

Social Presence Inventory for Interactions with Embodied Virtual Agents (SPI-IEVA)

Hint: The formulations used in this template questionnaire currently focus on one single person, highlighted in square brackets.

Please adapt this term to the one fitting for your respective study. It may be a co-worker, a conversation partner, a tour guide. It also may be several persons instead of an individual, such as partners, people, pedestrians, social group, etc.

If you are unsure on how to adapt the questions correctly, please consult Jonathan Ehret or Andrea Bönsch.

1. SP - Social Presence

These five questions are the Social Presence construct from the Multimodal Presence Scale for Virtual Reality Environments (MPS) [Makransky et al., 2017].

5-point Likert Scale (1 = completely disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree, 5 = strongly agree)

SP1	I felt like I was in the presence of [another person] in the virtual environment.
SP2	I felt that the [person] in the virtual environment [was] aware of my presence.
SP3	The [person] in the virtual environment appeared to be sentient (conscious and alive) to me.
SP4	During the simulation there were times where the computer interface seemed to disappear, and I felt like I was working directly with [another person].
SP5	I had a sense that I was interacting with [another person] in the virtual environment, rather than a computer simulation.

2. SR - Social Reactions

These first three questions are based on the Social Presence - Active Interpersonal construct from the Temple Presence Inventory (TPI) [Lombard et al., 2009]. The fourth is extracted from the Social Presence - Actor within Medium (Parasocial Interaction) construct from TPI

7-point Likert Scale between Never (1) and Always(7)

SR1	How often did you make a sound out loud (e.g. laugh or speak) in response to someone you saw/heard in the virtual environment?
SR2	How often did you smile in response to someone you saw/heard in the virtual environment?
SR3	How often did you want to or did you speak to a [person] you saw/heard in the virtual environment?
SR4	How often did you want to or did make eye-contact with someone you saw/heard in the virtual environment?

3. PBI - Perceived Behavioral Interdependence

These six questions are the Perceived Behavioral Interdependence construct from the revised version of the Networked Minds Questionnaire [Harms and Biocca, 2004].

7-point Likert Scale between Never (1) and Always(7)

PBI1	My behavior was often in direct response to [the other person's] behavior.
PBI2	The behavior of [the other person] was often in direct response to my behavior.
PBI3	I reciprocated [the other person's] actions.
PBI4	[The other person] reciprocated my actions.
PBI5	[The other person's] behavior was closely tied to my behavior.
PBI6	My behavior was closely tied to [the other person's] behavior.

4. ANT - Anthropomorphism

The five semantic differentials are described in the first dimension, namely Anthropomorphism, of the Godspeed Questionnaire [Bartneck et al., 2009].

5-point bipolar Likert Scale 1 to 5

	Please rate your impression of the [other person/persons] on these scales:		
ANT1	Fake	--	Natural
ANT2	Machinelike	--	Humanlike
ANT3	Unconscious	--	Conscious
ANT4	Artificial	--	Lifelike
ANT5	Moving rigidly	--	Moving elegantly

5. HLB - Human-Like Behavior

The five questions are based on construct 1.2 called Human-Like Behavior from the ASA Questionnaire [Fitrianie et al., 2022]

7-point Likert Scale with labels: -3 (disagree), 0 (neither agree nor disagree), 3 (agree).

HLB1	A human would behave like the [person].
HLB2	The [person's] manners is consistent with that of people.
HLB3	[The person's] behavior makes me think of human behavior.
HLB4	[The person] behaves like a real person.
HLB5	[The person] has a human-like manner.

6. COH - Coherence

The five questions are based on construct 13 called Agent's Coherence from the ASA Questionnaire [Fitrianie et al., 2022]

7-point Likert Scale with labels: -3 (disagree), 0 (neither agree nor disagree), 3 (agree). Score inverted!

COH1	[The person's] behavior does not make sense.	invert score
COH2	[The person's] behavior is irrational.	invert score
COH3	[The person] is inconsistent.	invert score
COH4	[The person] appears confused.	invert score

7. INT - Intentionality

These four questions are based on construct 14 called agent’s intentionality from the ASA Questionnaire [Fitrianie et al., 2022],
7-point Likert Scale with labels: -3 (disagree), 0 (neither agree nor disagree), 3 (agree).

AI1	[The person] acts intentionally.
AI2	[The person] knows what [he/she] is doing.
AI3	[The person] has no clue of what [he/she] is doing.
AI4	[The person] can make [his/her] own decision.

invert score

8. SOC - Sociability

SOC1 is AS3 of construct 5 called Agent’s Sociability from the ASA Questionnaire [Fitrianie et al., 2022]
Two more questions of this construct were discarded because they regarded more mingling
SOC2 can be optionally added when agents interact with each other, and is loosely based on SOC1
7-point Likert Scale with labels: -3 (disagree), 0 (neither agree nor disagree), 3 (agree).

SOC1	[The person] interacts socially with me.
SOC2 - opt	[The person] interact socially with each other.

9. Free Text

What interactions of the [person] did you perceive as social interactions?
What did not quite fit about the virtual [person]?

Sources

[Bartneck et al., 2009] Bartneck, C., Kulić, D., Croft, E., & Zoghbi, S. (2009). Measurement Instruments for the Anthropomorphism, Animacy, Likeability, Perceived Intelligence, and Perceived Safety of Robots. *Int J Soc Robot*, 1:71–81.

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