Perfect ever after:
An empirical investigation of tense-based event construals in English and Spanish

In English and Spanish, just as in many other languages, speakers can use simple past tense (1) or perfect tense (2) to describe something that happened in the past:

    (1) Julius travelled to London
    (2) Julius has travelled to London

But what is the difference in meaning between (1) and (2)? A longstanding descriptive observation is that while (1) and (2) both refer to the past event, (2) establishes a link to the present time in a way that (1) does not, therefore creating a more complex meaning. Formal accounts of the perfect differ in their assumptions about the nature of such a link, and the semantic contribution of the perfect overall (e.g., Iatridou et al. 2001; Klein 1994); but one prominent analysis concludes that the perfect creates a state from a previous event (Moens 1987, Parsons 1990). Here, we test this "perfect-as-state" analysis empirically. We present the results of two behavioral studies (total N=960) in English, a Germanic language, and Spanish, a Romance language. Our results show that the perfect tense in both languages leads to event construals that have more in common with states than events in the simple past: (1) refers to a past travelling event, whereas (2) refers to Julius' acquired property of having been to London.

In our studies, we used *boundedness* as a tool to tease apart the construals of past vs perfect events. Objects with boundaries can be counted (e.g. 'three apples'), whereas unbounded substances cannot (*'three applesauces'; only sortal reading possible); this property of individuability has been shown for bounded objects as well as events (Barner et al. 2008; Wittenberg & Levy 2017). We applied it to the domain of tense: If the perfect denotes a state, it should be unbounded, like mass nouns and durative verbs, triggering lower rates of individuation for events in perfect tense compared to events in past tense.

Experiment 1 replicated Barner et al. (2008) and extended it to Spanish: We manipulated nominal syntax (count vs. mass) and event type (durative vs. punctual); in addition to these conditions, we also manipulated tense (past vs. perfect; all between subjects). In the critical trials (n=12), participants read a set of vignettes describing two characters performing actions, normed to be either unbounded and durative, such as *dancing*, or bounded and punctual, such as *jumping*. A question followed, using a light verb in past or perfect form, followed by a noun either in mass syntax (e.g., *Who did/has done more dancing/jumping*; *bailar/saltar ¿quién hizo/ha hecho más?*) or count syntax (e.g., *Who did/has done more dances/jumps; bailes/saltos ¿quién hizo/ha hecho más?*). Participants had two response choices: One character did more of the action in number of times, and the other character did more of the action in a different, pre-tested dimension (e.g., jumping higher, dancing longer). The number-based choice therefore served as measure of individuation. **Results (Fig.1):** We successfully replicated Barner et al.'s (2008) results in two languages (N=240ea.), finding that speakers quantified events in count syntax more than in mass syntax. This was primarily driven by event type: punctual events resulted in high individuation rates regardless of nominal syntax, whereas durative events in mass syntax yielded lower
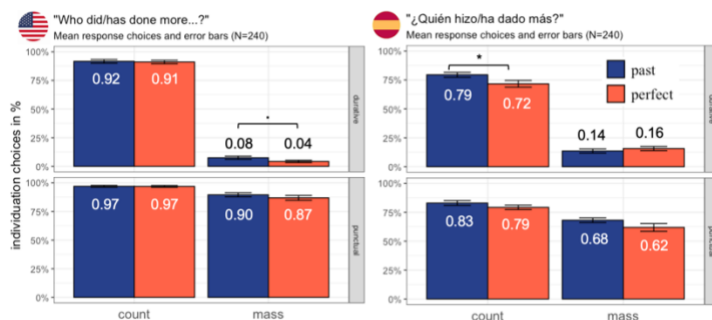

Figure 1. Mean individuation responses for English (left) and Spanish (right). In both English and Spanish, we replicated Barner et al's (2008) findings. For visual clarity, we only illustrate the significant effects of pairwise comparisons (*=significant; •=marginally significant); for other results, please refer to the text. Error bars represent Standard Errors.
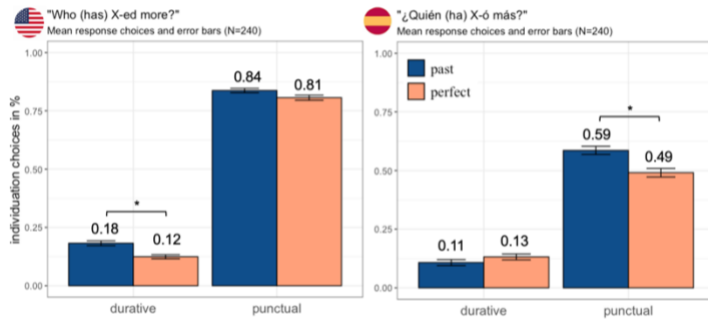
Figure 2. Mean individuation responses for English (left) and Spanish (right). For visual clarity, we only illustrate the significant effects of pairwise comparisons (*=significant; •=marginally significant); for other results, please refer to the text. Error bars represent Standard Errors.

individuation rates compared to count syntax (all effects and interactions Dfs=1, χ^2s>118.36, p<0.001). There was a marginally significant effect of tense in Spanish (Df=1, χ^2= 3.33, p=0.07), whereas in English the trend was only numerical, but both pointed into the predicted direction: less individuation in the perfect tense, compared to the past tense. **Experiment 2** (N=240ea.) tested the effect of tense on individuation without nominal syntax as intermediating factor. Instead of using light verb constructions, such as asking *Who did more jumps?*, we used full verb forms in past tense (e.g., *Who jumped/danced more? ¿Quién saltó/bailó más?*) and perfect tense (e.g., *Who has jumped/danced more? ¿Quién ha saltado/ bailado más?*). Other than that, the procedure followed that of Experiment 1. **Results (Fig.2):** A main effect of event type confirmed that durative events give rise to significantly less individuation than punctual events (Dfs=1, χ^2s>689.12, p<0.001). Crucially, we also found the predicted effect of tense: Perfect tense led to less individuation, both in English and in Spanish, as predicted by the perfect-as-state hypothesis (Dfs=1, χ^2s >10.97, p<0.001).

 Discussion: The pattern of results from four experiments clearly indicates: In the absence of strong cues of individuation such as nominal syntax, the perfect tense leads to more stative event construals compared to past tense, constituting the first empirical evidence supporting the 'perfect-as-state' hypothesis, so far advocated only on theoretical grounds (Bybee et al. 1994; Sánchez-Marco 2012; Dowty 1979; Katz 2003). Our findings lay the groundwork for further investigations across languages and tense systems.

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