm in myself still."</p> <p>"Oh yeah, closer, closer [when reviewing how he assessed his performance in comparison to the system]. I somehow kept in mind that the last time I was very far so, this time I decided to go lower with estimations [laugh]"</p>	<ul style="list-style-type: none"> <li>- The participant tries to make sense of the Feeler data.</li> <li>- Use of comparative clauses indicates that the participant has some sort of standard for assessing their performance.</li> <li>- Comments show that the participant has found, or is trying to find, a causal explanation for her/his behavior by making hypothesis and speculating.</li> <li>- Reference to past experiences using Feeler.</li> </ul>

	<p>“But here I thought I'm attentive because I'm looking for concrete information in my e-mail, so somehow I'm not attentive... my attention, according to the machine is very low.”</p> <p>“But now I started to think that looking at the diagram that what the machine is taking for attention is this period when I'm actually for longer time doing something, so the short span kind of thing the machine is not taking is not taking it as attention, which is really interesting because it's true that when I'm doing these very short tasks like I just need to find one information on the e-mail, the focus is not continuous at all.”</p> <p>“[Interviewer: in your opinion, which were the moment you were the most relaxed?] I think that towards the end of meditation and towards the end of the study, and also with the game.”</p>	
<p><b>SELF-REACTION</b></p>	<p>Self-reaction refers to participants' different levels of satisfaction with their performance. It also includes expressions regarding how willing participants are to question and modify their study habits.</p> <p>EXAMPLES</p> <p>“Like I said, I would be more than happy if you just give this to run on my machine for a couple of days, you know? I'm happy to test that as well. Because I feel that the data you would see is very different”</p> <p>“I don't know how that works over a period of time, you know? It's fine today, it might be fine for the first 2 or 3 weeks, but after a while does that has still have the same effect or not, is... I don't know, something to be seen.”</p> <p>“I think like this structure works, you know? That for me it's interesting. One of the things I was just thinking about is also like integrating some kind of game play into my breaks (...), some small mobile puzzle games or things like that, because that stops me from getting distracted by various themes online, but it also gives me a bit of a break.”</p> <p>“It's [decrease of attention when switching tasks] raising interesting thoughts for me, about, for example, doing some continuous work for a long time (...). It's strange because I felt I had felt this first, or like I was addressing this consciously sometime during the last year or two that it is good for me, for example, to read a book in a continuous manner for a few hours, but (...) I do</p>	<ul style="list-style-type: none"> <li>- Participants assess a past experience and express different levels of satisfaction with their performance. Feelings or emotions that require a certain level of analysis are coded as self-reaction.</li> <li>- Participants refer to the prospective Feeler use in the future (they use future or conditional tenses).</li> <li>- Participants acknowledge changes in their behavior, or reasons why not changing it, after using Feeler (these can be reported in past tense if the changes in behavior happened between sessions).</li> </ul>

	<p>something so rarely continuously for few hours that I think it's crazy (...) being like this. So I think that brings that up more strongly. And now I feel like scientific data is backing it up"</p> <p>"[Interviewer: is there something you are curious for next session?] I don't know, maybe, well, if it's the same test it would be fun to compare these, to see if the rhythm [of the attention and relaxation EEG data] is the same. But also if my mood before I get here, if I'm in a really good mood, what happens."</p>	
<b>TECHNOLOGY DESIGN</b>		
<b>FEELER</b>	<p>Feeler expressions consist in direct references to Feeler design elements such as user experience, usability and specific functionalities.</p> <p>EXAMPLES          "A feature that I would like is to be able to... say press a button and just quickly put a sign in this, you know? at different touch points, so they become like points that I know that later in my review and reflection I want to look back at the comparison between how I felt and the data"</p> <p>"And of course the data goes up and down, maybe, I would have thought it goes like more smooth, but anyway, you can just smooth this out and sort of make it smoother, so it doesn't look so random."</p> <p>"For me it would be useful to be able to graduate the time of the second box."</p>	<ul style="list-style-type: none"> <li>- Direct reference to Feeler as object/s by naming it or using a pronoun.</li> <li>- Participants suggest some features or changes in the design that would better respond to their needs.</li> <li>- Does not include evaluation on the previous learning process with Feeler</li> </ul>
<b>OTHER</b>		
<b>GENERIC</b>	<p>Generic refers to participants' assumptions and beliefs about learning, self-monitoring and data tracking. This type of statements tends to be general and is not directly linked to the Feeler prototype usage.</p> <p>EXAMPLES          "This relaxed state means different things depending on the activity like when I'm doing this</p>	<ul style="list-style-type: none"> <li>- General comments about study habits, as well as prior ideas about how certain mental states affect performance when studying will be coded as "generic".</li> <li>- Wider reflections might be considered as "generic" comments.</li> </ul>

	<p>relaxation for work means being at some, for me, higher level of attention, whereas relaxing at home on a Sunday is a totally different thing, like when I'm running, or something, I'm extremely relaxed, but that's where my mind is wondering completely and so, I don't know, I think it also depends on the context."</p> <p>"[Interviewer: which times of the day are better for you to focus] Probably mornings and evenings and late evenings"</p> <p>"Productivity might mean that you make something, that big outcome comes out of it. So, once I read like one paragraph which was really influential to my thesis topic and I felt that the whole day had been one of the most productive and that happened in one minute or so during like a month, because that connected so many things."</p> <p>"Yeah, but of course procrastination is, at least...how much ever... in my current way of... it is kind of helpful"</p> <p>"I'm always doubting the data!"</p>	
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