

Transparency Of RObots Scale (TOROS) - English Version

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Instructions

Contextualized instructions for participants:

The following statements are about the robot, its behaviors, and its functioning. Please indicate the degree to which you disagree or agree with these statements (from 1 “Strongly disagree” to 7 “Strongly agree”).

Not-contextualized instructions for participants:

Please indicate the degree to which you disagree or agree with the following statements (from 1 “Strongly disagree” to 7 “Strongly agree”).

Instructions for scoring:

By default, this questionnaire is a 7-point Likert scale (labels based on^{1,2}).

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree

The scale can be converted as a 5-point Likert scale using the following scaling.

1	2	3	4	5
Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree

The authors, however, strongly recommend not to do so, as 7-point Likert scales present the best balance between ease of use, adjustment to memory span, and accuracy¹.

Instructions for administration:

The order of the presented items should be ideally randomized.

Instructions for scoring:

Subscale (dimension) scores are calculated by averaging the ratings of the items of each subscale. A composite score of transparency can be calculated with the average of the three subscales.

The items:

Factors	Items
Illegibility	<p>The robot's overall functioning is a mystery to me.</p> <p>It is hard to make sense of the robot's general functioning.</p> <p>It is difficult to get a clear picture of the robot's overall operations</p> <p>I am confused about the robot's general objectives.</p> <p>I am unsure what the robot does.</p> <p>I cannot comprehend the robot's inner processes.</p> <p>I cannot explain the robot's behavior.</p> <p>It is impossible to know what the robot does.</p> <p>It is clear to me what the robot does.</p> <p>I have a clear understanding of how the robot operates in general.</p>
Explainability	<p>I feel like the robot's explanations are useful.</p> <p>The robot explains complex tasks in a way that is easy to understand.</p> <p>The robot provides detailed explanations of its actions.</p> <p>The robot provides clear explanations for its actions.</p> <p>The robot's explanations for its actions are straightforward.</p> <p>I feel informed about the robot's activities.</p> <p>The robot conveys its overall state effectively.</p>
Predictability	<p>It is easy for me to foresee the robot's future actions.</p> <p>The robot's behavior is predictable.</p> <p>I feel confident in predicting the robot's next moves.</p> <p>It is easy to anticipate what will follow the robot's behavior.</p> <p>It is difficult for me to tell what the robot will do next.</p> <p>The robot's next steps are clear to me.</p> <p>The robot's actions are obvious.</p> <p>The robot provides cues that help predict its next actions.</p> <p>The robot's behavior does not help predict what it will do next.</p>

References

1. Taherdoost, H. What is the best response scale for survey and questionnaire design; review of different lengths of rating scale/attitude scale/likert scale. *Hamed Taherdoost* 1–10 (2019).
2. Wade, M. V. *et al.* Likert-type scale response anchors. *Clemson international institute for tourism & research development, department parks, recreation tourism management. Clemson Univ.* 4–5 (2006).