

Interjections in Action

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Interjections are vitally important in realtime coordination of action, but this has not previously been directly studied. We recorded audio, screen images, and keystrokes as they occurred as four pairs of American English speakers played a cooperative online game, Fireboy and Watergirl. In 40 minutes of interaction we found 117 interjections. We examined each in context and grouped them into categories, primarily based on similarities in the state of mind conveyed, considering also the state of gameplay, the phonetic and prosodic forms, and the intended effects on the other player. We identified nine categories.

First there were interjections that related to information state. These conveyed the degree of understanding, either of the game situation or of the other person's explanation. These ranged from *hm?* (lack of understanding) through *hm* and *uh-huh* (partial understanding) to *oh* and *ahh* (complete understanding).

Next there were three types of affect bursts. One expressed a feeling of accomplishment after the speaker or the other player accomplished a tricky jump or completed a level, often with *hnn*. The second expressed disappointment, typically after the player's character died, as with *aww* in creaky voice or other sounds with /a/. The third expressed negative feeling about a situation, marked with a plosive followed by a fricative, such as *kssh*.

Then there were four that related to the nature of the current activity. Effort, occurring in moments where a player was in a difficult situation and concentrating on moving correctly, was marked by multiple short syllables, separated with glottal stops and synced with pressing the jump key, such as *urh uh* or *hu un*. Alarm, which occurred at moments of imminent disaster, was often expressed with loud repeated syllables with glottal fricatives such as *uh uh uhh*. Concern and tension sometimes occurred at such times, marked with sharp inhalations, usually with *sss* sounds. Feelings of relief and release of tension often took the form of breathy, slow exhalations, which sometimes segued into laughter.

Finally there were sound effects, such as *fwaa* and *hoo*. These often conveyed enjoyment, with a lack of tension and effort, for example when falling freely or being carried by the wind. These also seemed to convey something about the kind of motion, in an onomatopoeic way, for example, collisions with *oof* and running without obstacles with *whee*.

We note that these categories have some overlap, that some interjections are multifunctional, and that some shift their nature halfway through, reflecting changes in the game state. Orthogonally to these categories, most interjections serve to show continued interest and engagement in the game. Although few directly affect the behavior of the other player, they help the players be aware of each other's mental state, current and intended actions, and possible outcomes.

This study has added to the inventory of known functions of interjections, and illustrated how specific phonetic and prosodic properties help convey specific meanings.