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How Team Emotions Impact Individual Employee Strain Before, During, and After a Stressful Event: A Latent Growth Curve Modeling Approach

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ABSTRACT

Employee strain is a significant and costly issue for hospitality organizations. This study investigated the change trajectory of strain pre, during, and post a discrete stressful event, and how cohesion and group emotional variability altered the shape of the trajectory. Using an experience sampling method approach, we gathered 402 daily observations from 84 workers in a period that included a specific stressful event, the opening of a one-night "theme dinner" restaurant that catered to dinner guests from the general public. We used latent growth curve modeling to investigate the change of strain among employees over time. The results showed that indicators of strain displayed inverted U-shaped trajectories (i.e., strain increased before and decreased after the stressful event) and that group cohesion and emotional variability affected the starting value and the change trajectory of strain. By investigating strain on a daily basis and considering group-based influences in response to discrete stressful events, this study provides significant implications to the hospitality literature and suggestions to hospitality managers on how to alleviate the impact of strain among their workforce.

Keywords: strain; stressful events; group cohesion; group emotional variability; latent growth curve modeling.

Paper type: Research paper

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Introduction

The hospitality industry is relatively stressful due to the dynamic nature of most jobs, the need for employees to interact with a variety of (sometimes unhappy) customers, and unusual working hours (Shi, Gordon, S., & Tang, 2021). Recently, the COVID-19 pandemic has made clear how the stress, anxiety, and depression that many hospitality workers experience even in the best of circumstances can take a mental and physical toll. Many hospitality workers are now underemployed and those that are working report anxiety related to working in potentially unsafe conditions, fears of losing their jobs, and pressure to perform at the peak of their abilities to help contribute to the financial health of the organization (Baskin, 2020).

Many hospitality organizations are struggling financially, and individual employees bear much of the burden as well (Baum, Mooney, Robinson, & Solnet, 2020). Exposure to daily stressors has direct negative implications for the psychological and physiological functioning of individuals and these effects are compounded over time. Chronic stress is related to negative well-being outcomes, including anxiety, depression, exhaustion, sleep deprivation, and heart disease (e.g., Almeida, 2005; Ganster & Schaubroeck, 1991) and negative organizational-related consequences including reduced task performance, reduced organizational citizenship behavior, reduced satisfaction with the job, reduced motivation, and absenteeism (e.g., Halbesleben & Wheeler, 2011; LePine, LePine, & Jackson, 2004).

Though chronic stress is a fundamental concern, employees' emotional states vary over time (Wagner, Barnes, & Scott, 2014), and these emotional shifts are often in response to discrete, infrequent, and high-stakes situations (Weiss & Cropanzano, 1996). An event manager with an unusually large event for a difficult client, a concierge attending to a high-profile guest,

and a restaurant manager who is preparing for a grand opening must all adapt to these unusual but important circumstances effectively and efficiently to maintain high levels of service. Many employees seem to handle these acute stressors quite well, but it is unclear what inconspicuous psychological and physical strains these highly stressful events can place on individual hospitality employees (in addition to the typical daily stressors inherent in hospitality work). In order to investigate the impact of strain-related issues, it is necessary to use experience sampling methodology, and there are examples of studies on workplace strain related topics that have used this method before. For instance, Lanaj, Johnson, and Barnes (2014) found that smartphone usage depletes employees' regulatory resources and increased depletion the next morning via its effects on sleep. Wagner et al. (2014) uncovered that day-to-day emotional labor is related to emotional exhaustion, work-to-family conflict, and lost sleep. Hülsheger (2016) investigated the change trajectory of fatigue over the course of the day and found that generally fatigue decreases in the morning, reaches a nadir around noon and then increases until bedtime.

It is also a fact that most hospitality employees work together in teams to prepare for and execute high-stakes events successfully. Team members can be highly influential in altering the work experience, as past research has shown that team members' emotions could have both positive and negative consequences for individual team members; for example, Lin, He, Baruch, and Ashforth (2017) found that positive affective tone was positively related to team identification and team cooperation, whereas negative affective tone was negatively related to team identification and team cooperation. However, very little is known about how team dynamics interact with acute stressors.

In this study, we contribute to the existing literature by utilizing the principles outlined by Affective Events Theory (AET, Weiss & Cropanzano, 1996) to investigate the influence of a discrete stressful event on one psychological and one physiological indicator of strain before, during, and after the event: emotional exhaustion and sleep quality. Emotional exhaustion and

sleep quality were chosen because employees in the hospitality industry need to manage their emotions to do their jobs, which can be particularly draining and deplete their energy (Xu et al., 2018). In addition, based on the job demands-resources model (JD-R model; Bakker & Demerouti, 2007) and the conservation of resources (COR, Hobfoll, 1989) model, we also investigated the potential buffering and amplifying effects of cohesion and emotional variability within a team of employees on the dynamic changes in strain over time. In doing so, we provide the first comprehensive model that incorporates the impact of group-level affect on the dynamic stressor-strain relations in response to highly stressful events.

From a practical perspective, there is a significant growing concern on issues of strain and the mental health of hospitality employees. Research from the Royal Society for Public Health has found that mental health and wellbeing is under considerable strain among hospitality employees, and that one in five (20%) hospitality employees suffer from severe work-related mental health issues (RSPH, 2019a). Work-related mental illness in hospitality is estimated to cost the economy £9.7 billion ($13.3 billion; RSPH, 2019b). In addition, unsociable working hours (69%), causing hospitality employee strain, has been one of the top reasons employees cited for leaving the hospitality industry (Muller-Heyndyk, 2018). Furthermore, COVID-19 and related fears add strain on hospitality employees, exerting a serious toll on their physical and mental health and safety (Sönmez, Apostolopoulos, Lemke, & Hsieh, 2020). Thus, investigating the impact of a specific event on employee strain is vital to employees and organizations alike because of the prospective costs of strain for either party. This research focuses on sleep quality, because the hospitality industry involves unusual working hours that may impede restful sleep and cause employees to feel sleepy during the day (Karakaş & Tezcan, 2019).

This study was conducted with student workers enrolled in a food production and service management course. As part of this course, the students are required to plan the preparation and service of meals in a commercial restaurant setting. This context is a stressful event that

represents a workplace stressor for the participants. The students worked in management teams and had to demonstrate their capability to manage responsibilities that involve developing, producing, and evaluating a variety of food service systems, including sales and marketing, menu planning, recipe design, pricing, purchasing, facilities management, HR management, and financial management. This context is comparable to a real-life restaurant setting, because this restaurant is open to the public and the students and customers act as they would in any other restaurant setting. These management teams are ideal for the proposed study, as the theme dinner was a highly stressful event for team members. Many students insist their friends and family prioritize attending their dinner in lieu of their graduation and consider their formal education completed once the dinner is completed. Thus, students were motivated to do well and worked interdependently to accomplish tasks successfully. In addition, this scenario very closely resembles the experiences of actual employees because these individuals work together for several months, have existing relationships with one another, and are judged based on actual financial outcomes, including the number of reservations, revenue generated, and the outcomes of guest satisfaction surveys.

In the following sections, we first explain the relevant literature on how discrete events act as triggers for psychological and physiological strain and how group affect could act as a buffer or amplifier. Based on this literature, we then designed an experience sampling study to investigate the experiences of student workers across a period of time that included a specific stressful event, the opening of a one-night “theme dinner” restaurant catering to dinner guests from the general public. Latent growth curve modeling was used to investigate the hypotheses. Finally, we conclude with discussions on the theoretical contributions and implications for practitioners in the hospitality industry, ending with future research directions.

Discrete Events as Triggers for Psychological and Physiological Strain

Several theoretical orientations highlight the reactive relations between stressors (external events) and strains (psychological, physiological, or behavioral consequences of stressors). For instance, AET and its supporting empirical evidence has suggested that strain-relevant outcomes are a dynamic function of a relevant work event (Wang, Guchait, & Pasamehmetoglu, 2020; Weiss & Cropanzano, 1996). AET suggests that emotional and behavioral consequences are responses to work events (e.g., Matta, Erol-Korkmaz, Johnson, & Biçaksiz, 2014; Ohly & Schmitt, 2015). Furthermore, the JD-R model (Bakker & Demerouti, 2007) argues that personal resources are depleted by meeting the demands of stressful events; these resources need to be recuperated for healthy long-term functioning. The conservation of resources (COR, Hobfoll, 1989) model posits that people strive to acquire, keep, maintain, and manage personal resources as much as they can. The JD-R model and COR model imply that discrete stressful events can cause depletion of both psychological and physiological resources and that individuals strive to recover and/or buffer themselves from this resource depletion. In this study, we examined one important aspect of psychological strain and one useful proxy for physiological strain as outcomes: emotional exhaustion and sleep quality, respectively.

Psychological Strain

AET suggests that certain behaviors are emotional responses to workplace events and posits that specific work events are the proximal causes of employees' affective experiences. AET incorporates concerns for transient emotions and attempts to shed light on the impact of work events on employees' responses. Weiss and Cropanzano (1996) proposed that affective experiences would lead to spontaneous affect-driven behaviors including acts of good or bad behaviors at the workplace. In sum, affective experiences contribute to the affective component of attitudes including satisfaction with the job, and eventually to judgment-driven behaviors including a decision to quit a job. AET presents a valuable framework for interpreting the role of

stressful events in the workplace (Fisher & Ashkanasy, 2000; Parker, Sonnentag, Jimmieson, & Newton, 2020).

This study explains the effect of an emotionally significant workplace event on job-related perceptions, and raises the possibility that emotional exhaustion could fit naturally into AET. Emotional exhaustion refers to "the extent to which employees feel emotionally overwhelmed and drained by their work" (Janssen, Lam, & Huang, 2010, p. 788). Evidence has shown that elevated emotional exhaustion is a consequence of stressful events because of the repeated exposure to unfavorable work demands and a lack of job control (Sluiter, De Croon, Meijman, & Frings-Dresen, 2003).

According to AET, stressful events could impose high demands on hospitality employees, thereby depleting emotional resources and provoking emotional exhaustion (Teoh, Wang, Kwek, 2019). Stressful events are job stressors, which increase emotional exhaustion because, when facing stressors, individuals have to make an effort to regulate their emotions and meet job demands (Sonnentag, Kuttler, & Fritz, 2010). This research argues that the change of strain will display an inverted U-shaped curve before, during and after a specific stressful catering event. This effect can be interpreted by both AET (Weiss & Cropanzano, 1996) and the homeostatic model of stress (McGrath, 1970; Romero, Dickens, & Cyr, 2009). The latter suggests that the human body strives to keep a stable internal environment for essential organismal processes to proceed optimally. Stressors could cause the body to leave a homeostatic state and enter a "fight-or-flight" state that produces a neurophysiological activation and an increase in arousal (Ursin & Eriksen, 2004). Resources or energy can be depleted by employees meeting demands required by the event, and therefore the workplace stressful events could serve as mechanisms in depleting energy (Hobfoll, 1989). Once the stressor has been alleviated, the body will calm down and return to its original homeostatic state, resulting in relatively lower

psychological strain after the event due to a homeostatic rebound effect (Teixeira, 2003). In line with these findings and the previous theoretical discussion, we predict the following:

Hypothesis 1: Emotional exhaustion will display negative quadratic (inverted U-shaped) trajectories around the stressful event: emotional exhaustion will increase before the event and decrease after the event.

Physiological Strain

Sleep is of vital importance to human functioning and sleep quality affects an individual's mental health, well-being, and mortality (Hublin, Partinen, Koskenvuo, & Kaprio, 2007). Sleep deprivation impacts approximately 23% of US employees (Kessler et al., 2011) and has adverse effects on work behavior and job performance including increases in work injuries (Barnes & Wagner, 2009), decreased alertness (Åkerstedt, 2003), and reduced productivity (Kessler et al., 2011).

Sleep quality is defined as the easiness of falling asleep and staying asleep, and as the number of awakenings experienced by the individual during the night, and can be contrasted with sleep quantity, which is the amount of time one spends in a sleeping state (Barnes, 2012). One may sleep for many hours in any given night but have a fitful sleep punctuated by awakenings intermittently. Alternately, one may sleep only for a few hours, but soundly. Therefore, sleep quality is likely a better indicator of sleep regulation and physiological well-being than sleep quantity (Litwiller, Snyder, Taylor, & Steele, 2017). In addition, applied psychology research has investigated sleep quality more frequently than sleep quantity (Litwiller et al., 2017). For these reasons, we chose sleep quality as our focal physiological strain outcome.

Research has shown that stressful events are related to decreases in hours of sleep and increases in fragmentation of sleep (Hall et al., 2008). Based on the argument that a person's psychosocial environment affects biological consequences (Lazarus & Folkman, 1984), research has indicated that stressors share part of the blame for sleep deprivation because stressors involve

physiological arousal that generates sympathetic nervous system activation, such that people in an activated state are less able to fall asleep easily (Wagner, Barnes, & Scott, 2013). We argue that sleep quality will be gradually improved after the stressful event. Recovery is important for replenishing depleted resources after the stressful event and getting sufficient sleep and ensuring sleep quality is especially important for one's well-being and health (Hahn et al., 2011).

The AET and cyclical patterns in affective states suggest that within-person variability of strain-related constructs across days is a function of the day of the week (Hülsheger, Lang, Depenbrock, Fehrmann, Zijlstra, & Alberts, 2014; Weiss & Cropanzano, 1996). Thus, studying the change trajectory of sleep quality can contribute to a better understanding of the change patterns in recovery processes. We argue that the pattern in Hypothesis 1 is consistent with homeostatic sleep regulation, such that deficient sleep before the stressful event will lead to compensatory increase in sleep duration as well as depth after the stressful event. Thus, we predict that:

> *Hypothesis 2: Sleep quality will display a positive quadratic (U-shaped) trajectory around the stressful event: sleep quality will decrease before the event and increase after the event.*

The Impact of Group Affect

In line with the JD-R and COR models, we identified and examined the impact of two common group-related constructs that can act as either buffers or amplifiers of our anticipated change trajectories: group cohesion and the variability of emotions within the group. Group cohesion refers to "the group members' positive attraction to the group, that is, 'their liking of the group'" (Kelly & Barsade, 2001, p. 105) and can be classified as a "top-down" manifestation of group perceptions, because individual perceptions of group cohesion are derived from interactions at the group level (Kelly & Barsade, 2001).

Literature has found that cohesion is associated with employees' perceptions of control (Lee & Brand, 2005) because in situations characterized by relatively high group cohesion, interpersonal communication is enhanced, and employees thus have the flexibility and freedom to control how to do their jobs and to reduce stressors accordingly. In addition, cohesion has been shown to help employees maintain team spirit and morale in the face of intense stressors (Dion, 2000; Bliese & Britt, 2001). Specifically, according to the JD-R and COR models, a job resource such as group cohesion can bolster engagement through a motivational process, and high group cohesion will help breed social integration and affiliative and cooperative feelings with group members, which promote social bonding (Knight & Eisenkraft, 2015; Spoor & Kelly, 2004). Thus, when cohesion is high, group members report higher levels of satisfaction and enjoyment within the group (Tekleab, Quigley, & Tesluk, 2009) and less anxiety (Prapavessis & Carron, 1996). In contrast, groups low in cohesion tend to be overwhelmed by work overload and report higher levels of strain (Bliese & Jex, 2002). In the field of psychiatric symptomatology, group cohesion could also work as a strategy to prevent psychiatric pathology or breakdown (Griffith & Vaitkus, 1999). In the hospitality literature, group cohesion has been demonstrated to reduce interpersonal conflict and enhance team performance (Chen & Ayoun, 2019). Therefore, we anticipate that the impact of group cohesion on individual dynamics will be powerful, such that it not only decreases the initial levels of strain before the stressful event, but also dampens their change trajectories.

Hypothesis 3: Group cohesion will be negatively related to initial levels of emotional exhaustion (H3a) and positively related to initial level of sleep quality (H3b).

Hypothesis 4: Group cohesion will alleviate the systematic changes of (flatten the change pattern of) emotional exhaustion (H4a) and sleep quality (H4b) over time.

In addition to group cohesion, we also investigated the role of emotional variability within the group in exacerbating the negative effects of strain over time (Barsade & Knight,

2015). Emotional variability refers to "the range or amplitude of someone's emotional states across time" (Houben, Van Den Noortgate, & Kuppens, 2015, p. 902) and can be classified as a "bottom-up" manifestation of group perceptions because it is characterized as "the affective composition of the various affective attributes of the group's members" (Barsade & Gibson, 2007, p. 49). A person with high levels of emotional variability usually experiences emotions that reach relatively extreme levels and displays a great deal of emotional deviation from the average level of emotions (Houben et al., 2015). In general, emotional variability has been related to negative individual consequences, such as decreased life satisfaction and happiness and increased depression and anxiety (Gruber, Kogan, Quoidbach, & Mauss, 2013). In a cross-sectional study in the hotel industry, emotional variability was found to be correlated with emotional exhaustion (Xu et al., 2018).

In this research, we operationalize emotional variability within the group as individual perceptions of the variability of emotions within the group over time. Few studies have examined the effect of emotional variability of coworkers within a team on group dynamics, yet group members can vary widely in terms of their emotional variability. Thus, examining emotional variability within a group can highlight nuances related to work teams' feelings, attitudes, and interpersonal dynamics. Emotional variability within the group is likely to exacerbate the impact of strain for at least two reasons. First, high levels of emotional variability within the group can result in uncertainty and unpredictability about the emotions of others (Matta et al., 2017). When coworkers' emotions are erratic, the resulting uncertainty causes a generally aversive state related to feelings such as unease and fear (e.g., Fiske & Taylor, 1991). In addition, perceived uncertainty is negatively related to a sense of control over stressful circumstances, which in turn increases psychological strain (Bordia et al., 2004).

Second, perceptions of emotional variability within the group can exacerbate the impact of strain due to emotion contagion, one person's emotions affecting the emotions of others

(Cheshin, Rafaeli, & Bos, 2011). People do not live on their own "emotional islands" (Barsade, 2002). When team members experience certain emotions during work, these emotions can ripple out and impact not only others' emotions, but also group dynamics. These processes can also be unconscious - individuals' internal emotional states are often readily observable and can "leak" even when people are trying to hide them (Ekman, Friesen, & Ellsworth, 2013). Emotional contagion can also be achieved in other ways. For instance, individuals tend to mimic the physical manifestations of emotions (e.g., smiling, frowning) of others through automatic and unconscious processes (Hatfield et al., 1993; Kuang, Peng, Xie, & Hu, 2019). This mimicry can in turn induce the underlying emotion of the emotional "sender" in the "receiver" due to facial feedback processes (Grandey, 2008; Howard & Gengler, 2001). Thus, a group could be affected by individual group members who are emotionally variable; the proverbial "bad apple" makes the entire group feel unsettled, leading to possible morale problems and more strain, thus "spoiling the barrel." Therefore, we argue that at a group level, group members' emotional variability not only increases the initial levels of strain before the stressful event, but also steepens the change trajectories of strain over time.

Hypothesis 5: Group members' emotional variability will be positively related to initial levels of emotional exhaustion (H5a) and negatively related to the initial level of sleep quality (H5b).

Hypothesis 6: Group members' emotional variability will amplify the systematic changes of (steepen the change pattern of) emotional exhaustion (H6a) and sleep quality (H6b) over time.

Methodology

Sample and Procedure

Eighty-four undergraduate student workers, enrolled in a food production and service management course at the senior level, participated in the study. They worked in management

teams (six to eight participants per team). Each team had to create a profitable theme restaurant and open and manage a restaurant on two separate nights. Student workers were expected to develop and produce authentic dining experiences (two "theme dinners" in a semester), and this research focused on the first of those two dinners. There were twelve teams in total, resulting in twelve theme dinners.

Data collection was completed in two steps, both of which were administered through SurveySignal, a survey distribution and management application. There was a one-month gap between Step 1 and Step 2 (Figure 1). During the one-month period, students were in regular contact with their team members during class and in group meetings. In the first step of the process, we approached these 84 student workers and held a training session at the beginning of the semester (after the groups had been formed) to explain the study to the participants. We then sent a follow-up email to the students who had signed consent forms. In the email, we asked the students to register for the study via the SurveySignal webpage. Then we asked the participants to complete a survey that assessed demographic information (e.g., age, gender, race, previous work experience) and initial indicators of group cohesion.

The second step entailed completing a short diary survey for seven consecutive days using an experience sampling method approach (Yu, Xu, Li, & Shi, 2020). Specifically, during the week of the catering event, we requested them to fill out a mobile-accessible survey each day for three days before the event, on the day of the event, and each day for three days after the event. For example, if a student was managing a theme dinner on Wednesday night, we asked the student to complete the daily surveys from the previous Sunday to the following Saturday. As an incentive to participate in the project, we offered respondents monetary compensation. The participants were assured of confidentiality and they were told that the information provided by them would be used for research purpose only.

Insert Figure 1 about here

Of the 84 students who were involved in 12 teams, 69 participated in the survey, and we collected a total of 402 momentary observations from the 69 participants during the seven-day period. The overall response rate to the survey requests over time was 83%. The response rates for the teams ranged from 67% to 88%. The respondents ranged in age from 19 to 32 years (median age 22), 66% of them were female, and 63% were Caucasian. All respondents had prior work experience in hospitality and 68% of the participants were working in various types of hospitality jobs at the time.

Measurement

We used seven-point Likert scales ranging from 1 = strongly disagree to and 7 = strongly agree, except where noted. Brevity of measurement was a priority to encourage participation, given the momentary nature of the data collection and the highly stressful context (Schmitt, Belschak, Den Hartog, 2017). In this study, several constructs were measured with a single item. In the experience sampling method design, participants are normally requested to assess a straightforward unidimensional construct on a current or very recent experience, and thus, a single well-chosen item is considered to be sufficient (Fisher & To, 2012).

Emotional exhaustion. During the daily survey, we asked participants to respond to one item from the emotional exhaustion scale (Maslach & Jackson, 1981): “Right now, I feel emotionally drained.” This single-item scale has been used in prior experience sampling method studies in work settings (e.g., Hülsheger, Alberts, Feinholdt, & Lang, 2013; Thoroughgood, Sawyer, & Webster, 2020).

Sleep quality. We evaluated sleep quality in the daily questionnaire with a single item from the Pittsburgh Sleep Quality Index (Buysse et al., 1989; “How do you evaluate last night’s sleep?”) on a 10-point Likert scale ranging from 1 = very bad to 10 = very good. There is

evidence demonstrated that sleep quality can be reliably measured with a single item (Hahn, Binnewies, Sonnentag, & Mojza, 2011; Schmitt et al., 2017).

Group cohesion. We assessed group cohesion twice: in Step 1, we used seven items from Dobbins and Zaccaro (1986) to assess the respondents' perceptions of group cohesion. Sample items included: "I feel that I am really a part of my team," and "The team which I belong to is a close one." Cronbach's alpha for this variable was 0.87. We then submitted all items to an exploratory principal axis factor analysis with promax rotation to determine factor structure, which revealed one factor. In Step 2, we used the item with the highest factor loading from Step 1 to assess group cohesion three days prior to the event (this is the measure of group cohesion used for all analyses). The item was "The team which I belong to is a close one." Choosing the item with the highest factor loading from pre-existing scales is suggested by Fisher and To (2012) for experience sampling studies. We aggregated individual ratings of group cohesion to the group level by calculating the average ratings of cohesion within each group (e.g., Harrison, Price, & Bell, 1998).

Perceptions of group emotional variability. We created one item to measure group members' perceptions of emotional variability within a team: "In general, my group members' emotions change a lot." We assessed this variable three days prior to the event. We then obtained perceptions of group emotional variability by calculating the mean group members' emotional variability within each group.

The r_{wg} mean value for group cohesion was 0.75 (ICC1 = 0.25, ICC2 = 0.65) and the r_{wg} mean value for group members' emotional variability was 0.72 (ICC1 = 0.32, ICC2 = 0.70). An r_{wg} value exceeding .70 and an ICC(1) value equal or greater than 0.05 are considered adequate to warrant aggregation (Bliese, 2000; LeBreton & Senter, 2008). According to the results, we concluded that it was statistically applicable to assess group cohesion and group emotional variability as group-level variables.

Data Analysis Techniques

We tested the hypotheses utilizing latent growth curve modeling (LGCM), which permits examination of within-person changes over time (Preacher, Wichman, MacCallum, & Briggs, 2008; Xu & Martinez, 2018) in LISREL. We specified the growth curve model over the period of seven days of the study, testing the extent to which emotional exhaustion and sleep quality were functions of the day relative to this stressful event. Then, we entered group cohesion and group's emotional variability to examine whether the two factors were correlated with the initial value and change of strain over time. The initial value is the intercept, or the mean value of the key variables measured three consecutive days before the event; rate of change is the slope, which indicates how much the curve grows each day.

Results

Descriptive Statistics and Correlations

Table 1 displays the descriptive statistics, including means, standard deviations, and correlations among the focal variables. The average between-person correlations across waves are displayed below the diagonal, and the relevant within-person correlations are displayed above the diagonal. As shown in Table 1, at the within-person level, emotional exhaustion was significantly correlated with sleep quality (r = -.37, p < .01); at the between-person level, group cohesion was negatively related to group members' emotional variability (r = -.47, p < .01).

Insert Table 1 about here

The Univariate Growth Model of Strain Over Time

The first step in the LGCM was to examine how strain changed over the seven waves of data points. We first tested the quadratic growth curve model of emotional exhaustion. The model exhibited fit indices of $\chi^2(17) = 41.60$, $p < .01$, CFI = .88, RMSEA = .14, NNFI = .85, SRMR = .08[1]. The linear time function was negative and statistically significant, b = -0.11, p

< .05, as was the quadratic time function, b = -0.04, p < .05. Figure 2 demonstrates that emotional exhaustion exhibited a negative quadratic shape (inverted U-shape) over time. This offers support for Hypothesis 1: emotional exhaustion displayed a negative quadratic trajectory.

Hypothesis 2 argued that sleep quality would display a U-shaped trajectory. The model exhibited a good fit: $\chi^2(19) = 35.03$, p = .02, CFI = .92, RMSEA = .09, NNFI = .91, SRMR = .06. The results demonstrated that the linear time function was nonsignificant, b = 0.06, p > .05. However, the quadratic time function was positive and statistically significant, b = 0.07, p < .01. Figure 3 demonstrates that sleep quality exhibited a positive quadratic curve (U-shaped) over seven days. Taken together, the findings offer support for Hypothesis 2: sleep quality displayed a positive quadratic trajectory.

Insert Figures 2-3 about here

The Moderating Roles of Group Cohesion and Group Emotional Variability

In the second step of the analysis, we included group cohesion and perceptions of group emotional variability as moderators in the univariate growth models to examine their influence on the latent growth factors of strain. The findings are presented in Table 2.

Insert Table 2 about here

With respect to emotional exhaustion, the model produced an acceptable fit to the data: $\chi^2(97) = 230.98$, p < .01; CFI = .92, RMSEA = .11, NNFI = .88, SRMR = .10. As Table 2 shows, group cohesion was significantly related to the initial level of emotional exhaustion, b = -.28, p < .05. Participants who had higher group cohesion experienced lower initial levels of emotional exhaustion. Group cohesion was not found to be a significant predictor of the change in emotional exhaustion over time. However, there were significant positive relations between

group emotional variability and the initial level, $b = .48$, $p < .01$, the linear trend, $b = 1.57$, $p < .01$, and the quadratic trend, $b = 5.37$, $p < .05$, of emotional exhaustion. Individuals who experienced higher levels of group members' emotional variability reported higher initial levels of emotional exhaustion and a steepened trajectory of emotional exhaustion over time.

With respect to sleep quality, the model generated a good fit to the data: $\chi^2(23) = 24.78$, $p = .36$; CFI = .98, RMSEA = .02, NNFI = .96, SRMR = .08. As Table 2 shows, group cohesion was significantly related to the initial level, $b = .48$, $p < .05$, and the linear trend of sleep quality, $b = -.30$, $p < .05$; participants who had higher group cohesion experienced a greater starting value of sleep quality, and a flatter linear trend of sleep quality over the seven days. Group cohesion did not predict the quadratic change of sleep quality. The findings did not show that group's emotional variability significantly predicted the starting value or the trajectory of sleep quality over time.

Together, these results partially supported Hypotheses 3-6, such that group cohesion decreased the starting value of emotional exhaustion (H3a) and increased the starting value of sleep quality (H3b) and dampened the linear change of sleep quality over the course of the stressful event (H4b). In addition, group members' emotional variability increased the initial levels of emotional exhaustion (H5a), and amplified the systematic changes of individuals' emotional exhaustion (H6a) over the course of the stressful event.

Discussion

Job-related strain is a critical issue that is costly for hospitality organizations and employees alike (O'Neill & Davis, 2011). The purpose of this research was to extend the current literature on strain by examining the dynamic nature of strain around a stressful event and by examining the impact of group cohesion and perceived group emotional variability as moderators of strain over time. The results revealed that participants experienced an inverted U-shaped trajectory such that prior to the stressful event, participants' emotional exhaustion increased, and

after the stressful event their emotional exhaustion decreased. Similarly, sleep quality displayed a U-shaped path such that prior to the stressful event, sleep quality worsened, while after the stressful event, sleep quality improved. These findings are consistent with affective events theory (Weiss & Cropanzano, 1996) and the homeostatic model of stress (McGrath, 1970): specific work events acted as the proximal causes of employees' affective and physiological experiences and the indicators of strain returned to normal baseline levels after the stressful event had passed.

Interestingly, the shapes of the trajectories revealed that all of the indicators of strain worsened slightly for the first three days and improved dramatically for the last three days. This suggests that the participants were already experiencing a build-up of strain at the time they began participating in the study three days before the launch of the event. According to the literature on future-oriented emotions (Bagozzi, Baumgartner, & Pieters, 1998; Baumgartner, Pieters, & Bagozzi, 2008), one may experience "anticipatory emotions" (e.g., hope or fear) due to the expectation of a future event.

In the study context, the participants had frequent group meetings before the theme dinner and they were required to prepare themselves well for this stressful event. Anticipatory emotions such as anxiety, uncertainty, nervousness, tension and fear may arise during the planning stages toward a goal when one is unsure of what to expect. Therefore, strain levels tend to be higher before the event begins. Yet, after the stressful event, the participants saw that they had achieved the goal, which had positive benefits to their sense of accomplishment and relief (Latham & Locke, 1991; Locke, 2002). In addition, the sources of strain, such as demands and load, were no longer present once the participants finished the task. Thus, after the event, there was a quick return to their normal levels of exhaustion and sleep. This asymmetrical pattern in which the build-up of strain was slower than the alleviation of strain after the event is interesting for future researchers to explore and will allow researchers to detect more fine-grained changes and help practitioners to make important decisions on how to intervene with stressful events.

This research extends the current literature by testing potential boundary conditions on group affect specifically: group cohesion and group members' emotional variability. Adopting both top-down and bottom-up perspectives of group affect and considering the possibility of both resource enhancement and depletion, we highlighted that group's cohesion and emotional variability were correlated with the initial level of strain and with the change of strain over the course of a stressful event. Specifically, group cohesion was related to lower initial emotional exhaustion and higher initial sleep quality. The findings also showed that group cohesion served to flatten the trajectory of sleep quality such that participants' sleep quality changed less dramatically over the course of the stressful event in groups with relatively high levels of cohesion and changed more dramatically in groups with relatively low levels of cohesion. These findings extend the literature by showing that group cohesion can serve as a resource for employees to cope with emotional exhaustion and improve quality of life during stressful events (Midtgaard, Rorth, Stelter, & Adamsen, 2006; Nielsen & Daniels, 2012).

However, group cohesion was not found to impact the trajectory of emotional exhaustion. One potential explanation for the findings is that we conceptualized group cohesion as social cohesion (e.g., liking for one's group and the members of the group), not task cohesion (e.g., the extent to which group members share commitment to achieving important goals together; Mullen & Copper, 1994). If group members are emotionally bonded but do not have strong performance-related norms at work, they are less likely to achieve goals. This would likely in turn result in work-related strain because these groups will not be as prepared as groups that are more task-oriented (Høigaard, Säfvenbom, & Tønnessen, 2006). Therefore, future research could disentangle the independent impacts of social versus task-related social support in groups in predicting strain.

We also found that perceptions of group emotional variability were related to higher initial levels of emotional exhaustion. Emotional variability was also related to more dramatic

systematic changes of individuals' emotional exhaustion over the course of the stressful event. These findings contribute to resource depletion theory (Richeson & Trawalter, 2005), which emphasizes that individuals normally have finite personal resources allowing them to accomplish various taxing activities during the day. Coping with emotional coworkers requires the expenditure of limited inner resources to be depleted afterwards, which will subsequently lead to higher emotional exhaustion (see also Houben et al., 2015). The findings in this study extend the emotion literature by showing how emotional variability of team members influences changes of emotional exhaustion. We did not find that group members' perceptions of emotional variability impacted sleep quality, either at the beginning or over time. Individuals' poor sleep quality could be influenced by non-work obligations, caffeine consumption, or irregular daily routines such as varied retiring and rising times (Carney et al., 2006). Group members' emotional variability therefore might not be a significant antecedent of sleep quality during the course of a stressful event in the context of many other potential influences.

Practical Implications

This study contributes to the practice of education in hospitality management through advocating for greater interventions aimed at improving students' practical working experiences during their course of study. Educators should organize meetings with students to review issues related not only to their performance but also to their levels of strain and how to manage strain. The work environment should aim to be fun and friendly and empower students to look after their physical and mental health and reduce emotional variability. Students should be educated to have opportunities to bond and build a team spirit and build group cohesion.

This study also contributes to the practice of hospitality organizations. Hospitality organizations could use the findings of this research to reduce employees' strain and improve their quality of life, particularly during stressful events, thereby enhancing organizational performance. For instance, organizational leaders can investigate ways to enhance the benefits of

group cohesion and reduce emotional variability. These two interventions would serve to increase personal resources and reduce stressors that deplete resources. Hospitality managers could use this in the employee recruitment processes and select job candidates who are prone to develop cohesive relationships in the workplace and who are less emotionally variable. In contrast, although emotional displays are typically not considered to be valuable criteria in the context of structured interviews due to concerns related to evaluating them accurately (Sackett & Walmsley, 2014), hospitality managers can use behavioral indicators in the selection process. For example, emotional variability can be implied by one's difficulties in remembering details, concentrating, or making decisions (Xu et al., 2018).

There are a variety of strategies that hospitality employers can implement to enhance group cohesion and reduce employee strain levels in response to stressful events. For example, training programs could focus on the benefits of group cohesion. Organizations may stimulate cooperative behaviors rather than competitiveness to promote group cohesion and interdependence between group members (Mach, Dolan, & Tzafrir, 2010). Hospitality organizations should motivate group cohesion by cultivating supportive supervisors and leaders, encouraging a psychologically safe workplace environment, and motivating interpersonal interaction (Lee, Xu, & Yang, 2021). In addition, one's emotions could be trained to be less variable and fluctuating (Roberts et al., 2017), thus hospitality companies could implement interventions to reduce the variability. For instance, a mindfulness intervention has been demonstrated to help improve total mood disturbance (Krasner et al., 2009). In fact, trait domains related to affect (e.g., neuroticism closely aligned with negative affect and extraversion associated with positive affect) could change in response to interventions, according to a systematic review by Roberts and colleagues (2017). Therefore, hospitality managers could implement practices such as regularly encouraging meditative breaks to help staff lower their emotional variability and strain (Richardson & Rothstein, 2008). Additional training on dealing

with challenging customers can also be carried out, such that hospitality employees could feel that they are more in control and are less likely to be affected by ups and downs (Shani, Uriely, Reichel, & Ginsburg, 2014). These implications can be applied to event management, especially sports: pressure builds before the game, competition, and post-game rest. All these are under the condition of good teamwork that requires high group cohesion and low emotional variability for a win.

Limitations and Directions for Future Research

There are a few limitations in this study. First, although this research provided a controlled setting to examine the theoretical framework without the influence of potential confounding variables, our respondents were undergraduate students, which some may argue constitutes a threat to the external validity of the findings. Undergraduate student samples tend to be more homogenous than random samples in the hospitality industry in that the student samples tend to be mostly Caucasian and between the ages of 18 and 22 (Smith et al., 2015). However, the participants all had previous and appropriate work experience and most of them were actively employed in the hospitality industry during the study. This sample was high in ecological validity, as these individuals behaved the same way in real life as they behaved in the laboratory setting (Bem & Lord, 1979). Moreover, Landers and Behrend (2015) contended that shrinking the pool of legitimate data sources by nonspecific and uncritical condemnation would slow scientific progress without cause. Although it is expected that the findings from the current sample closely resemble those of real organizations, future research is encouraged to replicate this research in organizations by measuring hospitality service providers' strain and emotion-related variables using intensive longitudinal designs.

Second, the final sample size was 69 participants with 402 momentary reports, and the participants were part of twelve groups. This sample size limits the power to reach statistical significance and may result in poor fit indices (Button et al., 2013). Although some fit indices do

not use sample size in the calculations, they do have sampling functions that depend on sample size (Marsh, Balla, & McDonald, 1988). Therefore, researchers (e.g., Jaccard & Wan, 1996; Marsh, Balla, & Hau, 1996) recommend using a range of fit indices to overcome the individual constraints of each index. In the results of this study, some models did not provide acceptable fit indices (e.g., CFI < .90; RMSEA > .10). When sample sizes are small (i.e., less than 100), truly well-fitting latent growth models may erroneously be deemed poorly fitting, which makes model fit hard to discern with small samples (McNeish & Harring, 2017). However, the values of relative chi-square (i.e., the chi-square index divided by degrees of freedom) in this study were all less than five, which is acceptable according to Schumacker and Lomax (2004) and Preacher et al. (2008). Nevertheless, the power and goodness-of-fit of LGCM could be enhanced by raising the sample size (Zhang & Wang, 2009).

There are several directions for future research. First, it could be informative for future studies to experimentally manipulate group cohesion and emotional variability within a team-based context to assess cognitive and behavioral responses to different levels of strains. Second, further studies are needed to elucidate the effects of various forms of group cohesion (e.g., social cohesion or interpersonal cohesion and task cohesion) on group functioning during a stressful event. Third, because the results showed that emotional variability of the group leads to higher initial levels and changes of strain, researchers could be interested in designing and assessing interventions to help employees cope with group members whose emotional variability is high. Fourth, future researchers can investigate whether group members' emotional variability is harmful all the time, or whether it can be adaptive when it is related to flexibly shift emotional states to meet changes in the external environment (Aldao, Sheppes, & Gross, 2015).

Conclusion

Although extensive research has examined employee stress levels at work, little is known about change trajectories of strain during a discrete stressful work event. This study applied

affective events theory (Weiss & Cropanzano, 1996), the job demands-resources model (Bakker & Demerouti, 2007) and COR model (Hobfoll, 1989) to argue that strain-related variables display quadratic trajectories, and that group cohesion and emotional variability within the group influence initial levels and changes of strain-related variables. We found general support for many of the proposed hypotheses, highlighting the need for additional research on factors that either increase or decrease employee stress, as well as the need for designing intervention studies in decreasing work strain and ultimately improve hospitality employees' well-being.

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Footnote

We also examined several alternative models, including non-change models that served as a baseline, the linear models, and the cubic models for each variable. The results showed that the quadratic models fit the data better than the alternative models.

Table 1

Descriptive Statistics and Correlations among Variables

	M	*SD*	1	2	3
1. Emotional exhaustion	4.03	1.31		-.37**	
2. Sleep quality	5.80	1.76	-.46**		
3. Group cohesion	4.86	1.16	-.12	.19	
4. Group members' EV	3.67	0.92	.46**	-.28*	-.47**

Note.
* $p < .05$; ** $p < .01$.
EV: emotional variability
Correlations below the diagonal represent person-level correlations ($n = 69$). Correlations above the diagonal represent within-person correlations ($n = 402$).

Table 2

Conditional Growth Models of Strain with Group Cohesion and Group Members' Emotional Variability

Variable	Emotional exhaustion			Sleep quality		
	Intercept	Linear	Quadratic	Intercept	Linear	Quadratic
Group cohesion	-.28*(.19)	-.50(.11)	-2.57(0.02)	0.48*(1.60)	-.30*(.89)	.03(.14)
Group members' EV	.48**(.24)	1.57**(.14)	5.37*(0.02)	-.04(1.56)	-.29(.87)	.04(.14)

Note: $*p < .05$.
$**p < .01$.
EV: emotional variability
Numbers in the parentheses are standard errors of the estimates.

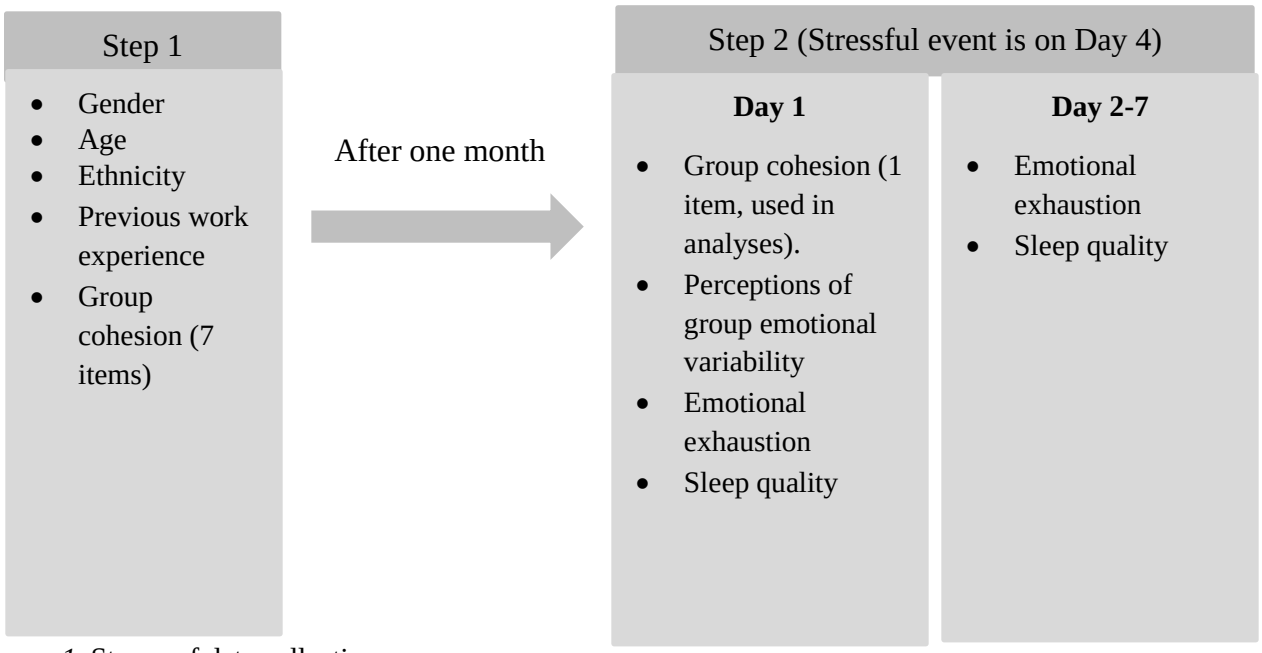

Figure 1. Stages of data collection.

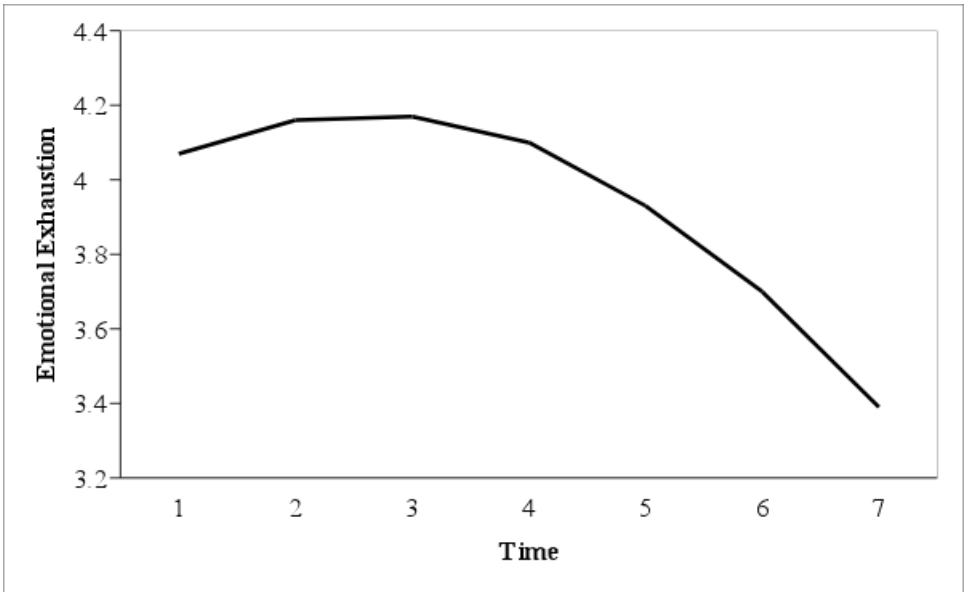

Figure 2. Change trajectory of emotional exhaustion over time

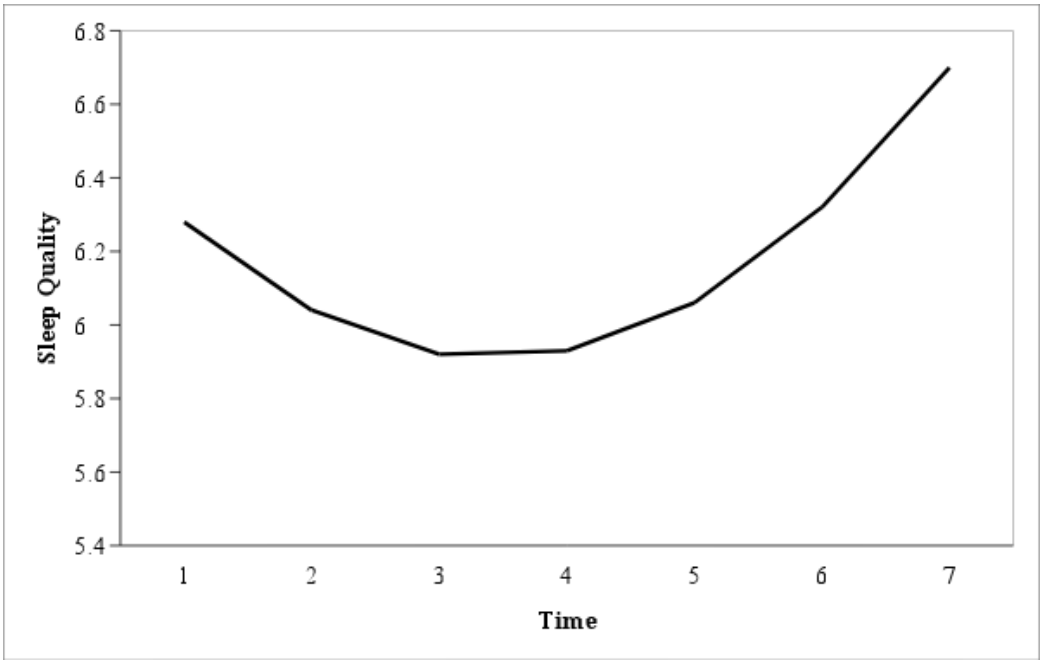

Figure 3. Change trajectory of sleep quality over time