

## What makes an Agent an Agent? Comparing the semantic properties of Instruments and prototypical Agents in subject position

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This study aims to analyze Italian speakers' perception of the thematic roles of Agent, Patient, and Instrument through the lens of Dowty's (1991) Proto-Role Hypothesis. While previous studies (Kako 2006; Reisinger et al. 2015; White et al. 2016) have demonstrated that the thematic roles of Agent and Patient can be decomposed into basic semantic properties that are inferred by speakers from the syntactic roles of subject and object, as outlined by Dowty (1991), no prior research has specifically focused on Italian or considered the thematic role of Instrument, which constitute the primary novelties of this study.

The Instrument role has traditionally been characterized in causal terms (e.g., Fillmore 1968; Croft 1991; Talmy 2000), as “an entity that serves as an intermediary between agent and patient in a causal chain (Goldberg 2002: 340)”. Although non-causal instrumental subroles have also been identified (cf. Marantz 1984; Levin & Rappaport Hovav 1988; Schlesinger 1995; Koenig et al. 2003, 2008), this study focuses on intermediary Instruments for two main reasons: (i) these Instruments are known to share the +cause property with Proto-Agents while being -volitional and -sentient, like Proto-Patients (Dowty 1991); (ii) only intermediary Instruments can undergo the Instrument-Subject Alternation (ISA), i.e., they can appear as subjects when the Agent is left unexpressed (e.g., *John opened the door with the key / The key opened the door*).

Intermediary Instruments are thus central to addressing our research questions: (RQ1) Are different properties attributed to Instruments occurring as subjects compared to subjects expressing prototypical Proto-Agents, as semantic properties are inferred from syntactic roles? (RQ2) Does the Instrument role align more closely with the Proto-Agent or the Proto-Patient, depending on its syntactic realization (PP *versus* subject)?

To answer RQ1 and RQ2, 39 pairs of sentences were created, as in (1):

- (1) a. *Il pescatore ha catturato il pesce con una rete*  
‘The fisherman caught the fish with a net’
- b. *La rete ha catturato il pesce*  
‘The net caught the fish’

Five defining properties of Dowty's Proto-roles were selected, starting from previous works (Kako 2006; Reisinger et al. 2015; White et al. 2016), i.e., VOLITIONAL INVOLVEMENT, SENTIENCE, CAUSED A CHANGE, UNDERGOES A CHANGE OF STATE, INDEPENDENT EXISTENCE. Participants were asked to rate, on a continuous scale (1-100), how much a constituent in a sentence displayed each of these five properties. The experiment was presented in two conditions. In the Agent-Instrument condition, 47 Italian native speakers rated how much the Agent-subject (e.g., *il pescatore* ‘the fisherman’) and the Instrument-subject (*la rete* ‘the net’) displayed the five properties, for all the sentence pairs. In the Patient-Instrument condition, other 47 Italian native speakers rated how much the instrumental PP (*con la rete* ‘with the net’) and the Patient-object (*il*

*pesce* ‘the fish’) displayed the five properties, for the same sentence pairs. The experiment was conducted online, via the Gorilla Experiment Builder platform ([www.gorilla.sc](http://www.gorilla.sc)).

The collected data are analyzed with a linear mixed-effects interaction model using *R* (R Core Team, 2023). The dependent variable is score. The fixed effects are the XP/role (i.e., Agent, Patient, Instrument-subject and instrumental PP) and the five properties. Participants and items are considered as random effects. This analysis revealed a significant interaction between the two fixed effects (random intercept  $p < .001$ ). Namely, Agent-subjects are rated significantly higher than Patients, Instrument-subjects and instrumental PPs concerning the VOLITIONAL INVOLVEMENT, SENTIENCE, CAUSED A CHANGE properties ( $p < .001$ ). Patients were ranked significantly higher than the other XP/roles concerning the UNDERGOES A CHANGE OF STATE property ( $p < .001$ ). Finally, no significant difference was found regarding the INDEPENDENT EXISTENCE property ( $p > .05$ ).

The collected data reveal that Agent-subjects are perceived as more volitional and more sentient than Instruments, even when Instruments are realized as subjects (RQ1). Instruments are especially perceived as entities that cause a change, regardless of their syntactic realization (RQ2). They align with Agents in this regard, but with Patients concerning the absence of volition and sentience, thus occupying an intermediate position between Proto-Agents and Proto-Patients, consistently with Dowty’s (1991) proposal.

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