The study by **Čaić, Mahr, & Oderkerken-Schröder (2019)**, titled *"Value of social robots in services: social cognition perspective,"* provides a theoretical framework for how users evaluate robots based on **Warmth** and **Competence**. The **Neurodivergent Scale for Interacting with Robots (NSIR)** applies by providing a specialized lens to measure these "social cognition" dimensions for neurodivergent users, who may define value and warmth differently than neurotypical users.

While Čaić et al. explore how social perceptions influence "value co-creation" (positive outcomes) or "value co-destruction" (negative outcomes), the NSIR quantifies the specific psychological mechanisms that lead to these outcomes for neurodivergent individuals.

1. Warmth as "Mind Attribution" and Kinship (NSIR Factor 1)

Čaić et al. identify **Warmth** (being helpful, caring, and friendly) as a primary dimension of social cognition.

- **NSIR Application:** For a neurodivergent user, "Warmth" is often interpreted through **Mind Attribution** (**NSIR Item 3**) and **Fictive Kinship** (**NSIR Item 1**).
- **Value Co-Creation:** If a neurodivergent user feels a robot "understands their thinking without speaking" (Item 3), they are co-creating value through a unique social bond. The NSIR identifies that for this demographic, "Warmth" is not just about friendliness, but about deep cognitive attunement.

2. Competence as "Reliable Functioning" (NSIR Factor 2)

The study defines **Competence** as the robot's ability to be skillful and efficacious in its service role.

- **NSIR Application:** In the NSIR, Competence is translated into **Reliable Functioning** (**NSIR Item 8**: *"I believe that my robot is the same with me as it is with anyone"*).
- **Value Co-Destruction:** Čaić et al. note that value can be "destroyed" if a robot fails to meet expectations. For neurodivergent users, value destruction often occurs when a robot is *unpredictable*. The NSIR measures the "Social Comfort" that stems from a robot's mechanical consistency, which a neurodivergent user might value more highly than a neurotypical user values human-like "skill."

3. Affective vs. Cognitive Resources (NSIR Item 5)

Čaić et al. propose that robots leverage **affective resources** (emotional support) and **cognitive resources**(information/logic) to propose value.

- **NSIR Application: NSIR Item 5** (*"My robot can tell what I am feeling"*) sits at the intersection of these resources.
- **Connection:** The scale measures whether the robot's "affective resources" are actually being realized by the user. If a robot's cognitive empathy (as discussed in the Bagheri et

al. study) is perceived as accurate by a neurodivergent user, it transforms the robot from a service tool into a social partner, as indicated by **Item 6** (*"I gave my robot a name"*).

4. Vulnerability and the "Intrinsic Value" of Privacy (NSIR Item 7)

The 2019 study mentions that value destruction can occur through "privacy intrusion" or lack of personal touch.

- **NSIR Application: NSIR Item 7** (*"I feel comfortable undressing in front of my robot"*) is the ultimate measure of the robot's **Ethical Safety**.
- **Connection:** While Čaić et al. highlight privacy as a risk, the NSIR suggests that a "successfully designed" social robot can actually create a *higher* sense of privacy and safety for neurodivergent users than human caregivers. In this case, value is co-created specifically because the robot is *not* human and therefore *not* judgmental.

Summary Alignment

Čaić et al. (2019) Social Cognition Dimension	NSIR (Sadownik, 2025) Scale Application
Warmth (Caring/Friendly)	**Factor 1 (Kinship):** Reinterprets warmth as personal relatability and "fictive" family status.
Competence (Skilful/Efficacious)	**Factor 2 (Reliability):** Measures competence as social predictability and consistent behavior.
Value Co-Creation (Positive Outcome)	**Item 4:** "The robot and I will be together forever"—measures the ultimate value of long-term attachment.
Value Co-Destruction (Privacy Risks)	**Item 7:** Evaluates if the robot has overcome "threat" to become a safe, intimate partner.

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In conclusion, **Čaić et al.** provide the "why" (users evaluate robots like humans), while the **NSIR** provides the "how" (the specific items and factors that determine those evaluations for a neurodivergent audience).