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THEME SERIES

Interaction: Talk and beyond
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This is the fifth and last article in the Theme Series entitled 'Interaction: Talk and Beyond', which explores non-verbal dimensions of talk in interaction. A full Series introduction can be found in issue 20/3 (2016).

Gender, electrodermal activity, and videogames: Adding a psychophysiological dimension to sociolinguistic methods[1]

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User experience research on the affective dimensions of videogame players' interactions has looked to psychophysiological measures as proxies for emotional states. We add to the growing body of literature on this topic and offer our research as a novel application to the methodological toolbox of sociolinguistics. We present a case study of an interaction occurring in a mixed-gender group (3m/1f) playing a video game that has a potentially sexualized component in gameplay, using a Nintendo Wii-mote joystick as a mimetic penis in the game *Mario Party 8*. Through a detailed analysis of (1) gameplay interaction, including talk, laughter and gesture, (2) participants' electrodermal activity (EDA), and (3) a post-game debriefing, we track the varied engagements of the players in-game and with each other, showing how the design of the game itself and the entanglement of hardware and software design with gendered gameplay serve to marginalize and exclude the female participant.

Investigaciones sobre la dimensión afectiva de la experiencia de usuarios de videojuegos se han concentrado en medidas psicofisiológicas utilizadas como indicadores indirectos de estados emocionales. El presente artículo se suma a esta literatura y añade una metodologia psicofisiológica a las herramientas de la sociolingüística. Presentamos un caso de estudio de una interacción ocurrida en un grupo de género mixto. En esta sesión, los participantes juegan utilizando la palanca de mando Nintendo Wii para *Mario Party 8*, que tiene un componente potencialmente sexualizado pues se asemeja a un pene. A través de un análisis detallado de (1) la interacción durante el juego, (2) la actividad electrodérmica de los participantes (EDA), y (3) una sesión recapitulativa, trazamos las relaciones de los jugadores

dentro del juego y entre sí. Mostramos cómo el diseño ambigüamente sexista del juego y el entrelazamiento de diseño, equipos, y aplicaciones informáticas sirven para marginar a la participante. [Spanish]

KEYWORDS: Laughter, embodiment, gender, videogames, electrodermal activity, entanglement

1. INTRODUCTION

This article seeks to put a spotlight on the roles of the body and materiality in language and gender socialization, a process that sociolinguists and linguistic anthropologists have traditionally argued takes place largely through language in interaction. In keeping with this article's appearance in the themed series, 'Interaction: Talk and Beyond,' we present an analytic innovation: the use of psychophysiological measures that represent the interaction between the physical and psychological aspects of brain and behavior.

The fields of sociolinguistics, linguistic anthropology, and visual anthropology have a longstanding interest in the role of the body in interaction. Discourse and conversation analysis have long been concerned with the fine-grained texture of interaction itself (Gumperz 1982; Erickson 1985; Tannen1984) and the delicate choreographing of physical components of the body with aspects of language such as intonation (Mendoza-Denton and Jannedy 2011). However, we know relatively little in sociolinguistics about the psychophysiological facets of interaction. Lab-bound research such as that with Event-Related Potentials (ERPs, small voltage events that occur in the brain in response to specific stimuli and are measured with an electroencephalograph) has long been taking place in psychology and psycholinguistics. Sociolinguistics has only recently explored ERPs and eye tracking techniques to understand how socio-indexical information influences phoneme recognition as well as sentence and text comprehension (Beddor et al. 2013; D'Onofrio 2015; Pickering et al. 2004); while other areas of linguistics are using MRI (Magnetic Resonance Imaging) and ultrasound to understand, for example, articulation and its relation to phonological structure (Mielke, Baker and Archangeli 2010).

Sympathetic nervous system responses such as increasing heart rate, temperature, blood pressure, and electrodermal activity (EDA) are not currently exploited for what they might tell us in sociolinguistics, linguistic anthropology or conversation analysis, and we believe this lacuna arises in part because of the perceived divide between field research and lab research that predominates in these disciplines, with most field sociolinguists considering psychophysiological measurement protocols to be too cumbersome and inhibitory of the naturalistic situations preferred for fieldwork and interviewing. Here, we must recognize some exceptions in the reading and ESL

fields which take advantage of the relative immobility of reading tasks to measure, for instance, the greater EDA response to first vs. second-language swearing and reprimands (Harris 2004).

There is no a priori reason for our discussion of the relation between language and the body to stop at the surface of the skin, especially given the current availability (indeed, ubiquity) of unobtrusive, portable devices. As part of audience design, speakers have been shown to deploy fine linguistic and gestural features to carefully fit their language to specific interlocutors (Bell 1984), and they have also been shown to orient to such displays across multiple interactions (Kendon 1985). In neighboring fields such as speech and hearing science, unconscious processes such as breathing have been shown to be tied to interactional events in laboratory situations (Hixon and Hoit 2005). Within sociolinguistics, we are aware of the ways in which techniques of the body (Mauss 1973) participate in meaning making along with language, primarily through studies of gesture (Goodwin 2000; Voigt et al. 2016; inter alia), and through analyses of the body interacting with objects (Shankar and Cavanaugh 2012; Mondada 2016). Little attention has been paid as of yet to processes (such as those of the autonomic nervous system) which are largely outside of conscious regulation.

In contrast to sociolinguistics, the field of videogame Human Computer Interaction (HCI) has a rich history of exploiting psychophysiological measurements to:

1. analyze and improve user experience (Ballard and Wiest 1996; Ravaja et al. 2008);
2. operationalize the development of biofeedback videogames that rely on interactivity between users and their own biological output; and
3. evaluate and implement design choices (Kivikangas et al. 2011).

With regard to product evaluation, the insights resulting from studies of users' physiological reactions can be employed by videogame developers seeking to quantify aspects of subjective dimensions such as fun, challenge, enjoyment, and boredom (Mandryk, Inkpen and Calvert 2006). Video game user experience data can additionally elucidate not only individual responses, but also co-participants' reactions to each other. Despite difficulties in interpretation (i.e. do increased heart rate, breathing or sweating have positive or negative valence?), gaming researchers and engineers assert that psychophysiological measurement provides an 'objective, continuous, real-time, non-invasive, precise, and sensitive way to assess the game experience' (Kivikangas et al. 2011: 181).

Meanwhile in the field of quantitative sociolinguistics, the real-time tracking of linguistic consequences of discrete interactional events has enjoyed a surge of interest, particularly in so-called third-wave variationist studies (Eckert 2012). Such studies often benefit from an ethnographic perspective (Podesva 2006; Mendoza-Denton 2008; see also Schilling-Estes 2004), providing rich

context that aids in the interpretation of the effects of linguistic variables as they unfold in conversation. But quantitative sociolinguists are not the only ones who have examined interaction as it unfolds: in sociology, anthropology, language and communication departments, conversation and discourse analysts have a long history of being centrally concerned with the mutually constitutive nature of talk and action. As Devyani Sharma observes, 'interaction is at once fundamentally linguistic and inescapably interdisciplinary [. . .] it creates momentary alliances of bodies, strategies, geographies, and various other signals and positionings' (2016: 335).

Some of the questions we seek to investigate in this paper include:

- How does materiality of the environment, and especially culturally sedimented features of material objects, serve to structure the interactions of speakers in the world?
- How does gender ideology as materialized in objects affect interaction?
- How are these effects reflected not only at the interactional level but also in physiology?

Answers to these questions can help us to better understand the building blocks not only in talk and at the interactional level, but of gendered marginalization, building on analyses of face-to-face interactional literature such as Goodwin (2006). The *technographic* 'human x machine/tool interaction' (Ferrin and Kontopodis 2017: 42) case study we present focuses on an interaction with a technological tool: the Wii-mote, a motion-sensing wireless joystick/remote controller that can simulate the speed and intensity of player movements. Such a technological artifact is not inherently weighted as masculinist, but becomes intensely so in the nexus within which the affordances of the game hardware and the interactions it propitiates – using the Wii-mote as a stand in for a phallus – serve to discourage and exclude the female player. In our case, the result is gendered marginalization that takes place within the context of play, joking and laughter. Thus, we can see how interactions during leisure activities surrounded by positive affect for some of the male players might simultaneously function to marginalize the female player. And yet, such a use of the Wii-mote as a substitute penis is widespread. Not only is Wii-mote the controller for one of the best-selling consoles of all time, but it has spawned a string of other games that exploit masturbation mimesis: *Wario Land: Shake It*; *We Dare* (a critically underwhelming [Gibson 2011] banned-in-the-U.K. swinger-avatar game that somehow achieved a 12+ age rating). Even the current and much-hyped portable console *Nintendo Switch* has built-in games that earn 'sexually suggestive' ratings from review sites (IGN.com 2017).

2. THEORETICAL BACKGROUND

In this section, we briefly summarize four relevant strands of literature needed in order to make sense of the data we will present. The literature on gaming

environments for women and girls gives us a glimpse of settings encountered by female gamers. The second section examines some of the conversation analytic claims about laughter (one of the main features we examine in the interactions we collected), and finally we discuss psychophysiology and electrodermal activity.

2.1 Gaming and gender

In her anthropological account as a participant observer in the *World of Warcraft* MMORPG (Massively Multiplayer Online Role-Playing Game), Bonnie Nardi (2010) provides an analysis of the gendered dynamics of video games, as well as a sobering review of the literature on women and video games. She notes that many games include elements that are unappealing to women, such as 'kombat lingerie [. . .] hypersexualized female body types . . .' (2010: 166) and even off-putting scenarios where players must 'run around finding gear to cover their nakedness' (2010: 166) or operate in environments of 'surly masculinity' like the brothels in the game *Neverwinter Nights* (Mortensen and Corneliussen 2005, as cited in Nardi 2010: 165). To further her analysis, Nardi relies on the use of the 'boys' tree house' metaphor originally employed by Williams et al. (2006), referring to a space that is assumed to be a boys-only safe space, where girls are by definition excluded, and which in some sense describes areas of gamer culture as a whole.

Much of our inspiration in thinking about gender is consonant with thinkers such as Michel Foucault and Judith Butler. For our purposes, Butler (1988) contributes the notion of performativity, a stance in which gender is not fixed, given or stable, but rather is continuously achieved through performance and repetition. A related notion was advanced by Gail Jefferson (2004) who considered gender not as a given entity belonging to an individual, but rather as a career, a cumulative trajectory through which individuals play out all their interactions. We follow Wysocki and Lauteria (2015) in understanding the videogame industry as analyzable through Foucault's regimes of biopolitics and anatomo-politics (Foucault 2010 [1978]). Anatomo-politics in this case can be used to consider how the prevalence of sexist language, imagery, and object reference in video games (for examples, see dorkly.com 2017) has resulted in a disciplining of the body, as well as an interpellation, a hailing (Althusser 1971) of women in video games as always/already constituted in degrading ways (Dietz 1998; Fron et al. 2007).

To give a brief illustration, a recent Python developer conference was plagued by scandal when two male developers were fired for openly making jokes about 'forking' and 'big dongles' within earshot of a female developer who chose to speak up and posted their picture online ('forking' refers ambiguously to both a sexual act and to the development of a new program from open source software, while a 'dongle' can be either a hardware connector or a slang word for penis). The male developers denied interpellating

the woman, claimed that they only meant 'forking' and 'dongles' in the technical sense, and apologized. As most gender-related matters in the world of gaming though, the controversy was far from over: the firings were followed by vengeance from Anonymous resulting in multiple DDoS (Distributed Denial of Service – an evil-minded attempt to make a server unavailable) attacks on the server hosting the woman's blog (Brodkin 2013).

Yes, by now the terms 'forking' and 'dongle' have technical meanings. Inescapable, however, is the sexist background from which these terms spring, and the double-entendre that the terms create and which can be covered up in plausible deniability. The terms and the objects to which they refer are always already entangled with the history of their social naming.

Elsewhere (Mendoza-Denton 2016) we discuss the enregisterment of this gaming interpretation, and its circulation through social media. The phenomenon of enregisterment, the emergence of recurrent patterns across registers, would be an example of an ideology in the making, an interpretant taking flight through post-mass-media networks. And yet it is the entanglement between the game designers of *Mario Party 8* (mostly male), the iconic function of the Wii-mote, and its use in a (purportedly family-rated) videogame that constitutes an in-group joke, a type of Easter Egg (a secret subroutine found in a video game that, if found, is meant to reward ingenuity on the part of the player), sent across time and space from the male designers of the game to the male players at the other end.

What is the point of the minigame under study then? The object of the minigame 'Shake it Up' within *Mario Party 8* is to shake the can (the Wii-mote) as hard as possible, at which point 'soda' appears to spurt out from the can. The person with the highest soda stream is declared the winner. All of this action is mimed by the Mario character in the game, and the mimetic masturbation this directive produced in the interaction we recorded drew peals of laughter from the men involved in the game. The patterning of language, laughter and action proved revealing for what it shows about gender relations in the game, and we will see how the emotional and interactional commitment signaled by this joke in the 'boys' tree house' is embodied in participants' electrodermal responses.

2.2 Laughter in conversation

From its earliest writings, the field of conversation analysis has investigated the micro-coordination of interactional patterns of laughter in conversation. Like all other types of interaction, laughter exhibits 'order at all points' (Sacks 1984: 22). Contrary to popular perceptions of laughter as interrupting normal speech or bursting through in a disorderly way, conversational data supports the idea that, even in what may seem like the abandon of merriment, speakers place laughter precisely (Jefferson 1979; Glenn 1995). The occurrence of laughter is projected by both speakers and hearers, and governed by principles more

broadly applicable to conversation, such as preference for positive assessments and agreement, commonly exhibited through sharing and joining of laughter (Kangasharju 1996; Gordon 2003). Laughter can be thought of as an invitation for joint attention which can be accepted or declined (Jefferson 1979). Laughing together (or not) is then a joint accomplishment, systematically produced and socially organized (Jefferson, Sacks and Schegloff 1987: 152), whether laughter is accompanying talk about troubles – in which case laughter-joining is dispreferred (Jefferson 1984) – or whether the laughter invites the positive evaluation of a nominated laughable (Glenn 1995).

The gendered pattern of laughter-joining has also aroused the curiosity of researchers. How, muses Gail Jefferson (2004: 117), is it possible to make sense of generalizations such as 'in male-female interaction, if the male laughed, the female would join in, and if the female laughed, the male would not join'? The cases she presents in that analysis are further abstracted as instances of 'laugh-receptiveness' and 'laugh-resistance,' and it is precisely that receptiveness and resistance that varies by the type of joke and the gendered career of the recipient.

2.3 Physiology and electrodermal activity

Physiological reactivity is constantly being regulated by our bodies through our autonomic nervous system. The system has two components: the parasympathetic and sympathetic. The parasympathetic nervous system serves to calm down the body while the sympathetic nervous system stimulates physiological responses. As individuals engage and interact with their environment, the sympathetic nervous system causes their bodies to react, elevating heart rates, quickening breath or increasing sweat production (Sapolsky 2004; Dawson, Schell and Filion 2007). Importantly, the same physiological reactivity also occurs due to psychological factors (Coenen, Coorevits and Lievens 2015; Müller and Fritz 2015). That is, even in the absence of physical activity, cognitive processes can result in physiological reactions just as movement does.

The physiological response we have chosen to examine is called electrodermal activity (EDA) and is the regulation of skin conductance through sweat levels in sweat gland pores. Increased moisture in sweat ducts lowers resistance for electric currents, increasing the amount of electricity that can flow through the skin (Dawson, Schell and Filion 2007; Fowles 2008). EDA is measured in microsiemens (μs), which is a standard measurement of electrical conductance. A rise in EDA levels is also controlled by the sympathetic nervous system. While EDA does react to physical stimuli – i.e. doing exercise – it is sensitive enough to document reactivity due to psychological stimuli as well. These include positive and negative emotions, engagement, and intense focus (Dawson, Schell and Filion 2007; Coenen, Coorevits and Lievens 2015; Müller and Fritz 2015). While EDA on its own cannot inform researchers of the reason or valence for the response – observations or interviews are needed for that – it indicates time

periods when there were sustained high or low levels of reactivity. We are hypothesizing that the commitment to the joke in the video game – the emotional investment – will be reflected in the body and recordable in the form of the impedance and conductance that make up EDA.

EDA can be examined in two main ways: tonic levels and phasic responses. Tonic levels refer to the long-term trends in EDA over a longer period of time (Fowles 2008; Empatica 2016). According to Benedek and Kaernbach (2010), the slowly varying tonic activity can be contrasted to the rapid spikes of phasic activity that can be attributed to sudomotor nerve responses within a 1–3 second window following the stimulus, depending on individual reactivity. A phasic response would be expected to return to its tonic baseline, and can be succeeded by other fast-varying phasic responses.

For example, a phasic response is what one would see in a traditional lab setting where an at-rest participant is exposed to a loud audio stimulus. Within one to three seconds following the stimulus the EDA data would show a discrete spike indicating reactivity to that specific stimulus.

What makes EDA a useful physiological measure for research looking at multimodal interactions is the new wearable technology that allows physiological data to be collected in ecologically plausible situations. To measure EDA, we used the Empatica E4 wristband (Empatica 2016) which allows participants to move around freely without being hindered by wired technology, facilitating the capture of real-time streaming EDA data, which can then be usefully combined with observations, video, and comments collected in interviews and debriefings.

Only recently has EDA begun to be used in conjunction with ongoing qualitative research in naturalistic environments. Eisenhauer (2016) indicates the potential for EDA and ethnographic data to inform each other. She compiles data into graphic representations called CSP (Context, Subjectivity, Physiology) timelines. These are images that superimpose ongoing activities and individual subjective commentary on the EDA data (Eisenhauer 2016). As part of this process, EDA can be used as a participatory visual research tool that can be used to probe participants' perspectives. Researchers can review EDA outputs with participants, allowing them to generate their subjective interpretation of moments of heightened physiological activity. Eisenhauer found that having children and youth view their own EDA output in conjunction with video footage of their participation in activities made for a powerful visualization. She found that youth were prompted to engage in more in-depth descriptions of what they understood to have been happening and how they felt about the activities. It also led to conclusions regarding their participation that ran counter to what may have been concluded based on observations or lengthier interview commentary alone. Although these methods have been longstanding in sociolinguistics (Gumperz [1982] and Tannen [1984] both showed participants videotapes of their interactions), Eisenhauer is the first to pioneer them with EDA outputs.

3. METHODS

The larger dataset for this study was collected over the course of a year, and over the span of five gaming sessions. The first three sessions were conducted from November 2015 to January 2016, and were composed of two unacquainted friendship dyads (four participants in total) playing at any given time. The last two sessions were conducted from October to November 2016, and were composed solely of dyads. For the purposes of this article, we focus on the third session, which took place in January 2016. The sessions were conducted with the initial expectation that they would last one to one and half hours, but during sessions 3, 4, and 5, all participants wished to continue past the expected timeframe.

We attempted to control for gender in the interactions, and invited two male friendship dyads to the session under discussion. As often happens in the course of research, one of our participants, Joey, did something unexpected: instead of bringing the male friend that he had said he would bring, he brought a woman named Ruth. We recorded the interaction anyway, and what was at first an accident of data collection has become the focus of our research: an interaction skewed numerically by gender (three male subjects and one female subject joined by two male researchers), and, as it turns out, technologically and culturally gender-skewed as well. The larger interaction under analysis took place over the course of four and half hours, over three rounds of gameplay separated by two intermission periods. We focus on rounds one and two, lasting around three hours total, and played on *Mario Party 8* (Hudson Soft 2007), which, as mentioned above, is a party (co-present multiplayer) game on the Nintendo Wii console that emphasizes group-oriented, motion-controlled gameplay. The close interaction analysis of turn-by-turn play and laughter takes place over a segment approximately two minutes in length.

Both friendship dyads were aware that they were going to play with strangers, but they were not introduced until the time of the session. Each individual player was close friends with one other player (the one in their dyad) and one of the two researchers present, but initial strangers to the other two game participants and the other researcher. Two of the co-authors of this study, Wilson and Flores, both male, recruited the subjects, ran the study and were present in the room without participating directly in gameplay. The composition of the players was 75 percent male, and 25 percent female (three men and one woman). During the session, one participant from each friendship group was asked to wear an Empatica E4 wristband device (we were limited in how many devices we could use by their cost, around US$3,000 at the time of purchase, though we expect they have come down in price). Although the only woman present was not wearing an Empatica E4 wristband, she later agreed to meet with a female member of the research team (not initially present at the recording session) to recall and reflect on her experiences from playing while looking at the video data that we had compiled from the session. The insights gained from the post-game interview will round out the presentation of our conversational data.

3.1 Equipment

The Empatica E4 wristband is a wireless, real-time monitor that measures a wide range of physiological signals. In addition to the EDA sensor, it has a skin temperature monitor and a photoplethysmograph (PPG) that measures Blood Volume Pulse (BVP), from which heart rate, heart rate variability, and other cardiovascular measures are derived. The E4 also has an Event Mark Button that allows users to intentionally 'tag events and correlate them with physiological signals' (Empatica 2016), and an application feature that provides a live-streaming feed for researchers to monitor activity in real-time and for up-to-date measurements that are synchronized to a secured, online database.

3.2 Data setting

Data collection took place in a 'game room' located within a redesigned faculty office on the UCLA Campus. This was to closely simulate an environment of familiarity and comfort (as opposed to a more impersonal laboratory setting) while effectively eliminating the chance of passing visitors. Our redesign consisted of separating one side of the office (used for its intended academic purposes) from the game room section by high drapes, while furniture was rearranged to evoke a cozy college dorm room (comfy couch, large TV screen, pizza provided) in order for participants to experience minimal distraction during gameplay. Participants sat on a couch on one side of the wall facing a series of 32" flat-screen televisions, accompanied by an atomic clock and a wide-angle lens camera (Figure 1).

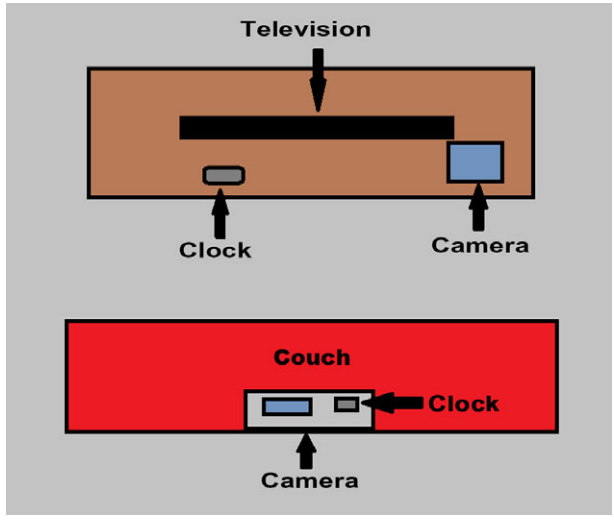

Figure 1: Game room setup [Colour figure can be viewed at wileyonlinelibrary.com]

The 'front' camera was designed to capture and record the movements of the participants during gameplay, while a 'back' camera, placed behind the players facing the television, would simultaneously capture all gameplay footage. As per the findings of Mendoza-Denton et al. (2009), we did not place posters on the wall that might exhibit gender prejudice and thus affect our interactions.

3.3 The participants

Participants were recruited according to the following criteria:

1. They were native English speakers, friends, and willing to come together as a friendship-pair.
2. They had some prior experience in playing, understanding basic game controls and game mechanics. It was not necessary for them to have previously played any of the games presented in the study.
3. They were interested in playing in a study environment. This included having two researchers in the room during the session.
4. The pairs were amenable to playing with a pair of strangers for the duration of the session.

Participants consented to the use of their undoctored video footage, but agreed to the modification of their names. Participants were not compensated save for food and drinks provided during the study to further simulate dorm-room play.

Before the session began, players were asked a series of background questions, including their history of videogame playing; their relationship to communities oriented around playing videogames – online or offline gaming forums; frequency of play, and history of playing with their accompanying friend. At the end of the session, players were asked some basic questions about their overall impressions of the gaming sessions, any particular moments that they felt emotionally responsive to, and how this may have been influenced by the presence of other participants. During the session, players were encouraged to stop at any point if they wished to ask any questions or to address any concerns that they may have experienced while participating.

A brief description of each participant is necessary to provide context.

1. **Ruth** (Group 1), 20, is a Latina student at UCLA, from South Central Los Angeles; she is the only female participant present during the gaming session. She considers herself a casual gamer during school, but plays more frequently when on break. She has limited experience with *Mario Party*, and has traditionally disliked first-person shooter games. She is not involved in online gaming communities beyond looking up general information.
2. **Joey** (Group 1) is a 20-year-old African-American male, from Inglewood, California, who is a student at UCLA. He considers himself a semi-avid

player; although his playtime also varies depending on school. He prefers to play local games with friends, but occasionally plays online against strangers. He is familiar with the *Mario Party* franchise, and not involved in online communities beyond looking up general information.

3. **Bob** (Group 2) is a 23-year-old Egyptian-American male, from California, living locally. He considers himself an avid player, familiar with both the *Mario Party* and *Call of Duty* franchise. He participates in online videogame communities through social media. Although he plays with strangers regularly online, he prefers to play with close friends.
4. **Ross** (Group 2) is a 30-year-old Native-American male from California, living locally. Like his friend Bob, Ross considers himself an avid player, familiar with the *Mario Party* franchise. He also participates in online communities, but tends to play games with close friends only.

After the groups were introduced to one another and were asked the initial interview questions, participants began the first round on *Mario Party*. Round 1 was a standard, two-versus-two game on medium difficulty. The teams were Ruth and Joey on team 1, and Bob and Ross on team 2. Without instruction from the research team, the participants sat next to each other for the first round, with Ross on the far left, Bob at the center left, Joey at center right, and Ruth on the far right (Figure 2).

After the first intermission period, the teams were switched, and round 2 began. In this round we asked that Ruth pair up with Bob, and that Joey pair up with Ross. As we will see in the discussion of the EDA later in the paper, the separation of Ruth from her friend Joey had consequences for Joey's

Figure 2: Participants during Shake it Up gameplay [Colour figure can be viewed at wileyonlinelibrary.com]

physiology. But first let us analyze an approximately one-minute interaction where speakers 'shake it up.'

4. TRIANGULATING OUR DATA

In order to make our argument, we will be presenting three different kinds of related data in this section:

1. conversation analytic data;
2. post-game debriefing interview data; and
3. electrodermal activity (EDA) data.

The conversation analytic transcription and video data come from the section in which much of the initial Shake it Up gameplay occurred. We selected these segments for their remarkable display of the theoretical 'boys' tree house' arrangement described in the literature. We selected those incidents *before* identifying the EDA data following those segments for further analysis. The electrodermal activity data comes from portions immediately following that brief first game-play and following the reshuffling of the seating of the subjects (recall that although EDA has a relatively fine granularity, it is still not exactly time-aligned to the stimuli: it has a latency response of 1–3 seconds, variable in time and magnitude for each speaker, so as far as possible we try to compare speakers to themselves). The post-game debriefing interview occurred two weeks after the event, and only one speaker (Ruth) was available for that.

4.1 Analyzing laughter

Our first data set involves analyzing interaction among the participants playing the *Mario Party 8* game 'Shake it Up'. We produced a conversation analytic transcript of the event, along with the short periods leading up to it and following it, and we analyzed it for interactional clues that might allow us to understand Ruth's participation in this sexualized interaction. Our analysis will be focused on laughter, utilizing transcription conventions as per Jefferson (1984; see the Appendix). Consider the following excerpt, from the first time the participants play the mini-game:

Excerpt 1: Shake it Up

Players are playing Mario Party 8. *The randomized mini-game lands on 'Shake It Up.' See the bottom of Figure 3 for an image of what participants see on-screen. The players in this excerpt respond to game selection and discuss the game controls.*

1. Joey: ↑O:::H I li[ke this::]
2. Ruth: [°Shake it uh:hp°]
3. Joey: = oh yah you'd jus[(.) da shake th- jus (.) shake]=

4. Ruth: >°[Shake it uhp shake it uhp↑]°< *((continued melodic intonation))*
5. Ruth: >which one?< *((Mario mimes up and down motion within game))*
6. Joey: = (0.5) >as fast as-< jus- shake da-
7. Ruth: you gotta jerk it? *((to Joey with smiling voice))*
8. Joey: yeah:: (.) I- I mean (.) tsh [ha-] ha *((smiling voice))*
9. Ross: [if] you want to SAY it [like THAT$_{L^*+H}$ GO ahead$_{L\text{-}L\%}$]
10. Ruth: I- I didn't mean it like that *((serious voice))*
11. Ruth: You're the one who took into connotation
12. Joey: WELL HACTUA.HHHLLY [↑I said shake]
13. Ross: [°<Yeah> I am°]
14. Bob: I me::.hhhan-uh (.) there's a bunch of [[.hhhdifferent wa]]ys: [you'd could]: have. . . .hhh
15. Joey: *[[inaudible laughter?, mouth in shirt]]*
16. Bob: *[[inaudible laughter? cough?, covering mouth]]*

In this excerpt, Joey and Ruth, who are best friends and sitting next to each other, assess the possibility that they will be playing this potentially embarrassing game together. When Joey's speech starts to slow down and he exhibits pausing hesitation in line 3, Ruth invites Joey to laugh with her, teasing him by pretending not to know the game, and in the end making overt the sexual connotation by saying 'You gotta jerk it?' with a smiling voice in line 7. The sequence plays out with both of these speakers looking at the screen but aligning their bodies toward each other. By line 8, Joey has accepted both the collaborative completion of the joke and the invitation to laugh. At this point Ross, who is sitting at the furthest end of the couch, invites himself into the joke by saying sarcastically to Ruth: 'If you want to say it like that, go ahead.' The intonation in this utterance is salient, and we've transcribed it in the ToBI system as a L*+H contour that Pierrehumbert and Hirschberg (1990) have analyzed as indicating a lack of commitment to a scale, while Calhoun and Schweitzer (2012) have analyzed it as a downplayer when a speaker offers a controversial opinion, all of which fits with our interpretation of Ross inviting himself into Ruth and Joey's joke. Ruth, however, rejects Ross's joking intervention with a serious voice in lines 10–11, firmly declining to laugh. Joey tries in line 12 to repair the face-threat to Ross implied by Ruth's dispreferred decline of his volunteered alignment, while Ross responds curtly to Ruth in line 13. After the attempted joke short circuits, both Joey and Bob cover their faces, possibly laughing or coughing (Figure 3). We understand this temporary stepping away from the interaction as significant in that it gives speakers a chance to restart what may have been an unsuccessful bid for mutual alignment. After this point, the game begins and the participants play. We pick the transcript back up after the game has declared Bob the winner.

Note that in the lower half, Mario is holding a Wii-mote, shaking it up and down.

Figure 3: Excerpt 1, lines 15 and 16 – attempted alignment fails [Colour figure can be viewed at wileyonlinelibrary.com]

Excerpt 2: After the minigame is finished, and Bob has won . . .

109.	Ross:	[TH .hhh ERE was] no way anyone was gonna beat =
110.	Ruth:	[What*?*]
111.	Ross:	=him in that [[game (.) OK?]] hhh .hhh=
112.	Ruth:	[[what*?* *((slight smiling towards Ross, then shaking her head side-to-side while mouthing words))*]]
113.	Ross:	= for L[IFE] ha ha ha
114.	Ruth:	[°my god°] *((mouthing out words))*
115.	Bob:	[HE HA HA] ha ha .hhh .hhh hu.ugh *((covers mouth with shirt to cough))*

116. Joey: (inaudible) *((smiles while looking down))*
117. Bob: .hhh .hhh .hhh HA .hhh guh- hu *((coughing))*
118. Cory: (inaudible laughter) *((researcher: laughter))*
119. Wesley: dhe [ha aha ha ha ha ha ha [[eha]= *((researcher: laughter))*
120. Ross: = *((response to Cory, pointing at him and laughing))*
121. Bob: [ha ha [[ha ha]] ha hah ha .hhh] *((laughter responding to Ross and Cory, then Bob turns refocuses attention to the game.))*
122. Ruth: [[(inaudible)]] *((mouthing words))*
123. Ross: [.hhh]
124. Joey: [It] said we need fifty*?*

From lines 109–124, after Bob's win, there would appear to be generalized laughter all around, with even the male researchers joining in the merriment. Looking more closely though, and as annotated in parentheses, we can see that despite Ross' proffered jokes (110, 111) invitations to laugh (115, 117, 119, 121), and opportunities to jointly assess volunteered laughables (113), Ruth has repeatedly declined to join laughter (lines 114, 122). Ruth looks straight ahead at the screen. All the while, Bob's laughter spawns a coughing fit, Ross laughs so hard he begins to cry, and that friendship pair pull researchers Cory and Wesley into the sequence by physically pointing at them. Between lines 112 and 121, their loud laughing is co-produced and jointly patterned, while Joey and Ruth vaguely smile but appear to decline to join in. Consider Figure 4, where Joey looks down/straight ahead and Ruth mouths inaudible words. It is of course a possibility that they were not declining to join, but their attention was captured by something else. However, there is nothing of consequence playing on the screen. We propose that the seating arrangement here is consequential: Joey mirrors the hidden-mouth gesture earlier, with Bob to his right, when everyone was 'game' and playing along with the joke. Now that the joke has gone too far for his best friend, Joey resists the joke, declines potential laughter invites, and mirrors Ruth's gesture and affect. The sequence ends with Joey nominating a new topic and the group moves on for the moment.

4.2 Ruth's post-game interview

The second type of data we now present consists of excerpts from a post-game debriefing. After reviewing the data, we specifically wanted to get participant opinions about the game 'Shake it Up,' and the sexual joking in the interaction. Only Ruth was interviewed because the male participants were unavailable. Here are some excerpts from her interview, which took place approximately two weeks after the initial interaction. The interview was conducted by Scarlett Eisenhauer, a female graduate student who is one of the co-authors of this study. Scarlett was not present at the initial interaction but had been briefed by the research team. Ruth viewed the video clip and made the following remarks:

Figure 4: Ross and Bob laughing while Joey and Ruth decline to join [Colour figure can be viewed at wileyonlinelibrary.com]

> Um, I thought what was really, really, funny was that immediately, as soon as we saw the motions, uh, that were on the screen there was a sexual connotation to it. And so, uh, I think it's just funny, like, masturbation is supposed to be funny. Or it's perceived as funny. So I felt like- I felt like I was less in on the joke than the three of them, because I noticed that the two on the other side were talking about- competing between each other like 'oh' um, like 'you should- you should be really good at this game' or whatever. So maybe as a fe- as a girl without a penis maybe I just didn't get it as much. But I was still competitive in the end.

In discussing the interaction, we see that Ruth felt that, as a woman, she was less 'in on the joke' than the other participants. Her pointing specifically to the phallic nature of the joke is the key to our interpretation of this excerpt as being conditioned by the gendered nature of the game. At an earlier point in the interview, she talks gamely about enjoying competitiveness (unexpected,

she says, because she's a girl) and wanting to display it, but in this portion of it she explicitly disavows competitiveness in the arena of sexual banter and innuendo. She continues:

> I felt a little uncomfortable and I tried to play it off as ignoring the sexual connotation too, 'cause I kept- I kept repeating 'oh it's like a soda can,' because I kinda wanted the joke to be over at that point. Because I just- I don't feel comfortable. I mean, masturbation is normal and that's fine, but I just- I don't like the idea of like someone else um, talking badly about another person's like sexual- sexuality or like how much- their sexual role I guess. [. . .] I feel like it makes it worse that like the Wii-mote is kind of like a phallic symbol or at least- so. [. . .] that's why I felt like I didn't want to participate with the other two, because I felt like some of their language, like, I just wasn't invested in it. Like, I know all the guys would laugh at certain jokes and I wouldn't, because it was kind of- not that I was left out- but it's just that I kind of- I don't like the idea of sexualizing things as a joke.

In this portion of the interview Ruth draws an explicit link between the phallic shape of the technological object (the Wii-mote controller) and how that shape allows it to lend itself to sexualized types of interactions. This interplay between technology, embodiment, and interaction, is an instantiation of the concept of entanglement. Hodder (2012) identifies the following sets of relationships:

- things depending on humans (T-H: Wii-mote depends on designers);
- humans depending on things (H-T: players depend on Wii-mote);
- things depending on other things (T-T: Wii-mote depends on larger game architectures); and
- humans depending on other humans (H-H: players interacting with one another, and in a physically and temporally remote way with hardware and software designers).

While all of these take place synchronically in the one interaction we have analyzed, an accretion of these interactions might give rise to a diachronic pattern of gendered marginalization in games like 'Shake it Up.' Regarding possible age effects, and keeping in mind that Ross is ten years older than her and Joey, Ruth did not mention age in her comments about the other players during her interview. While she was not specifically asked about this, she also did not mention it as an issue when describing and discussing the other players.

4.3 Electrodermal activity data

The third type of data we show is the EDA data for two of the male participants, Bob and Joey. We aim to show a contrast in EDA between the time that Joey was sitting next to Ruth and the period that saw Joey was sitting between the two other men.

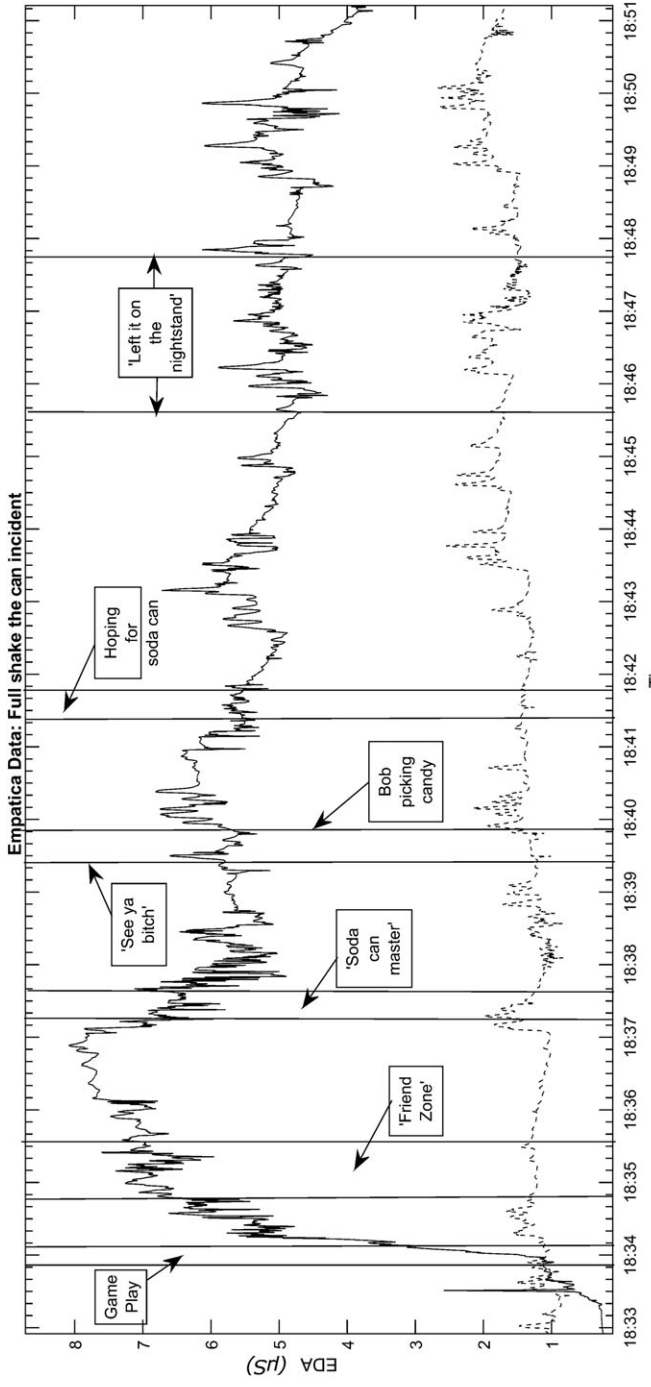

Figure 5: Data capture from approximately eighteen minutes of gameplay (solid line = Bob; dotted line = Joey). The timestamps (vertical lines) were produced by the participants themselves; sections were labeled by researchers with short-hand descriptions of gameplay and embedded dialog.

Figure 5, where the x-axis displays time and the y-axis displays the measure of conductance in microsiemens (μS), shows the full EDA output for the entire sequence where participants were playing 'Shake it Up.' The solid line tracks Bob's EDA levels, while the dotted line tracks Joey's EDA levels. It must be noted here that different people can have both different baseline levels and different magnitudes of EDA reactions. For this reason, we interpret an individual's EDA relative to their own output. What is their tonic trend-line? And how much reactivity do they exhibit for a given stimulus? Do they return to the tonic baseline quickly? Recall that focal EDA data comes from the devices on Bob and Joey. From the data output in Figure 5 we can infer that Bob (solid line) is much more reactive than Joey (represented by the dotted line).

In Figure 5, we aim to give the reader an overall view of the output from the EDA devices. The devices are aligned to the video, so the 18:34 visible in the nuclear clock on the table in Figure 4 corresponds above to the time that is labeled 'Game Play'. However, recall that EDA reactivity measurements are not instantaneous, but occur between 1 and 3 seconds following the stimulus, and both the magnitude of the speaker's wave and their time lag relative to the stimulus is dependent on the individual's level of reactivity (Stern, Ray and Quigley 2001). For that reason, we don't compare absolute numbers or averages for this data output, but rather look at overall trends, and in this case the best comparisons are within a single individual. We focus here on Joey, Ruth's friend. Let's zoom into a segment immediately after gameplay. We call this portion of gameplay the 'Friend Zone' because at that point in the transcript Ross remarks that they have left the *friend zone*, a designation for a

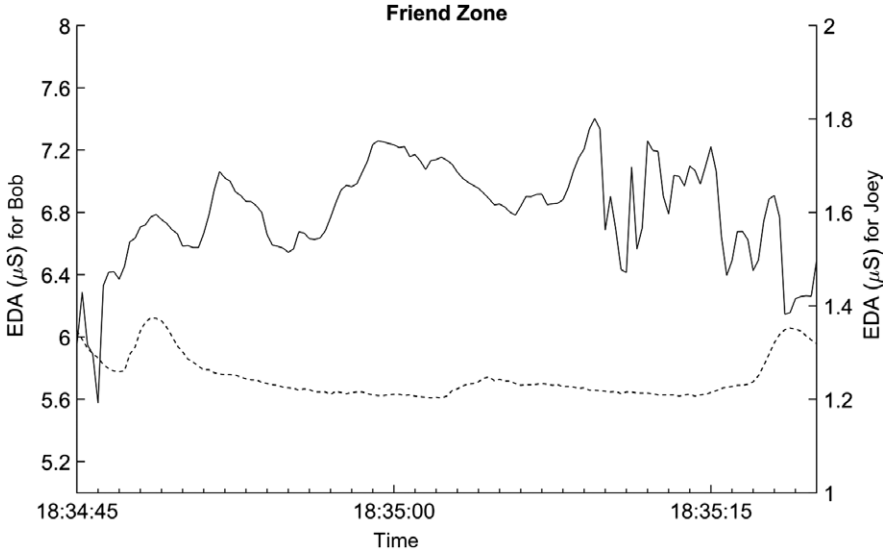

Figure 6: EDA response levels differ between Bob (solid) and Joey (dotted line)

situation where one party has an unreciprocated sexual interest in another. Ross says they have left the friend zone, meaning they are now intimate, because the game put them in a situation where they feel like they have masturbated together.

Figure 6 shows that right after the conclusion of game play, Bob has not only general elevation and but also some continuing phasic responses, since he's been joking and laughing. At the same time, Joey has very little response and his EDA actually shows some decline. Note here that the right y-axis is scaled for Joey and the left y-axis is scaled for Bob since they have different levels of reactivity.

In our video (not shown here for reasons of space), Joey has visibly turned toward Ruth. During the interview, Ruth talks about how she disengages with the joke and mentions that she is talking to Joey directly rather than engaging with the other two male players. Effectively, she has provided an alternate focus of attention for Joey, and this pulls him out of the male-only gaming space of the 'boys' treehouse.'

Figure 7 comes from the second time the randomized mini-game lands on Shake It Up, almost an hour later. Once again, Joey's microsiemens scale is on the right and Bob's scale is on the left. By this time, the players have changed seats, and Joey is sitting in between the two other men and Ruth is sitting in the same place.

The second time they play Shake it Up, the sexualized comments and jokes re-emerge in full force: 'My form is perfect!' exclaims Bob, and this time all

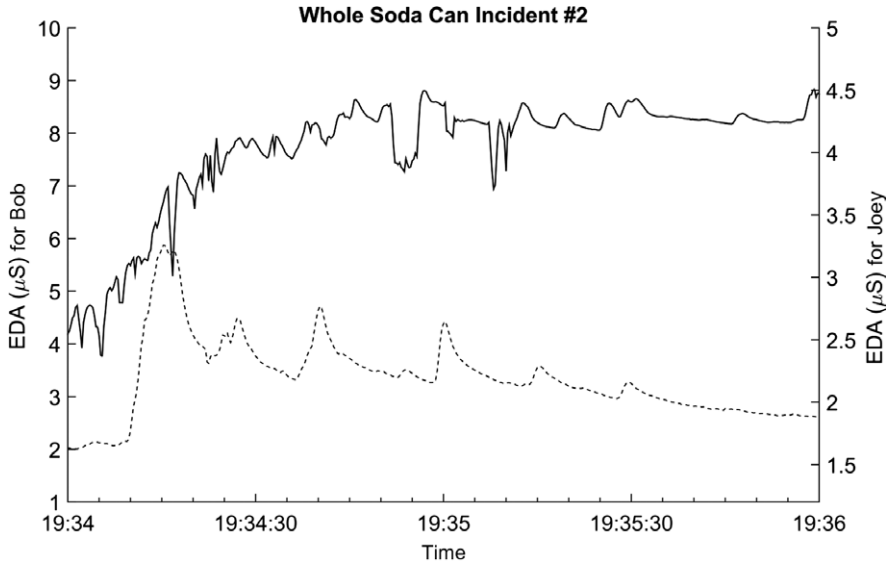

Figure 7: Both Bob (solid line) and Joey (dotted line) show phasic responses

three male participants laugh. In this case both Bob and Joey show phasic responses, as above. While Joey is still not as reactive as Bob, his EDA line is no longer flat. Now sitting in the middle of the boys' treehouse, Joey is interactionally positioned to participate more fully in their jokes, while Ruth completely loses interest. While we do not have Ruth's EDA data, we do have her post-game interview. Ruth later commented:

> And so, I was definitely feeling the adrenalin when we were playing the game again and like, I wanted to win, and so I knew he [Joey] was good at the game. And I was like 'oh you're good at this game, we got this.' But the joke- I felt like the joke was ok and then I think I started quitting down [. . .] because you know I think it's harmless when he references to masturbation, that's ok. I just think I don't like the idea of like using it as a kind of derogatory- using it in a derogatory form. . .nah. I think I was just completely disinterested at that point, I wanted to focus on the game. [Int: You were over it?] Yeah I was just over that joke. I mean it's fine, everyone can engage in what they want, I won't say anything.

The game session still went on for a couple of hours after this. Participants had pizza, and moved on to another videogame. Weeks later, both Ross and Bob were still joking with the male researchers about the great time they had 'shaking the can,' wondering if they could come back and play again.

5. DISCUSSION

We understand the present study as tapping into unexplored facets of the study of multimodality. We have tracked the engagement and arrangement of bodies in gesture, laughter, speech and physiology. We are also attempting to understand how a normatively male-oriented joke is both contingent on locally-produced sense-making and entangled with material objects. The joke is transmitted from the designers through the realm of objects interacting with the body, and those in-game objects in turn constrain bodies to fit into ideological frames. According to Haddington, Mondada and Nevile (2013: 45),

> In [virtual worlds] mobile actions are organized, coordinated and controlled by immobile participants who sit in front of computer screens and identify partially or totally with the movements of their avatars, in and even out of the game.

We observed that both in and out of the game, the Wii-mote's Mario-avatar actions translated into Ruth taking real-life offence, as evidenced in her interview, and into the other players joking that their real selves had moved past the 'Friend Zone' by virtue of their actions as instructed within the game. According to Mondada, participants orient toward '"normative mobile orders", where in the lived course of instructed actions the participants claim and disclaim, attribute and refuse the responsibility for game configurations that

are morally assessed as blamable, [. . .] complainable [. . .] or dangerous and risky . . .' (2013: 336).

Much current research now addresses social dominance in video games (González-González 2011; Gray 2012; O'Leary 2012; Fox and Tang 2014). We hold that locally produced assessments and invitations such as laughter, by virtue of the way they are *linguistically and physiologically responded to* by participants, highlight asymmetries in gender, power, and alignment.

6. CONCLUSIONS

We hope to continue this line of research in several different directions. First, we are interested in seeing how all-female groups with female research assistants might react to the videogame in question. Do mixed-gender groups with these kinds of sexually ambiguous gameplay play out differently with women? Would female groups playing this game even find it funny? Preliminary research suggests they don't. Under what circumstances would women develop these kinds of in-group jokes that would result in reciprocal coordination of laughter and physiology?

We also would like to further explore context in gameplay, and for example, EDA reactivity and activation differences in a speaker playing against the computer, and against co-located and remote co-participants (for example, in online gaming or MMORPGs, which are famously plagued by sexism, possibly due to the anonymity of participation; Lea and Spears 1991).

At this point readers may be asking themselves, what does EDA offer to the field of sociolinguistics? How does EDA differ from plainly observable behavior as is reflected in videorecordings of action, or in transcriptions of talk? In this study we have shown that physiological processes below the level of consciousness can shed light on interactional events. We suggest that being in close proximity to someone who is suffering through a sexist interaction is enough to affect psychophysiological processes, a sort of 'second-hand sexism' if you will. Even though Joey didn't say anything overtly oppositional to Bob or Ross at the time of the onanistic sequence, he was still internally affected by the experiences of his female friend. In other words, sexism and exclusion are felt not only by the target, but also physiologically by aligned bystanders/overhearers, a reflection of the sort of processes that Bell (1984) identified as overhearer effects. We might call this 'second-hand sexism,' along the analogy of 'second-hand smoke,' in that it is sexism that has a deleterious effect on the bystander. It cannot be ruled out that our observation of Joey's lack of alignment in laughter and gesture is essentially a case showing the operation of mirror neurons (Ramachandran and Altschuler 2009), except for the fact that in the case of psychophysiology, subjective reports of emotions through interviews and questionnaires have been widely normed and are also known to correlate psychophysiological measures to stress-related health states and outcomes vicariously (Drachen et al. 2010; Ruiz-Robledillo and Moya-Albiol

2015). In this way, we wish to suggest that the vicarious experience of discrimination and sexism may have long-term outcomes. Prior research suggests that we may be able to combine psychophysiological measures with our analyses of the chronic stressors around sexism and racism. Both divergence as shown here and entrainment (see, for instance, Hirschberg 2011) stand to be productively studied with the multifaceted methodology offered here.

Finally, we recognize that video gameplay has the potential to provide a rich source of relatively controlled data so that we may understand how EDA measurement might apply to a naturalistic situation before taking such measurements out into the field. Playing video console games in our contrived game room affords a familiar replica of a naturally occurring environment for this type of interaction: players can hear and see each other well, have assured co-presence and mutual orientation, as well as a lack of competing demands, extraneous movements and outside stimuli. We suggest that new, portable and noninvasive technologies for measuring breathing, heart rate, and EDA are ready to be taken into sociolinguistic situations beyond the confines of our labs and set-up living rooms and game rooms. We hope this exploratory, proof-of-concept study provides some first steps and lays the groundwork for future research in psychophysiology and sociolinguistics.

NOTE

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REFERENCES

Althusser, Louis. 1971. Ideology and ideological state apparatuses (notes toward an investigation). In *Lenin and Philosophy and Other Essays*. Ben Brewster trans. New York: Monthly Review Press. 127–186.

Ballard, Mary and J. Rose Wiest. 1996. Mortal Kombat (tm): The effects of violent videogame play on males' hostility and cardiovascular responding. *Journal of Applied Social Psychology* 26: 717–730.

Beddor, Patrice Speeter, Kevin B. McGowan, Julie E. Boland, Andries W. Coetzee and Anthony Brasher. 2013. The time course of perception of coarticulation. *The Journal of the Acoustical Society of America* 133: 2350–2366.

Bell, Allan. 1984. Language style as audience design. *Language in Society* 13: 145–204.

Benedek, Mathias and Christian Kaernbach. 2010. A continuous measure of phasic electrodermal activity. *Journal of Neuroscience Methods* 190: 80–91.

Brodkin, Jon. 2013. How 'dongle' jokes got two people fired – and led to DDoS attacks. Last accessed 25 February 2016 at https://arstechnica.com/tech-policy/2013/03/how-dongle-jokes-got-two-people-fired-and-led-to-ddos-attacks/

Butler, Judith. 1988. Performative acts and gender constitution: An essay in phenomenology and feminist theory. *Theatre Journal* 40: 519–531.

Calhoun, Sasha and Antje Schweitzer. 2012. Can intonation contours be lexicalized?: Implications for discourse meanings. In Gorka Elordieta and Pilar Prieto (eds.) *Prosody and Meaning*. Berlin, Germany: De Gruyter Mouton. 271–328.

Coenen, Tanguy, Lynn Coorevits and Bram Lievens. 2015. The wearable Living Lab: How wearables could support Living Lab projects. Paper presented to the Open Living Lab Days, 25–28 August, Istanbul, Turkey.

Dawson, Michael E., Anne Schell and Diane Filion. 2007. The electrodermal system. In John T. Cacioppo, Louis G. Tassinary and Gary G. Berntson (eds.) *Handbook of Psychophysiology*. Cambridge, U.K.: Cambridge University Press. 159–181.

Dietz, Tracy L. 1998. An examination of violence and gender role portrayals in video games: Implications for gender socialization and aggressive behavior. *Sex Roles* 38: 425–442.

D'Onofrio, Annette. 2015. Persona-based information shapes linguistic perception: Valley Girls and California vowels. *Journal of Sociolinguistics* 19: 241–256.

dorkly.com. 2017. 20 video game ads that got weirdly sexual. Last accessed 2 August 2017 at http://www.dorkly.com/post/79732/20-videogame-ads-that-got-weirdly-sexual

Drachen, Anders, Lennart E. Nacke, Georgios Yannakakis and Anja Lee Pedersen. 2010. Correlation between heart rate, electrodermal activity and player experience in first-person shooter games. In Stephen N. Spencer (ed.) *Proceedings of the 5th ACM SIGGRAPH Symposium on Video Games*. New York: ACM. 49–54.

Eckert, Penelope. 2012. Three waves of variation study: The emergence of meaning in the study of variation. *Annual Review of Anthropology* 41: 87–100.

Eisenhauer, Scarlett F. 2016. Reconciling the individual and the group: A new ethnographic method using electrodermal activity to understand subjective experience. Paper presented to 115th American Anthropological Association Annual Meeting, 16–20 November, Minneapolis, Minnesota.

Empatica. 2016. What should I know to use EDA data in my experiment? Last accessed 2 February 2017 at https://support.empatica.com/hc/en-us/articles/203621955-What-should-I-know-to-use-EDA-data-in-my-experiment

Erickson, Frederick. 1985. Qualitative methods in research on teaching. Occasional Paper No. 81. East Lansing, Michigan: Michigan State University.

Ferrin, Nino and Michalis Kontopodis. 2017. Playing sports with Nintendo Wii in Berlin: Technography, interactivity, and imagination. In Michalis Kontopodis, Christos Varvantakis and Christoph Wulf (eds.) *Global Youth in Digital Trajectories*. London: Routledge. 39–52.

Foucault, Michel. 2010 [1978]. *Naissance de la Biopolitique: Cours Au College de France, 1978–1979* (Vol. 5). New York: Picador.

Fowles, Don C. 2008. The measurement of electrodermal activity in children. In Louis A. Schmidt and Sidney J. Segalowitz (eds.) *Developmental Psychophysiology: Theory, Systems, and Methods*. Cambridge, U.K.: Cambridge University Press. 286–316.

Fox, Jesse and Wai Yen Tang. 2014. Sexism in online video games: The role of conformity to masculine norms and social dominance orientation. *Computers in Human Behavior* 33: 314–320.

Fron, Janine, Tracy Fullerton, Jacquelyn Ford Morie and Celia Pearce. 2007. The hegemony of play. In Akira Baba (ed.) *Situated Play: Proceedings of the Third International Conference of the Digital Games Research Association (DiGRA)*. Tokyo, Japan: DIGRA. 1–10.

Gibson, Ellie. 2011. We dare: SwingStar (Eurogamer Reviews, Wii platform). Last accessed 12 January 2017 at http://www.eurogamer.net/articles/2011-04-08-we-dare-review

Glenn, Phillip. 1995. *Laughter in Interaction*. Cambridge, U.K.: Cambridge University Press.

González-González, Carina S. 2011. Interaction, gender and videogames. Paper presented at the First International Symposium Communicability, Computer Graphics and Innovative Design for Interactive Systems (CCGIDIS), 28–29 June, Córdoba, Spain.

Goodwin, Charles. 2000. Action and embodiment within situated human interaction. *Journal of Pragmatics* 32: 1489–1522.

Goodwin, Marjorie Harness. 2006. *The Hidden Life of Girls: Games of Stance, Status, and Exclusion* (Blackwell Studies in Discourse and Culture). Oxford, U.K.: Blackwell.

Gordon, Cynthia. 2003. Aligning as a team: Forms of conjoined participation in (stepfamily) interaction. *Research on Language and Social Interaction* 36: 395–431.

Gray, K. L. 2012. Deviant bodies, stigmatized identities, and racist acts: Examining the experiences of African–American gamers in Xbox Live. *New Review of Hypermedia and Multimedia* 18: 261–276.

Gumperz, John J. 1982. *Discourse Strategies* (Vol. 1). Cambridge, U.K.: Cambridge University Press.

Haddington, Pentti, Lorenza Mondada and Maurice Nevile (eds.). 2013. *Interaction and Mobility: Language and the Body in Motion*. Berlin, Germany/Boston, Massachusetts: De Gruyter.

Harris, C. L. 2004. Bilingual speakers in the lab: Psychophysiological measures of emotional reactivity. *Journal of Multilingual and Multicultural Development* 25: 223–247.

Hirschberg, Julia. 2011. Speaking more like you: Entrainment in conversational speech. Paper presented at the Twelfth Annual Conference of the International Speech Communication Association, 28–31 August, Florence, Italy.

Hixon, Thomas J. and Jeannette Dee Hoit. 2005. *Evaluation and Management of Speech Breathing Disorders: Principles and Methods*. New York: Redington Brown LLC.

Hodder, Ian. 2012. *Entangled: An Archaeology of the Relationships between Humans and Things*. Malden, Massachusetts: John Wiley and Sons.

Hudson, Soft. 2007. *Mario Party 8* [video game for *Wii Nintendo* console]. Tokyo, Japan: Hudson Soft.

IGN.com. 2017. Is the Switch Nintendo's most sexually suggestive video game console? Last accessed 2 August 2017 at http://www.ign.com/videos/2017/03/20/is-the-switch-nintendos-most-sexually-suggestive-console

Jefferson, Gail. 1979. A technique for inviting laughter and its subsequent acceptance and declination. In George Psathas (ed.) *Everyday Language: Studies in Ethnomethodology*. New York: Irvington. 79–96.

Jefferson, Gail. 1984. On the organization of laughter in talk about troubles. In J. Maxwell Atkinson and John C. Heritage (eds.) *Structures of Social Action: Studies in Conversation Analysis*. Cambridge, U.K.: Cambridge University Press. 346–369.

Jefferson, Gail. 2004. A note on laughter in male-female interaction. *Discourse Studies* 6: 117–133.

Jefferson, Gail, Harvey Sacks and Emanuel Schegloff. 1987. Notes on laughter in the pursuit of intimacy. In Graham Button and John R.E. Lee (eds.) *Talk and Social Organisation*. Clevedon, U.K.: Multilingual Matters. 152–205.

Kangasharju, Helena. 1996. Aligning as a team in multiparty conversation. *Journal of Pragmatics* 26: 291–319.

Kendon, Adam. 1985. Behavioural foundations for the process of frame attunement in face-to-face interaction. In Gerald P. Ginsburg, Marylin Brenner and Mario von Cranach (eds.) *Discovery Strategies in the Psychology of Action*. London: Academic Press. 229–253.

Kivikangas, J. Matias, Guillaume Chanel, Ben Cowley, Inger Ekman, Mikko Salminen, Simo Järvelä and Niklas Ravaja. 2011. A review of the use of psychophysiological methods in game research. *Journal of Gaming and Virtual Worlds* 3: 181–199.

Lea, Martin and Russell Spears. 1991. Computer-mediated communication, de-individuation and group decision-making. *International Journal of Man-Machine Studies* 34: 283–301.

Mandryk, Regan L., Kori M. Inkpen and Thomas W. Calvert. 2006. Using psychophysiological techniques to measure user experience with entertainment technologies. *Behaviour and Information Technology* 25: 141–158.

Mauss, Marcel. 1973 Techniques of the body. *Economy and Society* 2: 70–88.

Mendoza-Denton, Norma. 2008. *Homegirls: Language and Practice among Latina Girls in Gangs*. London: Wiley Blackwell.

Mendoza-Denton, Norma. 2016. By boys for boys: Entanglement and enregisterment in videogame play. Paper presented at the Oxford Language, Identity, and Place conference, April 2016, Oxford, U.K.

Mendoza-Denton, Norma and Stefanie Jannedy. 2011. Semiotic layering through gesture and intonation: A case study of complementary and supplementary multimodality in political speech. *Journal of English Linguistics* 39: 265–299.

Mendoza-Denton, Rodolfo, Lindsay Shaw-Taylor, Serena Chen and Eugene Chang. 2009. Ironic effects of explicit gender prejudice on women's test performance. *Journal of Experimental Social Psychology* 45: 275–278.

Mielke, Jeff, Adam Baker and Diana Archangeli. 2010. Variability and homogeneity in American English /ɹ/ allophony and /s/ retraction. In Cécile Fougeron, Barbara Kuehnert, Mariapaola d'Imperio and Nathalie Vallee (eds.) *Laboratory Phonology 10.* Amsterdam, The Netherlands: Walter de Gruyter. 699–730.

Mondada, Lorenza. 2013. Coordinating mobile action in real time: The timely organization of directives in video games. In Pentti Haddington, Lorenza Mondada and Maurice Nevile (eds.) *Interaction and Mobility: Language and the Body in Motion*. Berlin, Germany/Boston, Massachusetts: De Gruyter. 300–344.

Mondada, Lorenza. 2016. Challenges of multimodality: Language and the body in social interaction. *Journal of Sociolinguistics* 20: 336–366.

Mortensen, Torill and Hilda Corneliussen. 2005. The non-sense of gender in Neverwinter Nights. Paper presented at Women in Games 2005 conference, 8–10 August, University of Abertay, Dundee, Scotland.

Müller, Sebastian and Thomas Fritz. 2015. Stuck and frustrated or in flow and happy: Sensing developers' emotions and progress. Paper presented at the 37th International Conference on Software Engineering, 16–24 May, Florence, Italy.

Nardi, Bonnie. 2010. *My Life as a Night Elf Priest: An Anthropological Account of World of Warcraft*. Ann Arbor, Michigan: University of Michigan Press.

O'Leary, Amy. 2012. In virtual play, sex harassment is all too real. *The New York Times*. Last accessed 12 January 2017 at http://www.nytimes.com/2012/08/02/us/sexual-harassment-in-online-gaming-stirs-anger.html

Pickering, Martin J., Steven Frisson, Brian McElree and Matthew Traxler. 2004. Eye movements and semantic composition. In Manuel Carreiras and Charles Clifton, Jr. (eds.) *The On-Line Study of Sentence Comprehension: Eyetracking, ERPs, and Beyond*. Hove, U.K.: Psychology Press.

Pierrehumbert, Janet and Julia Hirschberg. 1990. The meaning of intonational contours in the interpretation of discourse. In Philip Cohen, Jerry Morgan and Martha Pollack (eds.) *Intentions in Communication*. Cambridge, Massachusetts: MIT Press. 271–311.

Podesva, Robert. 2006. Phonetic detail and sociolinguistic variation: Its significance and role in the construction of social meaning. Unpublished PhD dissertation. Stanford, California: Stanford University.

Ramachandran, Vilayanur S. and Eric L. Altschuler. 2009. The use of visual feedback, in particular mirror visual feedback, in restoring brain function. *Brain* 132: 1693–1710.

Ravaja, Niklas, Marko Turpeinen, Timo Saari, Sampsa Puttonen and Liisa Keltikangas-Järvinen. 2008. The psychophysiology of James Bond: Phasic emotional responses to violent video game events. *Emotion* 8: 114–120.

Ruiz-Robledillo, Nicolás and Luis Moya-Albiol. 2015. Lower electrodermal activity to acute stress in caregivers of people with autism spectrum disorder: An adaptive habituation to stress. *Journal of Autism and Developmental Disorders* 45: 576–588.

Sacks, Harvey. 1984. Notes on methodology. In J. Maxwell Atkinson and John Heritage (eds.) *Structures of Social Action: Studies in Conversation Analysis*. Cambridge, U.K.: Cambridge University Press. 21–27.

Sapolsky, Robert M. 2004. *Why Zebras Don't Get Ulcers* (3rd edition). New York: St. Martin's Griffin.

Schilling-Estes, Natalie. 2004. Constructing ethnicity in interaction. *Journal of Sociolinguistics* 8: 163–195.

Shankar, Shalini and Jillian R. Cavanaugh. 2012. Language and materiality in global capitalism. *Annual Review of Anthropology* 41: 355–369.

Sharma, Devyani. 2016. Series introduction. *Journal of Sociolinguistics* 20: 335.

Stern, Robert Morris, William J. Ray and Karen S. Quigley. 2001. *Psychophysiological Recording*. Oxford, U.K.: Oxford University Press.

Tannen, Deborah. 1984. *Conversational Style: Analyzing Talk among Friends*. Oxford, U.K.: Oxford University Press.

Voigt, Rob, Penelope Eckert, Dan Jurafsky and Robert J. Podesva. 2016. Cans and cants: Computational potentials for multimodality with a case study in head position. *Journal of Sociolinguistics* 20: 677–711.

Williams, Dmitri, Nicolas Ducheneaut, Li Xiong, Yuanyang Zhang, Nick Yee and Eric Nickell. 2006. From tree house to barracks: The social life of guilds in World of Warcraft. *Games and Culture* 1: 338–361.

Wysocki, Matthew and Evan Lauteria. 2015. *Rated M for Mature: Sex and Sexuality in Video Games*. New York: Bloomsbury.

APPENDIX: Transcription conventions (based on Jefferson 1984)

Symbol	Explanation
[ ]	Square brackets mark the start and end of overlapping speech.
↑↓	Vertical arrows precede marked pitch movement. Other pitch notation is shown in the ToBi system.
CAPITALS	Capital letters are used to signal loudness relative to surrounding speech.
°Soft and whispering°	So-called 'degree signs' are used when the speech inside them is heard as softer than the surrounding speech, also used for whispered speech.
(0.4) (.)	Numbers enclosed in parentheses indicate tenths of a second of a pause. A single period enclosed in parentheses indicates a noticeable micropause.
lo::ng sound	Colons show degree of elongation of a sound. The more colons, the more elongated the sound.
>fast speech<	More than and less than signs enclose talk that is 'speeded up' relative to its surrounding context.
((smiling voice))	Additional contextual comments from transcriber.
ha-	Truncated speech.
stohhhp	Extra h's indicate laughter in voice.
.hhh	Laughter in-breaths are shown with h's preceded by a period.
heh huh hii	Voiced laughter with predominant vowel represented orthographically.
full stop.	A period at the end of a turn signals a falling intonation or final contour.
right,	A comma signals a rising intonation.

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