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Arousal Sustainability in Shared Experiential Consumption

Eunsoo Kim, Anocha Aribarg, and Natasha Zhang Foutz

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Report Summary

Despite an increased focus on experiential consumption and marketing, media, entertainment, sports, and other experience-focused industries have limited knowledge on how consumers evaluate experiential consumption.

In this study, Eunsoo Kim, Anocha Aribarg, and Natasha Zhang Foutz focus on arousal, a key motivation of experiential consumption. Although a consumer's level of arousal or intensity of emotion tends to decline during the consumption experience, research shows that heightened moment-to-moment arousal throughout an experience enhances consumers' retrospective evaluations of and their future participation in that experience.

Kim, Aribarg, and Foutz examine how two factors—consumption goals and relationship distance—help sustain consumers' moment-to-moment arousal during shared experiential consumption. They conceptualize two potential mechanisms of arousal sustainability in shared experience, one via elevated *arousal trend* over time and the other via positive *arousal spillover* from others sharing the experience.

Employing a multi-method approach, they conducted two studies: a field study where participants self-reported arousal while viewing the 2016 Super Bowl, and a lab experiment where participants wore skin conductance wrist bands while watching a college basketball video.

Both studies reveal novel and consistent findings. First, shared experiences help mitigate the downward trend of arousal as compared to solo experiences. Second, while distant co-experiencers with a common goal of entertainment (i.e., core customers) enjoy the strongest arousal spillover, co-experiencers holding diverse goals also benefit from maintaining a stronger arousal trend. For both current and potential customers, improved arousal sustainability leads to increased entertainment and social evaluations and future purchase intentions.

These findings highlight the strategic value of promoting shared consumption experiences. Further, fan expansion strategies promoting shared experience between current customers and their social circles not only attract new customers, but also enhance core customers' experience, cultivating a synergistic strategy of customer acquisition and retention.

Eunsoo Kim is a doctoral candidate and Anocha Aribarg is Associate Professor of Marketing, both at the Ross School of Business, University of Michigan. Natasha Zhang Foutz is Associate Professor of Commerce, McIntire School of Commerce, University of Virginia.

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Imagine you are watching a basketball game. You might be sitting next to a friend or someone you just met. You are there to enjoy the game while others are there to socialize. Throughout the game, goals scored by your favorite team arouse an emotional reaction in you. Seeing others clapping and shouting further boosts your excitement. As the game and social interactions unfold, your excitement either escalates or declines over time. This scene illustrates a typical form of shared experiential consumption and serves as an introduction to our research aimed at examining how two factors, consumption goal and relationship distance, help sustain consumers' moment-to-moment (MTM) arousal during shared experiential consumption.

Arousal, the intensity dimension of affect, is a primary motivation behind experiential consumption (Holbrook 1980; Hirschman and Holbrook 1982). Heightened arousal throughout an experience enhances retrospective evaluations and future participation. However, arousal tends to decline during an experience, as documented in the literature of hedonic adaptation (e.g., Frederick and Loewenstein 1999). Many entertainment industries, such as sports, gaming and motion pictures, as well as other industries that promote consumer experiences (e.g., automobile, alcoholic beverages) have been interested in how to sustain customers' arousal throughout an experience in order to engage and retain the customers.

Experience such as sports viewing, or movie and concert going, is often shared (Ratner and Hamilton 2015), be it with families, friends, or strangers in sports bars or theaters. *Does a shared experience better sustain arousal than a solo experience? And given a shared experience, which better sustains arousal, a close relationship or a distant one?* Furthermore, experience provides both entertainment and social utility, catering to consumers with diverse knowledge, interests, or consumption goals in shared experience. Experience is thus commonly shared among individuals holding diverse goals. *Given a shared experience, do diverse goals among individuals (some focusing on entertainment whereas others on socialization) or a common goal (e.g., all focusing on entertainment) better sustain arousal?*

These are strategic questions that have risen in importance in recent years. Changing demographics and intensified competition have propelled customer acquisition (i.e., “fan expansion”) to the top agenda of experience-focused industries (Gianatasio 2014; Litman 2014). Major league sports and theme parks are two examples that have leveraged present customers' social circles to attract potential customers (Fain 2013). For instance, family-and-friends-themed game days, holiday games, and promotions like “bring families and friends for half price!” are

pervasive (Humphrey 2006; Koop 2011). Yet little is understood as to whether such a strategy would attract potential customers driven largely by socialization, while continuing to engage entertainment-oriented core customers.

Despite the ubiquity of experiential consumption and industries' rising focus on experiential marketing, the literature has remained focused on utilitarian consumption, resulting in limited knowledge on how consumers evaluate experiential consumption in areas such as sports and film (Kahneman, Wakker, and Sarin 1997). Quantitative studies on experience are rare. Exceptions include Eliashberg and Sawhney (1994) and Hui, Meyvis, and Assael (2014) for solo experiences, and Ramanathan and McGill (2007) for dyadic experiences. The unique characteristics of experiential products that present theoretical and methodological challenges may explain such scarcity. For instance, consumers can assess a utilitarian product's utility based on tangible attributes before consumption while they might evaluate an experience only retrospectively. Thus it is important to capture MTM experiential dynamics and link them to retrospective evaluations. In addition, MTM experience is intangible and difficult to decompose into attributes. Unobtrusive measures (e.g., physiological measures by Teixeira, Wedel, and Pieters (2012) to gauge ad responses) should therefore be considered in conjunction with self-reported measures such as survey, joystick, or dial ratings (e.g., Hui, Meyvis, and Assael 2014; Ramanathan and McGill 2007). Also, experiential consumption is often shared instead of solo. Shared context further introduces new complexities such as influences from diverse goals and relationships on the experience.

This paper aims to enrich the literature in the growing area of experiential marketing. To accomplish this, we conceptualize two potential mechanisms of arousal sustainability in shared experience, one via elevated *arousal trend* over time, and the other via positive *arousal spillover* from others sharing the experience. Both mechanisms are potentially influenced by two key factors: consumption goal and relationship distance. We gather data via a multi-method approach, combining a field study survey of Super Bowl 2016 spectators in their natural solo, dyad, or group environments (Study 1), and a lab experiment with physiological measures of solo and dyadic viewers of a college basketball video (Study 2).

Regression and Hierarchical Bayesian analyses reveal novel and consistent findings across the studies. Shared experiences lead to stronger arousal sustainability than solo ones. Heightened average arousal as a result of stronger arousal sustainability—more positive MTM

arousal trend and/or spillover—improves retrospective evaluations of experiences. Also, co-experiencers with diverse goals best maintain arousal trends but relationship, whether close or distant, does not influence arousal trend thus offering executives a broader set of marketing options, such as in communications and experiential design. Nonetheless, when co-experiencers share a common goal of entertainment, likely core customers, a distant relationship produces the strongest spillover and highest entertainment evaluation of the experience. These findings suggest shared experience among entertainment-driven core customers and socialization-driven potential customers offers synergistic customer retention and acquisition strategies.

The remainder of the manuscript is organized as follows. First, we review the relevant literature. We then describe the first field study of Super Bowl 2016, and its findings. Next, we present the model, experimental design, and findings of the second study which uses physiological measures of skin conductance. We consider the managerial implications of both studies' results and conclude with contributions of our research and avenues for future research.

Literature

Arousal sustainability in shared experience

Consumers are not only rational decision makers who focus on functional features and utilitarian benefits of products, but also emotional human beings who seek pleasurable experiences (Hirschman and Holbrook 1982; Holbrook et al. 1984). While utilitarian consumption is associated with cognitive processes, hedonic or experiential consumption is more affective in nature (Hirschman and Holbrook 1982; Kahn, Ratner, and Kahneman 1997; Nelson and Meyvis 2008). This study of experiential consumption focuses on arousal (the intensity dimension of affect; Russell 1980) while controlling for the valence dimension of affect. Arousal is a major motivation behind the consumption of product classes such as sports, movies, and gaming (Holbrook 1980; Hirschman and Holbrook 1982). Arousal also increases social transmission of information regardless of valence (Berger 2011) and is thus of particular interest in shared experience.

Moment-to-Moment (MTM) arousal is often linked to retrospective evaluations of an experience via its parsimonious representations, such as average, peak, or end (e.g., Ariely 1998, Baumgartner, Sujan, and Pudgett 1997; Kahneman et. al.1993; Redelmeier and Kahneman 1996;

Vary and Kahneman 1992). As a result, heightened arousal throughout an experience is associated with enhanced overall experience and evaluations. Nonetheless, consumers' arousal responses to an experiential episode, such as watching a sports program, tend to decrease over time (Nelson and Meyvis 2008; Nelson, Meyvis, and Galak 2009; Nicolao, Irwin, and Goodman 2009). This desensitization is often explained through the concept of hedonic adaptation, that is, an individuals' tendency to adapt to affectively relevant stimuli over time (Frederick and Loewenstein 1999; Loewenstein and Ubel 2008), and can occur with positive experiences such as an increase in wealth (Brickman, Coates, and Janoff-Bulman 1978; Campbell 1981) and sexual stimuli (O'Donohue and Geer 1985), or negative experiences, such as incarceration (Zamble and Proporino 1990) and disability (Schulz and Decker 1985). Sensitization, or increased arousal over time, is also observed in, for instance, satisfaction with cosmetic surgeries (Reich 1982) and irritation with traffic noise (Wienstein 1982). We therefore accommodate heterogeneous arousal trends in subsequent modeling. Although desensitization is also treated in the habituation literature, habituation pertains to diminished awareness of and attention to simple, repeated stimuli such as background noise (Röer et al. 2001; Raoul et al. 2012), as opposed to adaptation to consciously aware, varying stimuli common in experiential episodes.

Another key characteristic of experience is that it is often shared among closer or distant others (Ratner and Hamilton 2015; Raghunathan and Rajagopal 2006). As compared to solo experience, shared experience is shown to increase attention to more emotional stimuli (Pozharliev et al. 2015) and reduce preferences for experiences with improving trend (Bhargave and Montgomery 2013). Shared experience is also more enjoyable when opinion congruence (Raghunathan and Rajagopal 2006; Raghunathan and Corfman 2006) or synchrony in MTM evaluations (Ramanathan and McGill 2007) takes place. In addition, although consumers tend to avoid breaks (e.g., television commercials) in pleasant experiences, such breaks may actually intensify subsequent experiences (Nelson and Meyvis 2008; Nelson, Meyvis, and Galak 2009). Extrapolating from these findings, it is possible that the presence of a co-experiencer who occasionally disrupts an experience may thwart hedonic adaptation and restore arousal intensity.

Despite the benefits that an approach to sustain arousal in shared experience would likely afford experiential industries, an analysis has yet to surface in the literature. We conceptualize two potential mechanisms of arousal sustainability in shared experience. One is maintenance of the arousal trend, or an individual's ability to sustain arousal throughout an

experience, with or without co-experiencers. It is possible that the presence of co-experiencers will enhance arousal trend. The second mechanism is arousal spillover, or contemporaneous influence of a co-experiencers' arousal on an individual's own arousal. This is a potentially added benefit of shared over solo experience. Our research explores whether arousal can be sustained via one or both mechanisms, leading to an overall improvement in retrospective evaluations of shared experience. Given the evidence that evaluation synchrony in shared experience increases rapport among friends but not strangers, and boosts retrospective evaluations among strangers but not friends (Ramanathan, McGill, and Vohs 2014), we consider both the entertainment and social evaluations of shared experience.

Moderating roles of consumption goal and relationship distance in shared experience

Individuals consume experiences with diverse goals in mind partly because experiences provide multi-faceted benefits. For instance, sports, film, and festivals not only offer product-related benefits such as excitement, amusement, and relaxation, but also offer social benefits when consumers share the experiences with close others (e.g., spouses, children) or even distant others (e.g., fellow sports fans in a stadium). In Luker (2015), sports fans report both watching favorite teams and socializing with families/friends as top priorities. Entertainment and socialization fulfill these important human needs (Koop 2011) and are synergistically integrated to enhance the excitement of an experience (Humphrey 2006; Koop 2011).

Diverse goals may arise from consumers' varying degrees of expertise and interest in specific experiences. Consider Jenny. She is interested in Disneyland whereas Jack is not; he comes along to socialize with her. Conversely, Jack is a baseball fan, but Jenny has no interest in the sport; she attends a game to be with Jack. Such episodes of shared experience with diverse goals are common among family members, friends, and acquaintances. Although both goals may be present in an experience, the dominant goal of each individual is considered in our research.

Diverse consumption goals not only are omnipresent, but also influence shared experience. Because diverse goals may influence the information attended to and processed by consumer, they can affect arousal trend and the degree and direction of arousal spillover. Consider Jenny and Jack attending the baseball game as a simple example of dyadic experience. While Jenny attends more to Jack, Jack's MTM arousal can be influenced by both how the game unfolds and Jenny's attention. This is a different experience for Jack than if he watches the game

with another baseball fan. As a result, it is important for marketers to understand whether diverse goals in shared experience uplift or diminish MTM arousal to guide promotional campaigns and experiential design.

Given existing research, albeit sparse, when diverse goals exist in a dyad, the entertainment (social) minded individual may temporarily disrupt the co-experiencer's social (entertainment) focused experience, more so than when they share the same goal. Such a seemingly unwelcomed experiential interruption is actually shown beneficial in multiple contexts, such as thwarting hedonic adaption and reinstalling excitement (Nelson and Meyvis 2008; Nelson, Meyvis, and Galak 2009), increasing processing of persuasive messages (Kupor and Tormala 2015), and reducing satiation via finer categorization of experiential episodes (Redden 2008). A similar phenomenon known as the "rejuvenating effect" is also reported in the advertising literature, where consumers are more responsive to pulsing than continuous advertising (Naik, Mantrala, and Sawyer 1998). Thus, shared experience with diverse goals instead of identical goals may sustain more positive or less negative arousal trend over time. In contrast, sharing the same goal, particularly the goal of entertainment, may result in stronger arousal spillover due to enhanced mimicry (Tanner et al. 2008), emotional contagion (Howard and Gengler 2001; Neuman and Strack 2000), and MTM synchrony (Ramanathan and McGill 2007). In other words, it is possible that identical versus diverse consumption goals in shared experience influence MTM arousal through different mechanisms.

Beyond diverse consumption goals, shared experience involves relationships of varied distance. Experiential industries have increasingly leveraged close relationships to enhance customer acquisition. One example is by offering discounts to families and friends. These industries have also induced closer relationships among strangers to better retain customers. Examples include promoting fan clubs and in-game apps. Although these strategies often incur high costs, little is known about the impact of relationship distance on shared experience, or whether these strategies will boost or detract from customer experience. Closer relationships may fuel excitement in an experience and stronger coherence between co-experiencers, thus increasing arousal trend, arousal spillover, and experiential evaluations (Ramanathan and McGill 2007). Conversely, such relationships may distract from the entertainment-driven excitement and reduce arousal over time.

Despite limited research in this domain, Ramanathan, McGill, and Vohs (2014) point to the differential impacts of MTM evaluation synchrony between friends versus strangers on experiential evaluations. Synchrony between friends increases rapport (i.e., social evaluation in our context), whereas synchrony among strangers boosts retrospective entertainment evaluation. Entertainment-minded consumers may thus benefit from having a common goal of entertainment and being in a distant relationship. On the contrary, social-focused consumers enjoy better social experiences with closer others¹. Moreover, heightened physiological states are shown to reduce social perception of connectedness or closeness to others (Li and Zhang 2014) and increase preference for congruency (Noseworthy, Di Muro, and Murry 2014). Therefore, distant relationship may be more congruent with heightened physiological states.

While this review of the relevant literature provides a theoretical foundation regarding the potential factors driving arousal sustainability in shared experience, two subsequent empirical studies will help identify the dominant forces. The two studies complement each other in methodology (natural field and controlled experiment), metrics (survey and skin conductance), relationship types (group and dyad), and empirical contexts (professional football and college basketball), offering more rigorous examination of our research questions.

Study 1: Field Study of Super Bowl 2016

Football is one of the most watched sports in the United States. Its culminating event, the Super Bowl, steadily attracted around 110 million television viewers from 2011 to 2016, according to Nielsen. Besides entertainment, the Super Bowl is an established venue for socialization and therefore offers an excellent natural context to study shared experience.

Study design

During the 2016 game between the Denver Broncos and the Carolina Panthers, we sent five short online surveys to the respondents who agreed beforehand to participate via their mobile devices. The respondents were recruited from the subject pool of a large American university and through a Facebook ad. The first of the five surveys was sent out at the beginning of the game and subsequent surveys at the end of each of the game's four quarters. We asked the

¹ Certainly these social-focused customers less interested in entertainment itself may be less profitable to certain businesses such as sports.

participants to complete each survey immediately, or at least within five minutes, after receiving it. If they failed to complete a survey, they would not receive the subsequent survey and would be excluded from the study. Participants received a \$15 Amazon gift card for completing all five surveys.

Each survey invited participants to report their own emotional valence (positive-negative) and arousal on three 7-point semantic differential scales and then to report their perceptions of the emotional valence and arousal of co-experiencers, if present. The three scales (bored-excited, uninterested-stimulated, and unaroused-aroused) form a single factor with Cronbach's alphas ranging from .839 to .915 across the five surveys. We use their average as a measure of arousal at each time point. The last survey also included questions about each participant's consumption goal (on a 7-point semantic differential scale of having entertainment versus social goal), relationship distance with co-experiencers, estimated percentage of co-experiencers holding entertainment versus social goal, retrospective entertainment evaluation of the experience (on two 7-point Likert scales: "I enjoyed watching the game" and "I was satisfied with the entertainment value of the game", with their average used in the analysis) and social evaluations (on a 7-point Likert scale on "Watching the game makes me feel closer to my friend/family"), future consumption intention (percentage likelihood to watch professional football and Super Bowl next season), relative knowledge of professional football as compared to co-experiencers, team preference, and demographics.

Out of the 276 participants who completed the first survey at the beginning of the game, 218 participants went on to complete all five surveys (a 79% completion rate). Among them, 195 (89%) viewed the game with at least one co-experiencer; 34 (17%) viewed the game in a dyad. Viewers with co-experiencers exhibit no significant differences in important characteristics as compared to solo participants (Table 1, all Tables and Figures follow References). Since co-experiencers' arousal was not directly measured, we do not examine arousal spillover and instead focus on arousal trend in Study 1. We calculate the arousal trend as the arousal at the end of the 3rd minus that at the end of the 1st quarter while the game was still in progress. Table 1 shows, consistent with the previous studies, the average arousal trend across all participants in Study 1 is negative. The participants in shared experience (-.475) sustain arousal with a less negative arousal trend, albeit only directionally, than the solos experiencers (-.827).

For the participants in shared experience, we regress their arousal trend on consumption

goal and relationship distance using three model specifications that sequentially add more variables (Table 2). Sharing the experience with a higher percentage of close friends or families is shown not to elevate the arousal trend, whereas sharing with co-experiencers holding a different consumption goal does, especially when an entertainment-minded participant shares with socialization-oriented others (.624 in Model 3; p -value < .05).

We further regress the entertainment and social evaluations of the experience on the average arousal throughout the experience², while controlling for consumption goal, relationship distance, relative knowledge about professional football, team preference, and shift in mood valence from the beginning to end of the experience (Table 3). The results confirm a significantly positive relationship between the average arousal and entertainment (.754, p -value < .05) and social (.525, p -value < .05) evaluations of the experience. Also, when co-experiencers root for the same team (.101, p -value < .1) and when mood becomes increasingly positive (.119, p -value < .05), participants report higher entertainment values. This may be linked to the “fan-ship” of sports in general. Moreover, a consumption goal that already influences the average arousal via arousal trend (Table 2) does not directly affect retrospective evaluations.

While closer relationship does not further enhance the social evaluation of the experience (-.481, p -value < .01), it actually weakens the entertainment evaluation. This result suggests that a more distant relationship may be beneficial to those with an entertainment goal and who wish to derive the most entertainment value from an experience. Finally, a regression analysis on the likelihood of watching professional football the following season shows it is significantly driven by both entertainment (std coefficient = .230, p -value < .01) and social (std coefficient = .156, p -value < .05) evaluations. Regression analysis on the likelihood of watching Super Bowl 2017 reveals similar results.

In summary, Study 1 is conducted in a natural environment where the consumption goal or relationship is not manipulated and arousal is self-reported. We find that shared experience, compared to solo experience, sustains arousal trend directionally better. In shared experience, diverse consumption goals among co-experiencers escalate the arousal trend over time, whereas closer relationships do not. Heightened average arousal throughout the experience is also

² When holding the beginning arousal constant, stronger arousal sustainability may also lead to higher end or peak arousal, besides higher average arousal. We further linked retrospective evaluations in both studies to end and then peak arousal while keeping all other variables the same. The results remain similar.

associated with enhanced entertainment and social evaluations, resulting in stronger intentions for future participation.

Study 2: Lab Experiment of Dyadic Skin Conductance

While Study 1 involves a natural setting, it relies on self-reported own arousal at discrete time points and perceived consumption goals of the co-experiencers. We also did not observe many solo viewers who might differ on unobservable dimensions and hence result in potential selection bias. Moreover, it is challenging to control the number of co-experiencers, relationship distance, and consumption goals—factors of interest to us. We thus conduct a controlled lab experiment using unobtrusive physiological measures of skin conductance to gauge each participant's second-by-second arousal. We randomly assign participants to view a video clip of college basketball either alone or with one other participant in an experimental condition with manipulated relationship distance and consumption goal.

Study design

Skin conductance. Past studies have largely gauged MTM experience with self-reported measures, such as dials, joysticks (computerized feeling monitors), or an experience sampling paradigm. These measures may be susceptible to scale usage heterogeneity—individuals differing in how they respond to measurement scales (Rossi, Gilula, and Allenby 2001; de Jong et al. 2008) or demand artifact—ratings driven by what participants perceive as correct responses to events (Frederick and Loewenstein 1999; Lynch 1982). Thus, in Study 2 we employ unobtrusive measures of Galvanic skin conductance used in the psychology literature and a few marketing studies to capture MTM arousal (e.g., Aaker, Stayman, and Hargety 1986). The use of skin conductance responses is based on the widely accepted notion that arousal manifests in higher skin conductance responses (Boucsein 2012).

Experimental design. Undergraduate students from a large U.S. university watched a 6.4-minute video clip either alone (44 participants) or with a co-experiencer (338 participants or 169 dyads). The clip showed part of a college basketball game between their school's varsity team and a rival team, a common experience for them. To avoid pre-exposure, a game from three years prior was used. Each participant received \$10 for completing the study lasting about 45 minutes; each session accommodated up to three solos or dyads (i.e., a maximum of six

participants total).

For the dyadic participants, each dyad was randomly assigned to one of the 2 (close, distant relationship) x 3 (both entertainment, both social, one-entertainment-and-one-social diverse goals within a dyad) experimental conditions. We doubled the number of participants in the condition of diverse goals such that nearly equal numbers of individuals are present across the four scenarios of dyadic goals: entertainment-self / entertainment-co-experiencer (42 close and 44 distant), social / social (48 close and 48 distant), entertainment / social (41 close and 37 distant), and social / entertainment (41 close and 37 distant). We distinguished the latter two scenarios since they potentially result in different experiences. For instance, when participant *i* attends to co-experiencer *j* while *j* focuses on the entertainment experience, versus the opposite scenario, participant *i*'s arousal may get affected differently. For solo participants, relationship distance and dyadic goals are irrelevant.

Pre-experiential survey. Upon arrival, participants viewed a brief description of the research and signed informed consent. The administrator then distributed participant numbers and placed the portable skin conductance devices on the participants' inner wrists, which they wore throughout the entire study. Next, the administrator asked participants to engage in a few unrelated tasks in order to secure stable electrical connections prior to the video viewing. The tasks involved a physical task of going up and down stairs three times without rest, and a cognitive task involving math and word puzzles. The tasks elicited skin conductance responses and offered opportunities to adjust the devices if needed.

After the tasks, participants were randomly assigned into either a solo or dyad condition. For the dyad conditions, two participants—of at most six—were paired up to engage in a conversation guided by a provided list for about 7 minutes. These questions required participants to reveal personal and intimate information and were hence intended to engender closeness in relationship. Similar to Small and Simonsohn's (2008) approach, we adopted a shortened version of the closeness induction task used by Sedikides et al. (1999) (Appendix 1). In the close-relationship conditions, the same conversational dyad also later watched the basketball video together. In the distant-relationship conditions, the dyad jointly watching the video was formed by two participants from different conversational pairs. In order to create a comparable setting, participants in the solo condition also participated in the conversation task, yet these people later watched the basketball video alone.

Before watching the video, all participants also answered a 3-minute survey with three measures of their knowledge about college basketball (Flynn and Goldsmith 1999) and six 7-point semantic differential scales of their present emotional valence: pleased – annoyed, unsatisfied – satisfied, unhappy – happy, melancholic – contented, despairing – hopeful, elated – depressed (Russell and Mehrabian 1974). These measures would later allow us to calculate the pre- to post- experience shift in emotional valence as a control variable in the model of retrospective evaluations. For participants in dyadic conditions, this survey also solicited three manipulation check measures on relationship closeness (Sedikides et al. 1999). The closeness measures produce a Cronbach's Alpha of .744 and knowledge measures of .922, indicating measurement reliability. The manipulation check confirms that, on average, participants in the close-relationship conditions had significantly higher closeness indices than those in the distant-relationship conditions (mean = 4.764 versus 3.843, p -value < .001). The survey further randomly primed the dyadic participants of either an entertainment goal, by prompting them to focus on the game, or a socialization goal by urging them to also pay attention to their co-experiencer while viewing the game.

Experience. Three experiment rooms were prepared for solo or dyadic viewing of the video, each equipped with a comfortable sofa and a 32-inch wall-mount flat-screen HDTV to create a more realistic shared experience where dyadic participants can naturally interact (Online Appendix 2). Each participant wore a portable skin conductance wrist band the entire time to capture skin conductance in the form of electro-dermal activity (EDA). The device measures slight electrical changes in the skin which are physiological signs of arousal in response to changing experience as established in the psychology literature (e.g., Dawson et al. 2000). Another advantage of this device is that it provides high-resolution continuous time series data, with 4 data points per second in our case.

Post-experiential survey. After the game experience, each participant was asked to complete another short survey, which included (1) briefly describing the game, and for dyadic participants only also the co-experiencers' reactions; (2) post-viewing emotional valence on the same scales as in the pre-viewing survey; (3) retrospective entertainment evaluations, and for dyadic participants only also social evaluations, of the experience; (4) intention ratings to attend another college basketball game (Kuenzel and Yassim 2007); and (5) demographics. The entertainment and social evaluations were measured using the same scales as in Study 1.

Model

Prior research has proposed quantitative models to predict aggregate success of experiential products, mostly films, based on product characteristics, distribution, advertising, critic reviews, and consumer word-of-mouth (e.g., Eliashberg and Shugan 1997; Lehmann and Weinberg 2000; Joshi and Hanssens 2009; Reddy, Swaminathan, and Motley 1998). However, only a few have examined individuals' MTM experience or experiential evaluations. For instance, Eliashberg and Sawhney (1994) assess how individuals' enjoyment of a film clip is impacted by self-reported affective states before viewing and emotions invoked by scenes in the clip. Neelamegham and Jain (1994) show that post-consumption evaluations are driven by disconfirmation between individuals' self-reported prior expectations and actual movie performance (Neelamegham and Jain 1994). Hui, Meyvis, and Assael (2014) further reveal an end effect of individuals' MTM ratings using an electronic dial on the evaluations of TV pilots. Ramanathan and McGill (2007) show the impact of dyadic synergy using joysticks. In this study, we use unobtrusive skin conductance to measure MTM arousal in solo and shared experience. A hierarchical Bayes MTM arousal response model further captures the influence of consumption goal and relationship distance on the arousal trend and arousal spillover in the shared experience.

MTM arousal response model. Let $k = 1, \dots, K$ be the order of the events that unfold in sequence during an experiential consumption episode, such as a basketball video clip. Each event, such as a home team steal, belongs to one of $e = 1, \dots, E$ event types, such as home team success. Each individual $i = 1, \dots, I$, has K arousal records corresponding to the K events. For dyadic participants, S_{ijk} denotes the MTM arousal captured by skin conductance of individual i in response to the k^{th} event, who shares the experience with individual j . We specify S_{ijk} as:

$$S_{ijk} = \mu_i + \varphi_{ij} + \gamma_i \text{Time}_k + \omega_i I_k + \alpha_i S_{jk-1} + \vartheta_{ijk}, \quad (1)$$

where Time_k is the actual clock time associated with the beginning of the k^{th} event (e.g., the home team made a shot at the 123th second of the clip). Since each event has a different duration, the actual clock time (Time_k), instead of the event order k , is used to capture arousal trend. Of focal interest are two parameters that capture the two mechanisms of arousal sustainability. First is γ_i that reflects individual i 's innate ability to sustain arousal inter-temporally throughout an experience (arousal trend). Second, is α_i that captures arousal spillover, or contemporaneous

influence of co-experiencers' arousal on an individual's own arousal. Analogously, S_{jik} for individual j , individual i 's viewing co-experiencer, can be specified.

We operationalize S_{ijk} as the difference between individual i 's skin conductance when exposed to event k which we will detail later, and his/her initial skin conductance, as measured by the average skin conductance during the first five seconds of the video clip when no major game actions occurred. This is to remove the individual differences in their initial skin conductance. We further control for individual differences in skin conductance levels (SCL) due to, for instance, varied sensitivity of sweat glands (Figner and Murphy 2014). One common approach to capture the SCL is to use a within-individual measure of central tendency, such as mean or median of several discrete measurement points distributed across the time period of interest (Boucsein 1992). However, unlike prior studies which compare individuals' arousal responses to one specific stimulus across different experimental conditions, we investigate a series of stimuli, i.e., events or scenes in a video clip. To emulate the previous studies, we can either further subtract each data point S_{ik} by each individual i 's mean across K events or control for heterogeneous SCLs by incorporating individual-specific intercept μ_i in the model³.

Next, consistent with the literature (Zhang and Yuan 2012), we use the dyad random effects, $\varphi_{ij} \sim N(0, \sigma_\varphi^2)$, to control for possible contemporaneous correlation between each dyad's MTM arousal in shared consumption (Ramanathan and McGill 2007). Finally, I_k is a vector of $(E - 1)$ dummies indicating whether event k belongs to event type e , while one of these event types is set as the baseline. Then, the vector ω_i captures individual i 's MTM arousal responses to different event types. The distributions of the error term, SCL heterogeneity, and event responses are specified, respectively, as $\vartheta_{ijk} \sim N(0, \sigma_\vartheta^2)$, $\mu_i \sim N(\bar{\mu}, \sigma_\mu^2)$, and $\omega_i \sim MVN(\bar{\omega}, \Sigma_\omega)$. We further specify, respectively, the arousal trend and spillover heterogeneities as being governed by $\gamma_i \sim N(Z\eta, \sigma_\gamma^2)$ and $\alpha_i \sim N(Z\nu, \sigma_\alpha^2)$, where Z is a matrix of covariates, including consumption goal and relationship distance. We estimate the MTM arousal response model using the Gibbs sampler (Gelfand and Smith 1990). We generated 50,000 draws and kept every 10th draw of the last 25,000 draws to compute the posterior means of the parameters. As described later, some models include only dyadic data; others include both solo and dyadic data.

³ Note that if the average skin conductance during the first five seconds of the video clip can fully account for an individual's SCL, then his/her intercept should equal zero.

Retrospective evaluation model. We use a regression model to link the retrospective evaluations of the shared experience to the average arousal driven by the arousal trend and spillover, while controlling for consumption goal, relationship distance, and other variables in x_i :

$$Eval_{m,i} = x_i' \beta_m + \varepsilon_i. \quad (2)$$

We distinguish two aspects of the retrospective evaluations, entertainment value ($m = 1$) and social value ($m = 2$).

Results

To ensure a common timeline between the video and skin conductance data, we use a commercial task-administration software, *E-prime*, to track the video starting and ending times, real time task markers, participant numbers, and experimental conditions. The final data set consists of the complete time series of skin conductance and pre- and post- experiential surveys of 382 dyadic and 44 solo participants. We excluded participants who did not complete the surveys or respond to the electro-dermal stimuli with a minimum of .01 micro-Siemens standard deviation from the analysis (Figner and Murphy 2014).

Extending the previous research that analyzed skin conductance responses to a single continuous stimuli (Dawson et al. 2000; Figner and Murphy 2014; Reid and Gonzalez-Vallejo 2009), we treat the video as consisting of multiple continuous stimuli or events. Two research assistants knowledgeable of college basketball independently identified all major events in the video, including those directly related to the game (e.g., varsity team's free throw success, rival team's steal) and those not (e.g., cheerleaders, audience's reactions). Then, consensus regarding these events and their classifications was reached via discussions, and the beginning and ending times of each identified event were recorded. Overall, the video featured 46 sequential events that fell into 11 different event types (Online Appendix 3).

We average the four data points of skin conductance per second to obtain 385 second-by-second data, subtract each person's first-five-second average as described earlier, and match it with the second-by-second event data in the video. As sweat glands typically have a 1-to-3 second reaction delay to a stimulus exposure (Figner and Murphy 2014), we define an event's window as between 2 seconds after the event begins and 2 seconds after the next event begins. Also consistent with the literature, we measure the skin conductance response to each event as the maximum skin conductance during the event's window.

Figure 1 shows the 46 event-based skin conductance data from six randomly selected dyads. As the game progressed, participants reacted MTM to the events, resulting in fluctuations in their arousal captured by skin conductance. For example, we see a rise in skin conductance in response to Event 12 when the varsity team made a successful free throw, or to Event 40 when the varsity audience was cheering. Note that, even with the same sequence of the events, participants' skin conductance evolved heterogeneously with diverse slopes, some trending downward, others upward.

Figure 2 shows that the average entertainment evaluations for dyadic participants range from 4.619 (close relationship, entertainment goal) to 5.364 (distant relationship, entertainment goal). The average social evaluations range from 3.869 (close relationship, entertainment goal) to 4.740 (close relationship, social goal). Further *t*-tests suggest that entertainment-minded participants evaluate entertainment value significantly higher (p -value < .05) when in a distant relationship (5.364) versus close relationship (4.619). Similarly, these participants derive a higher social value (4.386 vs. 3.869, p -value < .1) when they are in a distant relationship. In contrast, socially oriented participants assess the social value more highly when in a close relationship (4.740) versus distant relationship (4.240) with p -value < .1.

We next report the model estimation results and fit statistics. Unlike MSE, DIC penalizes a larger number of variables (Tables 4). Models 1 to 4 sequentially integrate additional sets of variables into the model, estimated only on the dyadic participants. Specifically, the baseline (Model 1) only captures individuals' heterogeneous skin conductance levels and the contemporaneous correlation within each dyad using dyad-level random effects (MSE = 144,520, DIC = 291,790). Model 2 further accounts for the event effects and offers a better fit (MSE = 124,770, DIC = 54,413). Including arousal trend (Model 3) leads to a considerably greater fit (MSE = 37,666, DIC = 35,811). Inclusion of arousal trend shifts the signs of a few event effects and decreases the variance of dyad-level random effects, suggesting these effects' potential confounding with arousal trend. Model 4, which accounts for arousal spillover within each dyad, further improves model fit (MSE = 33,137, DIC = 32,669). Finally, Model 5, built upon Model 4⁴, was estimated on data from dyadic and solo participants with the following specifications. The parameters associated with the SCL intercept and the event effects were estimated by

⁴ We also estimated alternative specifications of Models 4 and 5, including other control variables (e.g. mixed gender in a dyad) and their interactions with arousal trend and spillover. The key findings remain the same.

pooling across both the dyad and solo data. The parameters relevant to only dyads, including spillover, dyad random effect, and effects of consumption goal and relationship distance on arousal trend and spillover, were estimated using only the dyad data. Solos' arousal trends were estimated separately from the dyads'. In summary, only the parameters in italics (Model 5, Table 4) pertain to the solo participants.

The parameter estimates obtained from Models 4 and 5 are similar, so we will only interpret those from Model 5. We observe reasonable significant event effects (probs > .95⁵) with timeout/end horn as a baseline event. Participants on average are more aroused by the varsity team's successes (.040), and audience (.064; heterogeneity shown in Figure 3), but less by the varsity player close-ups (-.041), band and cheer leading (-.048), and rival team's failures (-.054), band, cheer-leading, and audience (-.056).

Both solo (-1.381) and dyadic (-1.053) participants exhibit negative average arousal trends during the experience. However, dyadic participants on average display a marginally less negative arousal trend than solo participants (prob = .92). They also benefit from a positive arousal spillover (.154, prob > .99) that solo participants apparently do not. Both mechanisms contribute to significantly heightened arousal sustainability in shared experience over solo experience. Despite a negative average arousal trend, individual heterogeneity abounds, with some dyadic participants exhibiting an upward trend (Figure 3f). In light of such heterogeneity, the covariate analysis on arousal trend (Table 4) further reveals that dyads with entertainment-social (.362) or social-entertainment (.336) goals tend to best sustain arousal trend (both with probs. > .95). This finding indicates that, as discussed before, diverse goals potentially provide experiential breaks that curb hedonic adaptation. Also, similar to Study 1, individuals with close versus distant relationship in shared experience do not significantly differ in arousal trend.

Next, we examine the covariate analysis on the arousal spillover in the shared experience. Because we standardized all covariates, including consumption goal and relationship distance which are categorical variables when estimating the model, and because multiple covariates and their interactions are significant, we multiply these standardized variables by their corresponding

⁵ We report the Bayesian equivalence of a *p*-value to indicate statistical significance (Rossi, Allenby, and McCulloch 1996). Using the MCMC estimation procedure, we empirically evaluate the posterior distributions of the parameters or their functions (e.g., choice probabilities) to conduct a hypothesis test. For example, to test whether parameter A estimate is greater than B, "prob" simply reports (1 - the probability that A exceeds B).

parameter estimates from Table 4 to calculate the total arousal spillover for each of the experimental conditions in the shared experience. Arousal spillover is most positive for the dyads with entertainment-entertainment goal and distant relationship (.344, prob. > .99), followed by entertainment-social-distant (.300, prob. > .99), entertainment-social-close (.208, prob. > .95), social-social-distant (.167, prob. > .95) and social-social-close (.143, prob. > .9).

Notably, relationship matters only when co-experiencers hold a common goal of entertainment where the arousal spillover in distant relationship (.344) is significantly higher than in close relationship (-.022). In all other goal conditions, relationship distance does not moderate arousal spillover. Although entertainment-entertainment-distant exhibits the highest arousal spillover, in all other conditions a co-experiencer with a socialization goal generates stronger arousal spillover in general (i.e., entertainment-social and social-social). This result also confirms the benefit of expanding customer base by inviting potential customers with a socialization, instead of entertainment, goal to share an experience.

We further regress the retrospective entertainment and social evaluations of the experience on average arousal while controlling for consumption goal, relationship distance, knowledge differential, and emotional valence shift from the beginning to end of the experience (Table 5). Similar to Study 1, a positive shift in emotional valence contributes to stronger entertainment (.726, p -value < .05) and social (.403, p -value < .05) evaluations. Close relationship slightly reduces the entertainment evaluation (-.469, p -value < .1), but can be moderated by diverse goals within dyad (.788, p -value < .05 for social-entertainment-close), potentially because diverse goals alleviate misattributing the entertainment value to close relationship (Ramanathan, McGill, and Vohs 2014). Dyads in the social-social-close condition provided significantly higher social evaluations (.855, p -value < .05). We also find evidence that heightened average arousal significantly contributes to more favorable social evaluation (.486, p -value < .05), but not entertainment evaluation potentially due to participants' strong attachment to the varsity team. As expected, enhanced entertainment (.746, p -value < .05) and social (.111, p -value < .05) evaluations lead to increased intentions for future purchases. Overall, Study 2, using a controlled experiment and unobtrusive physiological measure, produces the results consistent with Study 1 from a natural field setting.

Managerial implications

The findings from both studies, albeit bound by the empirical contexts, shed light on how entertainment industries, such as major league sports (such as NBA, NFL) and television (such as CBS, ABC), might strategize their customer retention and fan expansion campaigns. First, this research reveals that fan expansion strategies leveraging current customers' social circles can be rewarding to both current and potential customers, albeit via different mechanisms. Entertainment-oriented current customers (e.g., parents or husband) sharing the experience with socialization-focused potential customers (e.g., their children or wife) enjoy not only stronger arousal trend, but also positive spillover that further elevates their overall arousal. Potential customers, on the other hand, primarily benefit from the heightened arousal trend throughout the experience. Then for both current and potential customers, improved arousal sustainability leads to increased entertainment and social evaluations and future purchase intentions. In short, fan expansion strategies promoting shared experience between current customers and their social circles not only attract new customers, but also enhance core customers' experience, cultivating a synergistic strategy of customer acquisition and retention.

As a result, managers may execute more effective product design, pricing, promotion, and place strategies to appeal to socialization-oriented individuals who would not otherwise consume or enjoy the experience. For example, weekends, holidays, and family-themed special sporting events may prove rewarding for customer acquisition. Television networks such as CBS may consider offering television programs that appeal to and invite both core customers and their families. They may also embed socialization components within television programs via, for example, social gamifications or real-time viewer comments on-screen as implemented by letv.com. Promotional packages, family or group deals, or price discounts may be offered to encourage current customers to invite their families or friends who would not normally purchase for an entertainment purpose, but would join in to socialize with current customers. Marketing communications may also pair an entertainment (socialization) oriented message toward current customers with a socialization (entertainment) focused message toward their social circles. Product distribution could also account for such socialization factors: social media potentially offer an effective channel to attract present customers' families, friends, and co-workers.

Another discovery from this research is that both close and distant relationships are valuable to arousal sustainability in shared experience. While managers tend to focus on closer relationship, such as families and friends of current customers, in customer acquisition, they may

expand the invitation to more distant relationships, such as colleagues, acquaintances, or even a broader potential customer base. Mixing existing and new customers of different goals, regardless of the nature of their relationship, will tend to enhance arousal and overall experience for both. Nonetheless, when everyone focuses on entertainment, the distant relationship is more conducive to positive arousal spillover. As such, ads highlighting entertainment (e.g., “best game of the season for hard core fans!”) would be better directed to core customers and their more distant social circles than toward “bring your family or friend”-style promotions. Conversely, when advertising to families and friends, promoting a socialization, rather than entertainment, goal would lead to a better experience for both current and potential customers.

Similarly, customer retention strategies should encourage shared experience with both closer and more distant others. Nonetheless, when everyone aims for entertainment, such as among season ticket holders, more distant relationship induced by, for instance, more frequent shifts of seating, produces the strongest spillover and highest entertainment benefit. In the same vein, for experiences with the highest entertainment value, such as season finales, championship playoffs, it is best not to promote closer relationships among customers such as screen shots of fellow audience, or in-experience (e.g. in-stadium, in-park) gamifications with fellow consumers.

Besides the entertainment industries, firms in many other industries, such as automobile, food, and beverages, have also increasingly focused on experiential aspects of their products to differentiate themselves from competitors in hyper-competitive markets. More recently, these firms are engaging in more experiential marketing campaigns where they attempt to encourage consumers to participate in the evolution of their brands and/or co-creation of marketing campaigns. For example, Anheuser-Busch invited South by Southwest visitors to participate in an immersive multi-sensory virtual reality Budweiser Brewery tour where they could see, hear, smell and finally taste the beer as it went through a production line. Our results would suggest that these firms create campaigns that encourage their core customers to involve families and friends in these activities.

Discussion

While utilitarian consumption is well studied, research remains scant on solo and particularly shared experiential consumption. In light of skyrocketed industrial efforts toward customer retention and expansion via shared experience, understanding how to better sustain

arousal in order to enhance consumer experience becomes a top priority. Our research makes contributions on several fronts. Conceptually, we expand the literature from solo utilitarian consumption to shared experiential consumption. We conceptualize two important mechanisms of arousal sustainability critical for experience enhancement – own arousal trend and arousal spillover from co-experiencer, and two key factors driving these mechanisms – consumption goal and relationship distance. Methodologically, we tackle the challenge of quantitatively measuring MTM experience via a multi-method approach. Interestingly, self-report and unobtrusive physiological measures lead to converging findings. As academics and practitioners increasingly emphasize experiential marketing and biometric measures of experience and consumer behavior in general, this research illustrates the value of combining biometrics and traditional methods. Substantively, we provide insights that help guide customer acquisition and retention strategies for experiential marketing managers.

Our findings suggest that consumers in shared experience not only enjoy heightened own arousal trend over time compared to being alone, but also benefit from co-experiencers' positive arousal spillover. Both mechanisms elevate the average arousal, resulting in increased experiential evaluations and future purchase intentions. Moreover, those with a co-experiencer of a different goal withhold the strongest arousal trend over time, and reap additional spillover benefit when the co-experiencer focus on socialization. Interestingly, those in close or distant relationship do not differ in arousal trend or spillover as long as one co-experiencer possesses a socialization goal, offering executives greater strategic freedom. Nonetheless, distant relationship creates the strongest spillover when everyone focuses on entertainment.

While this research takes an initial step to improve our understanding of shared experience, this important and growing area invites much more future research along many directions. For example, while we focus on arousal, additional biometric data such as facial expression may be integrated to better understand experiential valence in addition to experiential intensity (arousal). Such integration may reveal more detailed psychological processes in social interactions and boundary conditions of our findings. Other factors, such as fandom, partisanship (e.g., fans of rival teams), and consumption contexts (e.g., stadium/in person versus home/digital, live versus recorded experience, real versus fantasy/virtual experience), may also influence arousal sustainability. Finally, when more studies are conducted in a variety of experiential contexts, such as motion pictures, theme parks, concerts, and gaming, empirical generalizations

of results to experiential consumption may be established.

Appendix 1: Conversational Task to Induce Close Relationship in Study 2

We would like you to learn more about the student next to you. We would like both of you to engage in a natural conversation using these questions. You will have about seven minutes to complete the task. Please try to get to as many of the questions as you can, but don't worry if you don't get to all of them. Check off the questions as you finish.

Please start by introducing yourself to the other student and then ask him or her the following questions.

1. Where are you from?
2. What are your hobbies?
3. What would you like to do after graduating from the University of Michigan?
4. What would be the perfect lifestyle for you?
5. If you could travel anywhere in the world, where would you go and why?
6. What is one thing happening in your life that makes you stressed out?
7. If you could change one thing about yourself, what would that be?
8. What is one recent accomplishment that you are proud of?
9. What is one emotional experience you've had with a good friend?
10. If you could have one wish granted, what would that be?
11. What is one thing about yourself that most people would consider surprising?
12. Tell me one thing about yourself that most people who already know you don't know.

Appendix 2: Experiment Room for Study 2



Appendix 3: Identified Events in Study 2

	Event Type	# Occurrence	Identified Events
1	Home team success	6	Home team layup Home team steal Home team free throw success
2	Home team failure	1	Home team free throw failed
3	Rival team failure	5	Rival team foul Rival team 2-pointer failed Rival team 3-pointer failed
4	Home team close-up	11	Home team timeout close-up Home team game close-up
5	Rival team timeout close-up	8	Rival team timeout close-up Rival team game close-up
6	Home team band / cheerleaders	4	Home team band/cheerleaders
7	Home team audience	2	Home team audience
8	Rival team band / cheerleaders / audience	3	Rival team band/cheerleaders Rival team audience
9	Replay	2	Replay
10	Flashback	1	Flashback
11	Timeout end horn	3	Timeout and end horn
Total		46	

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TABLE 1
Descriptive Statistics of Study 1

	Viewing with Co-experiencers (N=195)		Viewing Alone (N=23)	
	M	SD	M	SD
Goal rating: 1 (entertainment) – 7 (socialization)	4.779	1.710		
% > half of co-experiencers with social goal	.631	.484		
Co-experiencers more knowledgeable than me: 1 (not) – 7 (very)	4.467	1.709		
Co-experiencers rooting for same team: 1 (not) – 7 (very)	4.836	1.444		
% close friends among co-experiencers	.779	.348		
% rooting for lost team	.339	.474	.478	.511
Fan of football: 1 (not) – 7 (very)	3.490	1.095	3.300	1.146
Entertainment evaluation	4.928	1.325	4.783	1.499
Social evaluation	5.400	1.286		
Likelihood of watching pro football next year (%)	65.470	34.81	67.300	37.490
Likelihood of watching Super Bowl next year (%)	89.720	15.05	88.870	16.750
Positive mood at beginning of game: 1 (negative) – 7 (positive)	5.500	1.329	5.780	1.204
Positive mood at end of game: 1 (negative) – 7 (positive)	4.938	1.620	5.260	1.630
Average arousal across sampling points	4.597	1.012	4.788	1.050
Peak arousal	5.479	1.106	5.624	1.002
End arousal	4.597	1.012	4.788	1.050
Arousal trend (downward if negative)	-.475	1.281	-.827	.953

TABLE 2

Impact of Consumption Goal and Relationship Distance on Arousal Trend in Study 1

	Model 1		Model 2		Model 3	
	Goal Only		Goal and Relationship		Model 2 + Controls	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
Intercept	-.727	.202	-.843	.291	-.788	.535
Social (self) / Social (co-experiencers)	.068	.244	.063	.245	.062	.253
Entertainment / Social ^a	.675**	.286	.666**	.286	.624**	.313
Social / Entertainment	.515*	.298	.540*	.302	.560*	.307
% close friends among co-experiencers			.150	.268	.137	.271
Co-experiencers more knowledgeable					-.034	.061
Co-experiencers rooting for same team					.023	.066

*significant at .1 and **significant at .05.

a: a participant's goal is determined by the median split on the 7-point scale used in the goal question. The co-experiencer's goal is determined as follows: if a participant reported >50% others had a social (entertainment) goal, then co-experiencers' goal is coded as social (entertainment).

TABLE 3

Impact of Average Arousal on Entertainment and Social Evaluations in Study 1

	Entertainment Evaluation		Social Evaluation	
	Coefficient	SE	Coefficient	SE
Intercept	1.076	.603	3.162	.687
Average arousal	.754**	.079	.525**	.909
Social (self) / Social co-experiencers	.105	.215	.205	.245
Entertainment / Social	.142	.26	-.014	.296
Social / Entertainment	-.412	.257	.310	.292
% close friends among co-experiencers	-.481**	.226	-.132	.257
More knowledgeable than co-experiencers	.081	.051	.024	.058
Co-experiencers rooting for same team	.101*	.055	-.057	.063
Rooting for lost team	-.086	.18	-.106	.205
Positive mood end minus beginning of game	.119**	.041	.009	.047

TABLE 4
MTM Arousal Driven by Arousal Trend and Spillover in Study 2

	Model 1: Baseline	Model 2: Model 1 + event effects	Model 3: Model 2 + arousal sustainability	Model 4: Model 3 + arousal spillover	Model 5: Model 4 + solo participants
Intercept (SCL)	-2.051**	-2.670**	.266**	.263**	.189*
Arousal trend:					
Mean (solo)					<i>-1.381**</i>
Mean (dyad)			-1.202**	-1.060**	-1.053**
Close relationship			.053	-.239	-.235
Social (self) / Social (co-experiencer)			.300*	.174	.174
Entertainment / Social			.525**	.338**	.336**
Social / Entertainment			.524**	.363**	.362**
Close relationship * Social / Social			.031	.164	.164
Close relationship * Entertainment /			-.244	-.088	-.175
Close relationship * Social /			-.154	-.025	.060
Event Effects:					
Varsity team success		.590**	.074**	.046**	.040**
Varsity team failure		.865**	-.116**	-.016	-.035
Rival team failure		.923**	-.076**	-.056**	-.054**
Varsity player close-up		.868**	-.057**	-.033**	-.041**
Rival player close-up		.903**	-.008	.004	-.003
Varsity team band, cheer leading		.157**	-.086**	-.037*	-.048**
Varsity team audience		-.362**	.081**	.080**	.064**
Rival team band, cheerleading,		-.071	-.089**	-.045**	-.056**
Replay		1.556**	.035	.052**	.034*
Flashback		.463**	-.118**	-.026	-.041*
Arousal spillover:					
Mean				.155**	.154**
Close relationship				-.184**	-.183**
Social / Social				-.081*	-.080*
Entertainment / Social				-.114**	-.117**
Social / Entertainment				-.011	-.019
Close relationship * Social / Social				.122**	.120**
Close relationship * Entertainment /				.144**	.104*
Close relationship * Social /				.051	.090*
Mean of individual error variance					.991
Mean of individual error variance	9.331	8.069	2.467	2.224	2.282
Variance of dyad random effect	2.059	2.385	.618	.635	.041
DIC	291,790	54,413	35,811	32,669	35,896
MSE	144,520	124,770	37,666	33,137	35,761

* Probability of the parameter estimate less (greater) than 0 is > .9.

** Probability of the parameter estimate less (greater) than 0 is > .95.

For Model 5, only parameters in italics are relevant to solo participants.

TABLE 5

Impact of Average Arousal on Entertainment and Social Evaluations in Study 2

	Entertainment Evaluation		Social Evaluation	
	Coefficient	SE	Coefficient	SE
Intercept	5.121**	.193	4.505**	.230
Average arousal	.120	.147	.486**	.175
Social / Social	-.199	.254	-.124	.302
Entertainment / Social	-.417	.275	-.201	.327
Social / Entertainment	-.380	.273	-.191	.325
Close relationship	-.469*	.264	-.513	.314
More knowledgeable than co-experiencer	.103**	.026	-.001	.031
Valence after minus before experience	.726**	.098	.403**	.117
Close Relationship * Social / Social	.149	.364	.855**	.050
Close Relationship * Entertainment / Social	.551	.383	.638	.456
Close Relationship * Social / Entertainment	.788**	.383	.355	.456

FIGURE 1
A Sample of Event-Based Skin Conductance for Six Dyads

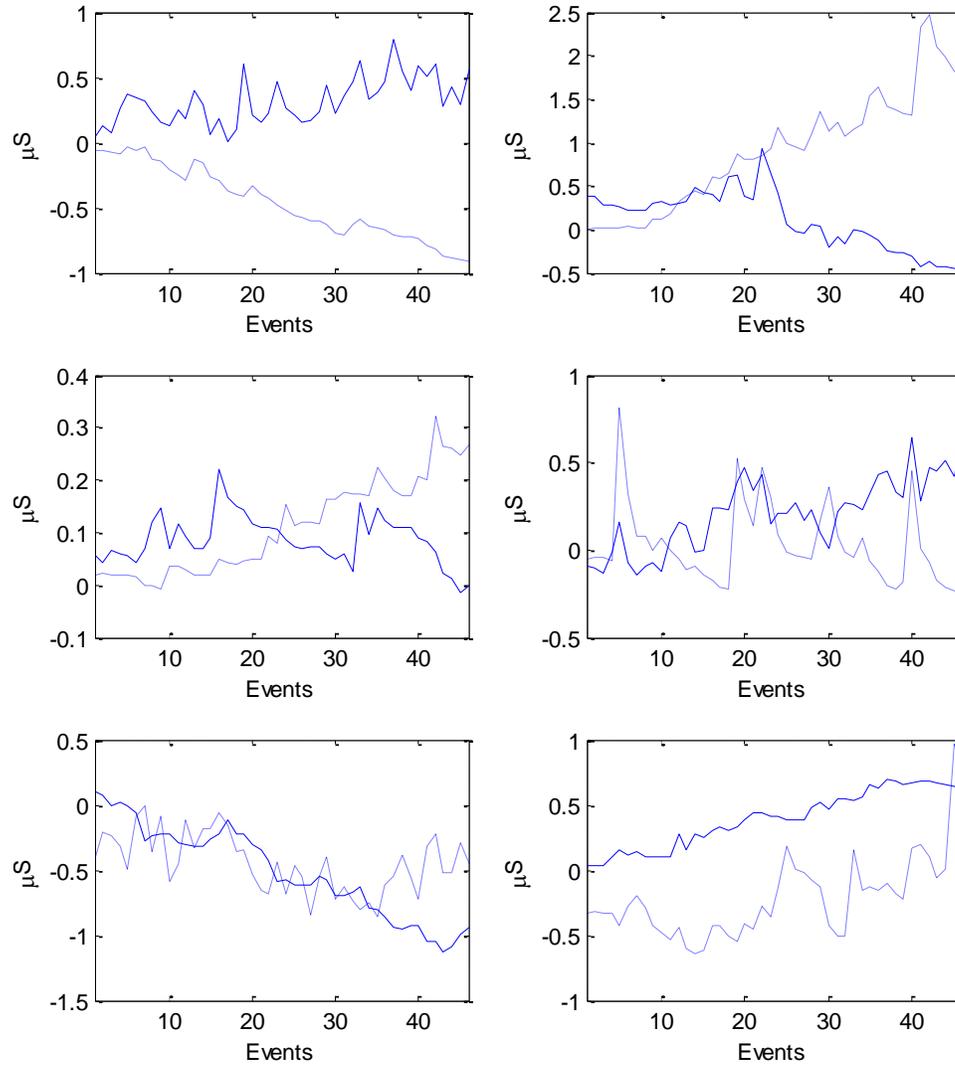
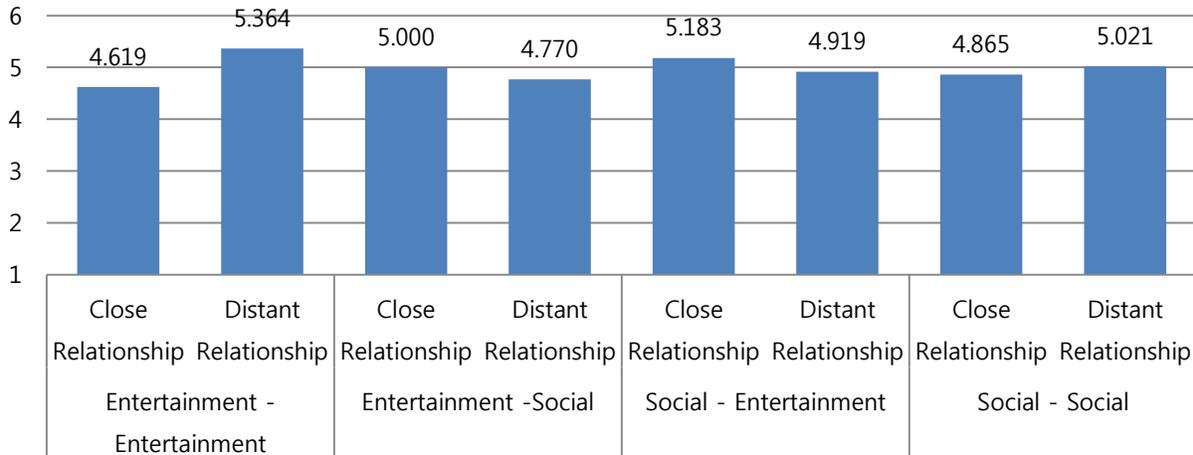


FIGURE 2

Average Entertainment and Social Evaluations

4a Entertainment Evaluations



4b Social Evaluations

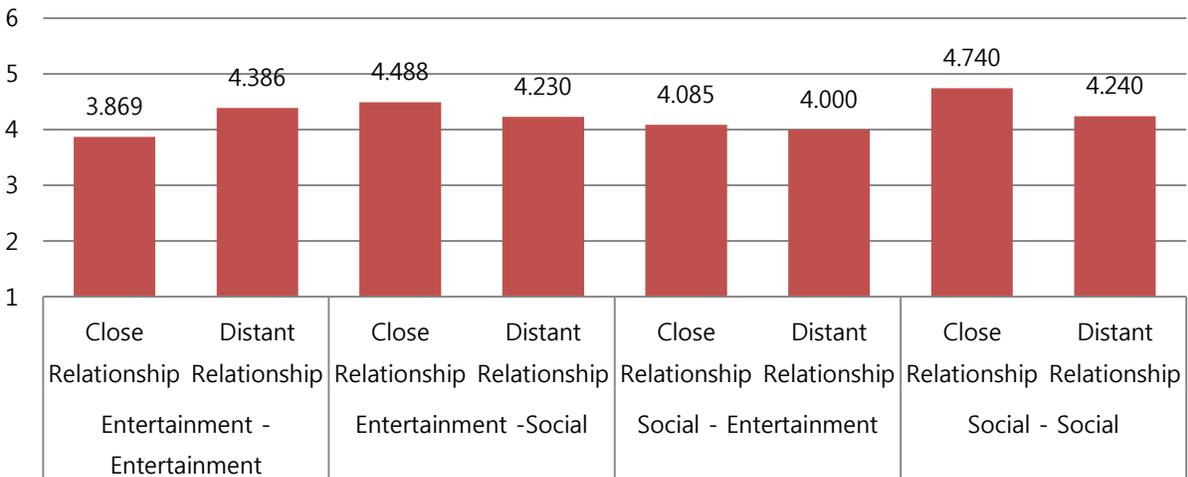


FIGURE 3
Heterogeneity in Parameter Estimates

