

Capability Assessments

- An Experimental Study of Capability Assessments with Multi-Actor Dependencies

When solving a task with someone, you are likely to underestimate your capability to do so. At least if the task is of a cognitive nature and you are dependent on each other. In the conducted experiments the majority of the participants underestimated their capability to perform a given task. In an ever growing complex world, making accurate capability assessments will be an important future tool to allocate resources between relevant actors. This is highly important since the consequences of misplaced resources may be loss of lives.

The modern society is growing fast and is increasingly complex, which inherently increases the number of actors who also are dependent on each other. In order to cater for the increasingly complex society several countries, Sweden and United Kingdom among others, have adopted a capability-based planning approach in their national risk and vulnerability analysis. The capability assessments are conducted in Sweden as part of the risk and vulnerability analyses, which every municipality is required to update annually. However, the term capability and how to conduct assessments of capability have not been defined and structured consistently among practitioners. Since the number of actors who are dependent on each other is increasing, it is crucial to understand how multi-actor dependencies affect capability assessments.

In this study two different dependencies were tested where all relevant actors have a common goal, called Dependency I and Dependency II. **Dependency I** simulates two actors where each actor's individual performance is not affected by the other actor's performance. **Dependency II** simulates two actors where the first actor's individual performance affects the second actor's performance.

The conclusions are that the participants tended to be more confident when assessing multi-actor dependency tasks in pairs than individually, even so a majority of the participants underestimated both their individual and joint capability to solve the tasks. There was a significant difference between capability assessments and performances for all tasks, including the individual task. This suggests that assessing capability is difficult both with or without multi-actor dependencies. However, a qualitative analysis suggests that individual capability assessments are more accurate for individual tasks and Dependency II than for Dependency I. For assessment made in pairs there is no significant difference between the dependencies, although assessments for Dependency II tend to be more accurate than Dependency I.

The foundation of this study is the experiment carried out at Lund University, Luleå Technical University and Nils Fredriksson Utbildning. A total of 48 participants took part and performed at least one of the two designed tasks. It is the anticipation that the results from this study will be a stepping stone towards future methods on how to assess capability where multi-actor dependencies are present.