

# Legal HARKing: theoretical grounding in interaction research

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## Abstract

In psychology, we tend to follow the general logic of falsificationism: we separate the ‘context of discovery’ (how we come up with theories) from the ‘context of justification’ (how we test them). However, when studying human interaction, separating these contexts can lead to theories with low ecological validity that do not generalize well to life outside the lab. We propose borrowing research practices from formal inductive methodologies during the process of discovering new regularities and analyzing natural data without being led by theory. From the perspective of experimental psychology, this approach may appear similar to the ‘questionable research practice’ of HARKing (Hypothesizing After The Results are Known). We argue that a carefully constructed form of HARKing can be used systematically and transparently during exploratory research and can lead to more robust and ecologically valid theories. **Keywords:** HARKing; experimental psychology; conversation analysis; methodology; interaction

## Performance-enhancing questionable practices

Most discussions of the current ‘replication crisis’ in psychology and the social sciences (Pashler & Harris, 2012; Pashler & Wagenmakers, 2012) focus on identifying and mitigating the biases and incentives that lead researchers to adopt questionable research practices (QRPs): a range of methods for manipulating experimental results and processes that John, Loewenstein, and Prelec (2012) describe as “the steroids of scientific competition, artificially enhancing performance”. But science—at least ideally—is not about competition, and the highest scientific achievements are of benefit to all. It makes sense, therefore, to look at some QRPs and their underlying rationales in more detail: why are they so tempting? What makes them ‘safe’ or ‘unsafe’ for science in specific contexts? For example, qualitative, inductive methods often used in cognitive science such as grounded theory (Glaser & Strauss, 1967) are very useful for exploratory studies in many research areas, but may produce misleading inferences when used to code certain kinds of behavioral phenomena for confirmatory, quantitative research into language and human interaction (Stivers, 2015). However, rather than simply labeling all such methods as QRPs in the context of experimental, confirmatory research, we may be able to borrow from them to enhance our research results without compromising our methodological rigor. In many of the failed replications reported in Open Science Collaboration (2015), it seems that QRPs are used to increase the probability of ‘finding’ an effect predicted by the stated theory. Theorizing about an interactional phenomenon that has no grounding in interactional reality makes QRPs attractive, simply because they make it more likely that researchers will be able to report significant effects that support their theory. The issue underlying the use

of QRPs in the study of human interaction, then, may be intrinsically related to the broader problem of groundless theorizing, where theories are formulated without being familiar with the situations they theorize about. We suggest that this problem, in turn, stems from some uncritical assumptions about science and human interaction.

## The problem of groundless theorizing

A common assumption about falsificationism, still implicitly or explicitly a major philosophical underpinning of empirical science, is that as long as a theory can be falsified by testing a hypothesis, the scientist is free to theorize any conceivable causal relationship between any measurable variables. There is nothing inherently wrong with this approach if all plausible confounding variables can be controlled, and this theoretical freedom of movement is tremendously powerful. Popper was inspired by how the freedom to theorize raised the stakes for cosmologists such as Einstein, whose entire theory of general relativity could have been falsified if just one of his audacious predictions about electromagnetism and gravitational potential had turned out to be false. However, in the context of human interaction research, it is notoriously difficult to control for confounds because there are many human behaviors that are very difficult if not impossible to emulate in controlled conditions (De Ruiter, 2013; Schegloff, 2006), and just recording or observing people interacting may change the ways they interact in unpredictable ways (Labov, 1972). In this paper we describe a set of pre-theoretical research procedures that interaction researchers can use to constrain their theories to match observable facts within the domain of interest. While this may sound like the questionable research practice of HARKing (Hypothesizing After the Results are Known) (Kerr, 1998), we argue that systematic, inductive methods for analyzing social interaction can provide a principled and effective way to ground theorizing about human interaction, leading to more robust and relevant theories.

## Contexts of discovery and contexts of justification

The ‘context of discovery’ is the situation in which a phenomenon of interest is discovered. For example, when studying human interaction, a useful context of discovery would be an otherwise naturalistic conversation that happened to be recorded for analysis (Potter, 2002). ‘Contexts of justification’, in this example, might then include the laboratory, the conference paper, and the academic literature within which the empirical details are reported, analyzed and formulated as a scientific discovery (Bjelic & Lynch, 1992). These

Context	Participants' resources	Analysts' resources
Discovery	Observable actions Observable settings	Observable actions Observable settings
	Knowledge & experience beyond current interaction	Ability to fast forward, rewind and replay.
Justification	Sequential organization of talk & social actions Self/other correction (repair)	Sequential organization of talk & social actions Self/other correction (repair)
	Introspection Inductive reasoning	Quantification Deductive analyses

Figure 1: Interactional resources and methods within participants' or analysts' contexts of discovery and justification.

are important distinctions for what we think of as theoretical grounding: drawing together the contexts of discovery and contexts of justification in order to place principled limits on theorizing about interaction. However, drawing these contexts together in interaction research requires analysts to take account of critical distinctions between what kinds of evidence is available to analysts and the kinds of interactional resources available to participants in the situation itself (Garfinkel, 1964; Lynch, 2012). Figure 1 lists a few key resources participants and analysts can both use when discovering and justifying interactional phenomena, and (underneath, in red) some of the resources for making sense of interaction that are only available from one perspective or the other. Some of these resources are shared, for example, both participants and overlooking analysts can use observable features of the setting and the visible actions of the people within it to discover new phenomena. Both participants and analysts can also observe when these visible actions are contiguous and uninterrupted (Sacks, 1987), and can see if certain actions are routinely matched into patterns of paired or 'adjacent' initiations and responses (Heritage, 1984, p.256). Similarly, both analysts and participants can observe when contiguous flows of initiation and response seem to break down, falter or require repair to re-establish orderliness and ongoing interaction (Schegloff, Jefferson, & Sacks, 1977). By contrast, many other resources and methods for making sense of the situation are exclusively available to one or another role. For example, analysts can repeatedly listen to a recording, slow it down, speed it up, and can precisely measure, quantify, and deduce cumulative facts that would be unimaginable to participants in the interaction. On the other hand, participants may draw on their store of tacit knowledge and use introspection—options which are not necessarily observable for overlooking analysts—to make sense the current state and consequences of the interaction. 'Discovery' for participants, then, is some action or phenomenon observably discovered and treated as mutually relevant with others in the situation. Justification is the interactional work participants do with others in the setting to display and uphold the mutual intelligibility and rationale of their actions: an imperative that Garfinkel (1967)

describes as 'mutual accountability'. For analysts, discovery and justification use as many of the same resources as possible, but are motivated by different concerns i.e. to provide causal explanations for the events and phenomena discovered for the purposes of scientific research, but without the urgent imperatives of mutual accountability. The challenge for analysts wishing to improve their theories by bringing together contexts of discovery and contexts of justification is to constrain themselves to testing theories that deal with resources and methods that are evidently available to both analysts and participants.

## Pre-experimental HARKing for better theories

When we advocate pre-experimental HARKing, it should be clear that this proviso about using interactional resources available to both participants and analysts excludes 'exploratory data analysis' (Jebb, Parrigon, & Woo, 2016) or other uses of inferential statistics for pre-confirmatory theorizing since this is not something participants would be able to use as a resource within their contexts of discovery or justification. Rather, the research procedures recommended here are inspired by conversation analysis (CA): an approach to interaction research which exemplifies the use of empirical constraints on theorizing (Schegloff, 2007, pp. xii-xiii), and which has tended to avoid engagement with experimental studies that necessarily prioritize theorizing in order to arrive at causal explanations (Kendrick, 2017). The 'theoretical asceticism' (Levinson, 1983, p. 295) of CA's research practices makes them very useful for drawing together contexts of discovery and justification in a principled and coherent way (De Ruiter & Albert, 2017). In relation to theorizing, we call these practices 'pre-experimental HARKing' to draw attention to the distinction between HARKing as a QRP (*after* having produced a theory and tested it with an experiment), and CA's "qualitative, inductive, and strictly empirical" (Haddington, Mondada, & Nevile, 2013, p.7) research processes of systematic observation and ongoing informal peer review that takes place before any theorizing is allowed. One of the ironies of theories and experiments in interaction psychology that use corpora is that the 'results' (i.e. what actually happened in the interaction) usually *are* known before the hypotheses or research questions are formulated. It therefore makes sense to use these data to develop better theories and operationalizations before having to make key decisions about coding, quantifying and analyzing interactional phenomena. The risk otherwise is that what gets coded, quantified and tested may not turn out to be observably relevant to the participants in the interaction at all (Schegloff, 1993; Stivers, 2015). It should be clear by now that the term HARKing is not used perjoratively here. Since existing data, intuitions, and past results often provide the basis for theorizing at a pre-experimental stage in any case, we advocate using CA's systematic and transparent procedures to constrain and ground those theories empirically.

## Sharing contexts of discovery and justification

A ‘result’ in the participants’ context of discovery can be thought of as the achievement of a reciprocal action in a social situation such as successfully ordering a beer in a bar. This is motivated quite differently from the ‘results’ that might be discussed in the analyst’s context if the researcher were, for example, designing an experiment to try to figure out what behaviors enable people to obtain beer in bars. Loth, Huth, and De Ruiter (2013) show that going to a bar and systematically observing how beer-ordering is achieved through interaction provides very informative and somewhat surprising results as the basis for formulating new theories. They found that all customers have to do to initiate a successful beer-ordering interaction is to stand at the bar looking towards the bartender and that any use of the stereotypical ordering-like actions they had anticipated in fact proved to be unnecessary and even potentially disruptive. The first step in drawing together contexts of discovery and justification, then, is to find a setting where participants do observable interactional work to achieve their results (getting a beer in a bar) in ways that are informative for the analyst’s results (finding out how people get beer in bars). CA terms this kind of social situation that can be used as a starting point for analysis a ‘perspicuous setting’ from the Latin *perspicio* ‘to see through’, denoting a situation that functions like a microscope that analysts can use to examine the local organization of human affairs. Garfinkel (1992, pp. 184-186) emphasizes that in perspicuous settings participants’ affairs are “locally produced, locally occasioned and locally ordered” and that these function as contexts of discovery and justification of what is relevant for the participants, whose interactions in those contexts are conducted without reference to analyst’s concerns. The bar is an obvious choice as a perspicuous setting for exploring beer-ordering, but even if there is no specific domain of inquiry, new questions can also emerge from repeated viewing and ‘unmotivated’ analysis of data. For example, a corpus of video recordings of guided walking tours has provided a perspicuous setting for discovering questions about how people organize themselves as mobile groups (De Stefani & Mondada, 2013), about the roles and procedures involved in getting the group to examine something (De Stefani, 2010), and to then coordinate the process of walking away together interactionally (Broth & Mondada, 2013). The starting point for Legal HARKing, then, is to find a perspicuous setting where participants work together to achieve a given outcome in ways that researchers can then observe and analyze as the basis for formulating more interactionally grounded theories.

## Transcribe interactionally relevant details

Conversational turn-taking is one of the most clearly observable systematic forms of organization in interaction (Sacks, Schegloff, & Jefferson, 1974). In this sense conversation is a useful example of a context of discovery and justification that is shared between participants and analysts alike. In the context of conversation, participants discover things like

whose turn it is to talk next, and justify their discoveries using a clearly organized protocol for turn-allocation and turn-transition. For conversation analysts, the turn-taking system became a foundational context for discovery and justification when Sacks et al. (1974) showed how it could explain systematic features of everyday interaction such as the tendency for minimal gaps and overlaps in natural talk (a discovery that has subsequently been tested experimentally and across multiple languages (Stivers et al., 2009)). CA’s transcription system was devised by Gail Jefferson to highlight the systematic patterns of overlap and variations in prosody and intonation (Hepburn & Bolden, 2012). Although phonetic transcription in IPA notation provides a much higher degree of accuracy than standard orthography, these objective levels of description are not necessarily available to participants themselves, and in any case people in everyday interactions do not usually make an issue of pronunciation. Jeffersonian transcription is relatively simple to read and use, and is optimised to spatialize and represent the features of talk such as speed-ups, stress, stretches, overlaps, and gaps that seem most relevant to participants’ contexts of discovery and justification. Most importantly, the activity of hand-transcribing conversational data is a very useful pre-analytical activity in itself through which researchers can become intimately familiar with their data by watching repeatedly while trying to capture the fine details of whatever features are observably relevant to the participants themselves (Bolden, 2015). While all transcription systems introduce the analytic perspectives and assumptions of the analyst doing the transcription (Ochs, 1979), it makes sense to use a system designed specifically to capture the details of talk most demonstrably relevant to how participants maintain the smooth operation of the turn-taking system.

## Use intersubjective review of subjective judgments

Another way to draw together the participants’ and analysts’ contexts of discovery and justification is to use the interactional aptitudes of the analysts themselves as a heuristic device to explore what is going on in the interaction. This may sound like an overly subjective form of judgment, but since the object of inquiry for analysts is human interaction where we have no better measuring device than our own social intelligence, it makes sense to use our skills as interactants, even if we may not understand how these abilities work. This problems of reliance on subjective intuition can be mitigated through interaction itself. The conversation analytic ‘data session’ is a research practice where analysts present their data, describe what they see, and have their observations tested against the intuitions and reasoned arguments of other analysts. This is one of the least well-documented aspects of CA, and is barely mentioned in the research or training literature (Sidnell & Stivers, 2012), although Ten Have (1999, pp. 140-141) provides a brief explanatory description.

“[The data session] often involves playing (a part of) a tape recording and distributing a transcript...The session starts with a period of seeing/hearing and/or read-

ing the data, sometimes preceded by the provision of some background information by the ‘owner’ of the data. Then the participants are invited to proffer some observations on the data, to select an episode which they find ‘interesting’ for whatever reason, and formulate their understanding, or puzzlement, regarding that episode. Then anyone can come in to react to these remarks, offering alternatives, raising doubts, or whatever.”

The group often consists of both experienced and novice analysts, so there is an element of ‘tradescraft’ and apprenticeship built into the structure of the data session (Jordan & Henderson, 1995; Harris, Theobald, Danby, Reynolds, & Rintel, 2012). Ten Have (1999) in fact attributes his learning CA to having attended data sessions with Gail Jefferson and Emanuel Schegloff, so despite the lack of documentation, the data session has clearly been central to CA from the start. There is a scattering of advice about how to run such sessions in some textbooks, in a few short papers (Hindmarsh, 2012) and even within some reflexive studies that explore CA data sessions as interactional situations in themselves using CA (Antaki, 2008; Harris et al., 2012). These accounts also provide some useful technical advice, for example, Jordan and Henderson (1995) suggest that the ‘owner’ of the data plays back short clips of up to twenty seconds, then discusses each clip, but limits the discussion to 5 minutes before looking at more data, so that “no single participant can speculate for very long without being called upon to ground her or his argument in the empirical evidence, that is to say, in renewed recourse to the tape.” Heath, Hindmarsh, and Luff (2010, pp. 156-157) have some similarly practical advice to limit the session to 20 or fewer people, and not to “cheat and look ahead, or rely on information exogenous to the clip itself”: essentially following the rule of thumb to avoid using resources or methods unavailable to participants themselves. Of course the frequent fast forwarding and rewinding of recordings and many of the other analytical methods described here do, nonetheless, rely on resources not necessarily available within the participants’ contexts of discovery and justification. However, since the data session is an interactional situation where peers are involved in grounding one another’s assumptions about the interaction *through* interaction, there is also a degree of mutual accountability at work that may compensate for the loosening of CA’s strict methodological constraints. Through the data session, theories and assumptions are subjected to open and self-critical debate. Ten Have (1999) sums up this analytic attitude neatly:

“What is most important in these discussions is that the participants are, on the one hand, free to bring in anything they like, but, on the other hand, required to ground their observations in the data at hand, although they may also support them with reference to their own data-based findings or those published in the literature. One often gets, then, a kind of mixture, or coming together,

of substantial observations, methodological discussions, and also theoretical points.”

Even after the analyst’s painstaking transcripts and observations have run the gauntlet of multiple data sessions where flaws in theory may be identified and discussed, the CA research cycle has just begun by finding candidate phenomena for analysis.

### **The analytical phases of pre-experimental HARKing**

Having attended multiple data sessions to explore candidate phenomena and findings, there are several further stages required to develop analytically grounded theories about interaction. Conversation analytic primers are now available (Schegloff, 2007; Sidnell & Stivers, 2012; Ten Have, 1999), so only a summary of analytic procedures is provided here.

After a series of data sessions, analysts collect multiple instances of a target phenomenon each with minor variations in terms of their composition, sequential structure and their range of uses in interaction. Analysts often then work on ‘single case analyses’ involving an extended study of a few episodes of interaction featuring the target phenomenon in great detail. Over time, the analyst may build up hundreds of cases, organized into ‘collections’ (Schegloff, 1996), working towards a more complete characterization of the phenomenon and its specialized variations. For example, Schegloff (1968) describes collecting 499 cases of telephone call openings, and considering his collection almost complete and ready to be analyzed. It was the 500th case, however, which provided him with a single ‘deviant case’ that forced him to re-evaluate his findings about the sequential order of ringing and greeting exchanges in telephone call openings. This example is often cited to demonstrate the difference between these approaches and more conventional case studies. Each single case starts from first (interactional) principles in trying to explore the setting from a vantage point as close to the context of discovery and justification of the participants as possible. For this reason, Schegloff’s (1968) example functions as a kind of applied falsificationism: the only way the 500th case could make sense from the analyst’s context was to (quite radically) change the theory. Furthermore, long-standing collections of often-analyzed phenomena become theory-like over time, and can be subject to falsification and ongoing modification through contradiction by subsequent CA findings, or through changes in people’s patterns of behavior over time. For example, since the mid-2000s the most common telephone call opening sequence has changed significantly due to the prevalence of caller-ID on mobile phones (Raudaskoski, 2009). This process of careful, qualitative analysis is required before CA researchers even consider developing a formal coding scheme (Dingemans, Kendrick, & Enfield, 2016; Stivers & Enfield, 2010) with which to quantify their findings (Stivers, 2015) and run experiments—although these last few steps are still not widely accepted, and remain controversial within CA

(Kendrick, 2017). While this overall procedure is clearly extremely laborious, it does have the reassuring advantage that the phenomena described are guaranteed to have actually occurred in reality, not only in our theoretical imagination.

### Summary: Better theorizing *after* legal HARKing

This paper argues for researchers of human interaction to devote attention and resources to systematically exploring the context of discovery where their theories will be formulated by extending the falsificationist paradigm. Before we theorize and then test our predictions experimentally, we suggest researchers borrow methods from conversation analysis and other formal inductive methods to enhance the performance of our theories with a kind of pre-experimental ‘legal HARKing’. This procedure involves using detailed Jeffersonian-style transcription, holding data sessions and subjecting our qualitative findings to ongoing, critical analysis before developing theories. By proceeding with our analysis with a sensitivity to the kinds of resources that participants themselves have at hand, we can identify interactional practices that are psychologically relevant and consequential for participants (and not just researchers), and empirically grounded in natural interaction. We expect this kind of grounding to improve the relevance, robustness, and replicability of human interaction research by producing more theoretically grounded hypotheses that we can then test using traditional experimental methods. As long as—at this stage—we pre-register our experiments, we can harness the performance-enhancing benefits of legal HARKing while excluding the dangerous possibility of ‘illegal’ *post*-experimental HARKing. More generally, since research practices are seen as ‘questionable’ in relation to the conventions of a specific methodological framework, we suggest that if we reconsider them at a critical distance from any one methodology, these practices may have many potentially beneficial applications. From the perspective of the experimental research practices that predominate within cognitive science and psychology (Toomela, 2014), for example, the inductive categorizing and coding methods of grounded theory may be seen as ‘questionable’. Similarly, from the perspective of generalization-oriented experimental studies, the scope of theories derived from micro-analytic methods such as CA (e.g. about turn-taking) can seem almost trivial (Heritage, 2008). However, taken together the body of work derived from CA’s empirical studies constitutes a very broad set of findings about interaction against which generalized theories can be tested (De Ruiter & Albert, 2017). While different research practices address different problems and questions at different scales, they may also have some useful practical and philosophical intersections. One scientists’ ‘questionable’ research practice can be another’s means of rigorous inquiry, and perhaps remaining ‘questionable’—in the sense of being open to critical review—is something more researchers could aim for in their research practices.

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