Interjection as coordination device: feedback relevance spaces

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Dialogue is co-constructed by multiple interlocutors with frequent feedback demonstrating whether something said is taken as understood [1,2]. To achieve this grounding, we produce relevant next turns or interjections ('mm', 'yeah'). Some interjections indicate processing or coordination difficulties and the need for repair ('huh?'). This feedback does not just occur at the ends of turns, but sub-sententially, showing that grounding occurs incrementally, before a complete proposition has been produced/processed [3,4].

However, despite evidence that speaker switch can occur anywhere, even within syntactic constituents [5], feedback is not appropriate just anywhere -- randomly placed backchannels disrupt the flow of dialogue, are rated as less natural and decrease rapport [6]. Using Dynamic Syntax [7], we provide a low-level, semantic processing model of where feedback ought to be licensed -- feedback relevance spaces (FRSs). These are analogous to (but more common than) transition relevance places (TRPs; [8]) -- places where speaker switch may occur. Just as this is optional at TRPs, feedback is optional at FRSs. The model accounts for cases where feedback occurs at FRSs, and also describes how it can be integrated at non-FRSs due to the predictive, incremental and interactive nature of Dynamic Syntax. In contrast to models of feedback that incorporate higher order reasoning about mental states [9], this model shows how feedback serves to continually realign processing contexts without recourse to higher order pragmatic reasoning, and provides a mechanistic model of the characteristic divergence and convergence that is key to moving dialogue forward.

As well as providing insights into human-human communication, this work has implications for the production and interpretation of human-like feedback in dialogue systems; not just based on unanalysed features (which may result in accurate placement), but because they have successfully compiled a semantic unit. Our FRS model is implemented [10] and deployed in a new dialogue system architecture [11]; ongoing work explores the naturalness and usability of such systems versus turn-based systems or those without the FRS model.

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