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Tourism impacts, emotions and stress

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ABSTRACT

Emotions and stress play an important role in individuals' quality of life and lived experience. Tourism can have a significant impact on the emotions and stress experienced by host community residents. In this study, the interrelationships between perceived tourism impacts, emotions from tourism, and tourism related stress were examined. Two mediated models were tested to examine the interdependence of stress and emotions. Several perceived tourism impacts predicted the experience of emotions from tourism and tourism related stress, while emotions and stress partially mediated relationships in both models. Host communities need to consider psychological outcomes such as emotions and stress when planning for the development of tourism.

Introduction

Despite the vast quantity of research examining tourism impacts over the last 50 years, the emotional and psychological outcomes experienced by residents of host communities remain overlooked. While emotion has long been an important subject of study in the tourism marketing realm (Li & Petrick, 2008), researchers are beginning to acknowledge the importance of emotion across other tourism contexts, such as the relationship between tourists and residents (Tucker, 2009; Woosnam, Norman, & Ying, 2009) and the tourist experience (Buda, d'Hauteserre, & Johnston, 2014; Ji, Li, & Hsu, 2016; Nawijn, Mitas, Lin, & Kerstetter, 2013). Several psychological concepts that influence the experience of emotion (e.g., power and identity) have been explored in the tourism literature, but the concept of emotion has received little attention (Boley, McGehee, Perdue, & Long, 2014; Jordan, Vogt, Kruger, & Grewe, 2013; Nunkoo & Gursoy, 2012; Nunkoo & Ramkissoon, 2012). Similarly, there is a small but growing literature stream that has examined the concept of psychological stress as a potential outcome of residents' perception of tourism impacts, but much remains to be explored within this vein of research (Jordan & Vogt, 2017b; Jordan, Vogt, & DeShon, 2015). We aim to fill this research gap by testing two competing models of the relationships between perceived tourism impacts, emotions, and stress.

Tourism impacts, emotions and stress will be examined through the lens of Lazarus' (1999) theory of the interdependency between stress and emotions. Model one posits that the relationships between perceived tourism impacts and stress are mediated by emotions (positive and negative). Model two posits that the relationship between perceived tourism impacts and emotions (positive and negative) are mediated by stress. Testing these models will expand the theoretical understanding of how tourism impacts the lives of host community residents and examine the interdependency of emotions and stress as theorized by Lazarus (1999). Understanding the types of perceived impacts that are related to emotion and stress outcomes will provide valuable knowledge for

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tourism researchers and practitioners so that tourism development can minimize such impacts in the future. This knowledge is especially useful for communities seeking to develop or expand tourism activities without marginalizing the well-being of residents.

Literature review

Perceptions of tourism impacts held by residents of tourism host communities have been extensively studied for over three decades. Indeed, McGehee and Andereck (2004, p. 132) state that "research on resident attitudes of tourism … [has become] … one of the most systematic and well-studied areas of tourism." Positive impacts range from better access to festivals, fairs, and events (Nyaupane, Morais, & Dowler, 2006) to improved public health and safety systems (Andereck, Valentine, Knopf, & Vogt, 2005; Ap, 1992). Negative impacts range from increased traffic and crowding (Brunt & Courtney, 1999) to increased cost of living or environmental degradation (Deery, Jago, & Fredline, 2012). Traditionally, perceived tourism impacts have been measured via attitudes toward tourism impacts or support for tourism development.

Emotion is defined as "*a complex reaction of a person arising from appraisals of self-relevant interactions with the environment, which result in states of excitement, direction of attention, facial expressions, action tendencies, and behavior*" (Lazarus, 1991; Levine, 2010, p. 6). Emotions are short-lived, intense, and usually associated with a specific referent that can activate a response behavior (Cohen & Areni, 1991). Emotions are an important part of the human experience, and play a critical role in individuals' psychological and physical well-being (Pressman, Gallagher, & Lopez, 2013; Richman et al., 2005). The tourism industry is one of experiences, and some of the most commonly sought outcomes of travel are the elicitation of positive emotions like joy and happiness (Filep & Deery, 2010; Hosany & Prayag, 2013; McCabe & Johnson, 2013). While many experiences in the tourism realm are positive, it is also possible for tourism to elicit negative emotions like sadness or anger, especially for travelers undertaking dark tourism activities (Biran, Poria, & Oren, 2011).

Stress is defined as "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her own resources and endangering his or her well-being" (Lazarus & Folkman, 1984, p. 14). In stressful situations, the human body releases the stress hormone cortisol to prepare for a potential fight or flight response (Newman, O'Connor, & Conner, 2007). Cognitively, individuals are constantly appraising their experiences and actions for potential stress, and every individual perceives stress differently (Lazarus & Folkman, 1984). While some stress can be good (e.g., stress that spurs a student to study for an exam to get a good grade), the experience of stress and cortisol for an extended period of time can lead to a variety of negative health and behavioral outcomes, such as elevated blood pressure, increased susceptibility to sickness, and difficulty of sleeping (Hanson & Chen, 2010; Segerstrom & Miller, 2004; Sturge-Apple, Davies, Cicchetti, & Manning, 2012).

The relationships between perceived impacts, emotions, and stress

Recently, the focus of the tourism impacts literature has shifted from seeking to understand how tourism affects attitudes toward tourism and support for tourism to exploring the implications tourism has on residents' quality of life (QoL) (Andereck & Nyaupane, 2011; Kaplanidou et al., 2013; Kerstetter & Bricker, 2012; Kim, Uysal, & Sirgy, 2013). According to Andereck and Nyaupane (2011), QoL "refers to one's satisfaction with life and feelings of contentment or fulfillment with one's experience in the world." One important element of QoL is psychological well-being, which includes elements of emotion and stress (Schalock, 1997). As such, a small but growing body of literature has begun to explore the relationships between these phenomena.

Within the tourism literature, little attention has been paid to how tourism affects residents' emotional states (Woo, Kim, & Uysal, 2015). Researchers have found that the happiness and overall subjective well-being (encompassing several emotional states) of residents depends on social, cultural, economic, and environmental impacts of tourism development (Nawijn & Mitas, 2012; Rivera, Croes, & Lee, 2016). These findings imply a positive relationship between perceived positive tourism impacts and positive emotions. Others exploring residents' emotional reactions to tourism incidents in their community found that residents experienced negative emotions like shock and sadness (Shakeela & Weaver, 2012). Residents' negative feelings toward tourists can emerge from the negative impacts they perceive tourism as having on their community (Woosnam, 2012; Woosnam et al., 2009). These findings imply a negative relationship between perceived positive tourism impacts and negative emotions. Based on these findings, we posit the following hypotheses about the relationships between perceived tourism impacts and emotions in Model One (Fig. 1):

Hypothesis 1a-h (Model One). There is a significant positive relationship between the perceptions of each tourism quality of life impact and the perception of positive emotions from tourism.

Hypothesis 2a-h (Model One). There is a significant negative relationship between the perceptions of each tourism quality of life impact and the perception of negative emotions from tourism.

Similarly, there is a small but growing body of literature examining the relationships between perceived tourism impacts and stress. Building on earlier work by Iwasaki and Schneider (2003), Schuster, Hammitt, and Moore (2006) and Jordan et al. (2015), Jordan and Vogt (2017b) found that residents of a cruise tourism host community perceived that tourism impacts like crowding, traffic congestion, increased cost of living, and pollution caused them stress. Further research has shown that tourism impacts and stress are highly interrelated, and that host community residents cope with stressors differently depending on their appraisal of the controllability of stressors (Jordan & Vogt, 2017a). Based on these findings, we posit the following hypotheses about the relationships between perceived tourism impacts and stress in Model Two (Fig. 2):

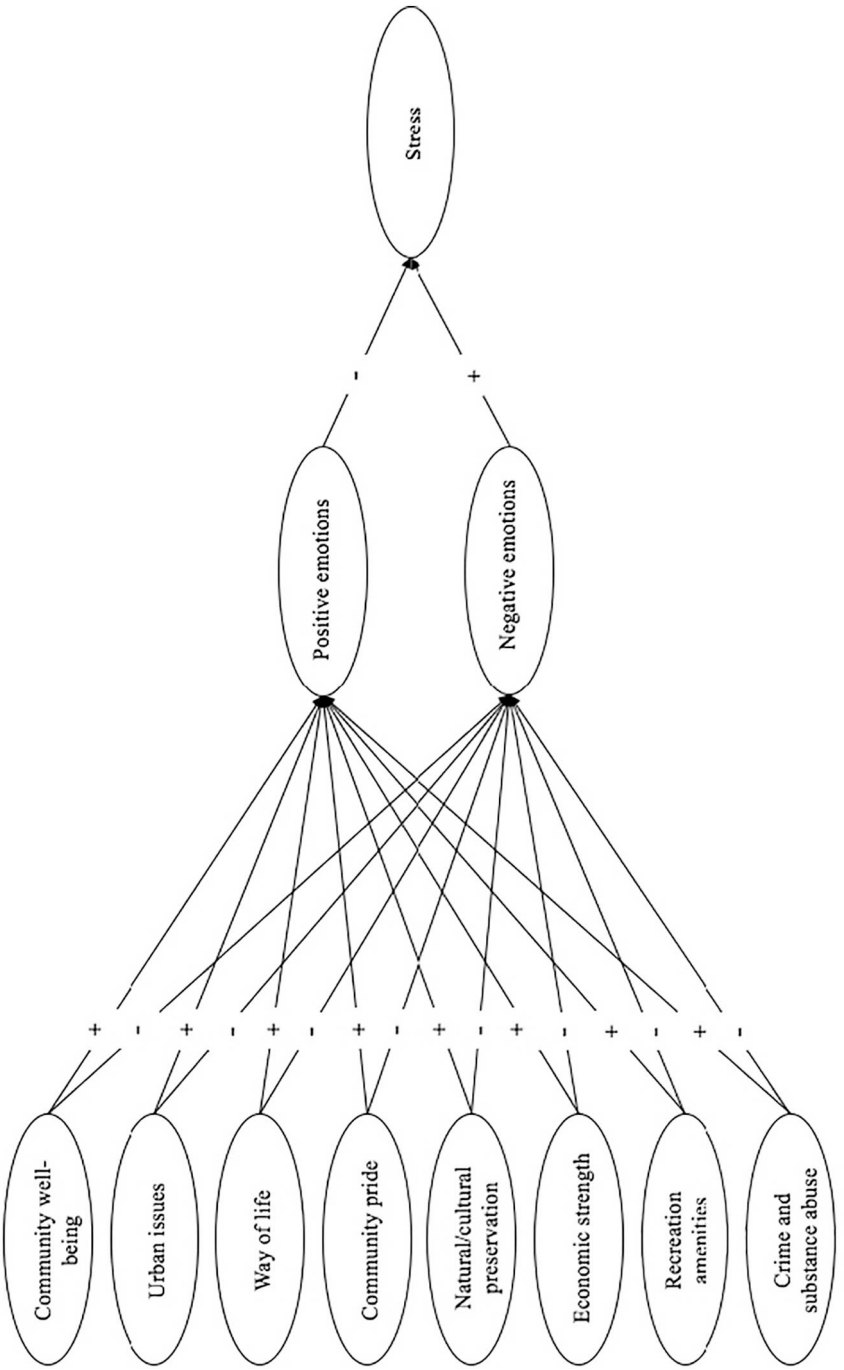

Fig. 1. Model one.

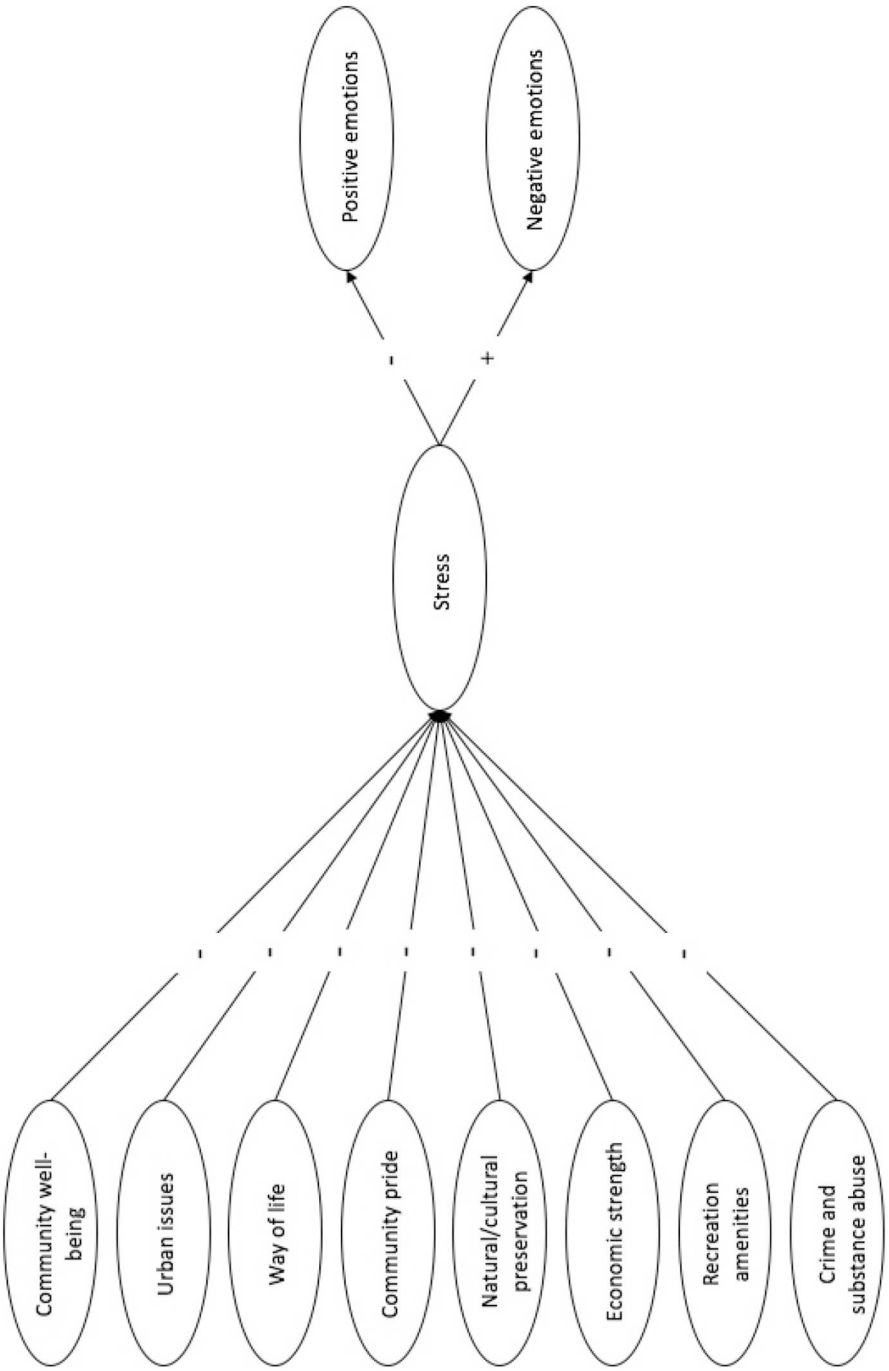

Fig. 2. Model two.

Hypothesis 3a-h (Model Two). There is a significant negative relationship between the perceptions of each tourism quality of life impact and the perception of tourism related stress.

The relationship between stress and emotion is complex. Traditional theories of emotion such as James-Lange (James, 1894), Cannon-Bard (Cannon, 1927, 1931), and Schachter-Singer (Schachter & Singer, 1962) tend to view emotions as either subconscious or cognitive reactions to physiological changes in the body that result from stress stimuli. More recently, however, it has been posited that stress and emotion are interdependent within the cognitive appraisal process, as the experience of one can lead to the experience of the other (Lazarus, 1999).According to Lazarus' (1999) conceptualization of the interdependence of stress and emotion, the experience of stress almost always elicits emotions, and the experience of emotions often elicits stress. Until recently, research heavily focused on the relationships between negative emotions and stress, and a great deal of evidence has shown that they co-occur during stressful periods (Feldman et al., 1999). However, researchers have begun to consider that there is also a relationship between stress and positive emotions (Folkman & Moskowitz, 2000). For example, researchers have shown that bereaved individuals who experienced laughter (an indicator of positive emotion) experienced less stress (Fredrickson, 1998; Keltner & Bonanno, 1997) More recently, researchers have found that stress and positive emotions co-occur nearly as often as stress and negative emotions (Ong, Bergeman, Bisconti, & Wallace, 2006). Based on these findings, we posit the following hypotheses about the relationships between stress and emotions:

Hypothesis 4 (Model One). There is a significant negative relationship between positive emotions from tourism and tourism related stress

Hypothesis 5 (Model One). There is a significant positive relationship between negative emotions from tourism and tourism related stress

Hypothesis 6a (Model Two). There is a significant negative relationship between tourism related stress and positive emotions from tourism

Hypothesis 6b (Model Two). There is a significant positive relationship between tourism related stress and negative emotions from tourism

The interdependency of stress and emotions posited by Lazarus (1999) indicates that stress and emotion likely mediate each other in relationships with other variables. For example, Schwarzer and Hallum (2008) found that job stress mediated the relationship between perceived self-efficacy and emotional exhaustion in teachers. Further, Mikolajczak, Menil, and Luminet (2007) found that emotional expression mediated the relationship between emotional intelligence and occupational stress. Based on these findings, we posit the following hypotheses about mediation:

Hypothesis 7a (Model One). The relationships between perceived tourism impacts and tourism related stress are mediated by positive emotions from tourism.

Hypothesis 7b (Model One). The relationships between perceived tourism impacts and stress are mediated by negative emotions.

Hypothesis 8 (Model Two). The relationships between perceived tourism impacts and positive and negative emotions are mediated by stress.

Methods

Study region

This study was conducted in the U.S. State of Hawaii on the island of Oahu for several reasons. In his review of the literature on host perceptions of tourism, Sharpley (2014, p. 42) observed that, “destinations with dominant tourism sectors and/or significant economic dependence on tourism and where residents may arguably be more sensitive (if not sensitized) to tourism have, to a great extent, been excluded from the research”. He also observed that “research into residents' perceptions of tourism in large scale resort areas in both the industrialized and developing world are notable for their scarcity yet, arguably, it is the latter that would benefit most from such research” (p. 46). Both comments apply to the U.S. State of Hawaii and especially to the Hawaiian island of Oahu, by far the most heavily visited island in Hawaii with over 5.3 million visitor arrivals annually (Hawaii Tourism Authority, 2016). Moreover, although the Hawaii Tourism Authority sponsors a statewide telephone survey of residents to track their attitudes toward tourism every one or two years, the reports on these efforts offer only descriptive statistics.

Sample

Data were collected in a cross-sectional study of Oahu residents conducted from July 2015 to April 2016. The long data collection period helped ensure that data were collected during varying times in the tourism season. A nine-page paper survey instrument comprised of approximately 150 questions was distributed to 1205 Oahu residents. Questionnaires were distributed with a stamped envelope so that participants could complete the survey at their leisure and mail it in when they were finished. While this method likely produced a lower response rate than other possible distribution methods, it was deemed necessary as the instrument was lengthy and contained questions of a psychological nature that some individuals may have wished to keep private. Attempts were

made to distribute questionnaires to every third house in selected neighborhoods across Oahu. The neighborhoods of Kahala, Kaimuki, Kailua, Kapahulu, Laie, Lanikai, Manoa, and Mo'ili'ili were chosen for their diverse demographic characteristics and varying proximity to major tourism areas on the island. Distribution of questionnaires was conducted at various times on varying days of the week, including weekends and evenings, to ensure that those who worked during the day were included in the sample. At the conclusion of the data collection period, a total of 300 surveys were returned, for a response rate of 24.8%.

In this study, we use power analyses by Cohen (1992) to assess sampling adequacy. For a statistical power of 80%, at the 5% level of significance, with 8 arrowheads pointing at a construct, and with a minimum of 10% of variance explained, the minimum sample size according to Cohen (1992) is 144. Our sample exceeds this requirement.

Measurement of constructs

All items were measured on a 0–4 Likert-type scale. Perceived tourism impacts were measured with all 38 items from Andereck and Nyaupane's (2011) study on tourism and QoL. Respondents were asked how they felt tourism affected characteristics of their community on scale where 0 represented "very negatively" and 4 represented "very positively". Perceived tourism stress was measured with 10 items from the Perceived Stress Scale (PSS) (Cohen, Kamarck, & Mermelstein, 1983), modified to relate specifically to tourism. Respondents were asked how often they felt or thought a certain way in the last 30 days because of *tourism*, on a scale where 0 represented "never" and 4 represented "very often." Emotions were measured with 18 items from the Positive Affect Negative Affect Schedule (PANAS) (Watson, Clark, & Tellegen, 1988). Respondents were asked how often they felt a certain way because of *tourism* in their community in the last 30 days on a scale where 0 represented "never" and 4 represented "very often." As described by Panksepp (2000), emotion is all of the behavioral, expressive, cognitive and physiological changes that occur to a person. Affect is the conscious experience of emotion (Panksepp, 2000). As such, a great deal of research has utilized PANAS to measure emotion (Ehring, Tuschen-Caffier, Schnülle, Fischer, & Gross, 2010; Hancock, Gee, Ciaccio, & Lin, 2008; Zemack-Rugar, Bettman, & Fitzsimons, 2007). It should be noted, however, that PANAS almost exclusively measures high arousal emotions rather than low arousal emotions. Each of these measurement tools have been utilized across multiple studies, and have been found to possess adequate reliability and validity. The use of self-report as the measurement approach rather than direct observation is well established in the tourism and marketing literatures (Dubé & Morgan, 1998; Hosany & Gilbert, 2010). In the following discussion of modeling results, the phrase "perceptions of tourism impacts" refers to the perception of the positivity and negativity of tourism impacts, and the terms emotions and stress refer to the perceptions of the frequency of the experience of emotions and stress.

Results

Sample characteristics

Demographic characteristics of the sample are reported in Table 1. The means and standard deviations of the tourism impact items (Table 2) reveal that residents perceived traffic (M = 1.05) and crowding and congestion (M = 1.07) as affecting the community most negatively. Respondents perceived economic impacts such as stores and restaurants owned by local residents (M = 2.87) and plenty of retail shops and restaurants (M = 2.83) somewhat positively. In terms of their emotions in relation to tourism, respondents rarely felt afraid (M = 0.48) or scared (M = 0.54), but sometimes felt happy (M = 1.42). They also sometimes felt angry (M = 1.21) and upset (M = 1.32) because of tourism in their community. An examination of the skewness scores of scale items revealed that some were within while others were outside of the recommended threshold of +/− 1 (Hair, Hult, Ringle, & Sarstedt, 2014), indicating non-normal data, and thus, suitable for conducting PLS-SEM.

Modeling process and evaluation

PLS-SEM was preferred over covariance based SEM as PLS-SEM is particularly advantageous when the researcher is trying to explore, rather than confirm, theory and when sample size is small (Chin & Newstead, 1999; do Valle & Assaker, 2015). PLS-SEM is also not constrained by normality of the sampling distribution (Hair et al., 2014). PLS-SEM analysis was conducted using SmartPLS 3.2.4 in Mode A (reflective). PLS-SEM is becoming increasingly popular in the tourism literature, and studies using PLS-SEM have been published in numerous tourism journals (e.g., Assaker, Hallak, Vinzi, & O'Connor, 2014; Barnes, Mattsson, & Sørensen, 2014; Chiu, Lee, & Chen, 2014). All results were bootstrapped (n = 5000) as suggested by Hair et al. (2014).

The outer model was assessed by examining the reliability (individual and composite) and the validity (convergent and discriminant) of each study construct (Hair et al., 2014). The outer loadings in the model indicated that one item of urban issues, two negative emotions, one positive emotion, and four items of stress had to be deleted as their loadings were < 0.5. All remaining items had outer loadings of > 0.6. The latter is acceptable in social science studies when scales are not well established (Chin, 2010; Hulland, 1999) and when the loading does not affect composite reliabilities (CR) and average variance extracted (AVE) (Rasoolimanesh, Ringle, Jaafar, & Ramayah, 2017).

As shown in Table 2, all constructs are internally consistent with Cronbach's alpha > 0.7. Composite reliabilities (CR) were above the recommended 0.7, ranging from 0.885 for recreation impacts to 0.946 for community pride, establishing the measures as reliable. All outer loadings were statistically significant (Table 2) and Average Variance Extracted (AVE) for all constructs was > 0.5, indicating convergent validity of the measures. Discriminant validity was tested by comparing the square root of AVE for each construct with the correlations between pairs of the latent variables (Fornell & Larcker, 1981). Comparing all correlation coefficients with

Table 1
Sample demographic characteristics.

	% (n = 300)
Gender	
Male	40.7
Female	59.3
Ethnicity	
Caucasian	46.9
Hispanic	3.1
Hawaiian or part Hawaiian	6.6
Pacific Islander	1.7
Asian	33.4
Mixed	4.8
Other	3.4
Annual pre-tax household income	
Less than $25,0000	6.3
$25,000 to $34,999	5.6
$35,000 to $49,999	4.8
$50,000 to $74,999	20.4
$75,000 to $99,999	18.2
$100,000 to $149,999	19.3
$150,000 to $199,999	9.3
$200,000 or more	15.6
Education level	
Some high school	1.0
High school diploma	6.4
Some college	21.3
Bachelor's degree	26.0
Some graduate school	20.3
Graduate degree	25.0
Degree of contact with tourists in the community	
No contact	10.8
Very little contact	35.6
Some contact	32.2
Quite a bit of contact	12.2
A great deal of contact	9.2

square roots of AVEs in Table 3, results suggest strong evidence of discriminant validity. In addition, the heterotrait-monotrait (HTMT) ratios were also examined to establish discriminant validity. Previous studies have suggested 0.85 as an upper limit for HTMT ratios (Henseler, Ringle, & Sarstedt, 2015). The HTMT ratios ranged from a high of 0.826 (economic strength/recreation impacts) to a low of 0.135 (positive emotions/negative emotions), suggesting that the ratios were within the desirable threshold.

Model one results

Model one was evaluated using the explained variance values (R^2), the strength and significance of path coefficients, and the standardized root mean square residual (SRMR) (Hair et al., 2014). The model accounted for 57.4% of the variance in stress. Tourism impacts account for 36.1% and 22.4% of the variances in positive and negative emotions, respectively. Of the eighteen proposed hypotheses, six were supported and twelve were not supported (Table 4). The bootstrapped confidence intervals are reported for each significant path. Way of life had a positive and significant relationship with positive emotions ($\beta = 0.276$, $p = 0.006$, BCa [0.079:0.479]). Community pride had a significant and positive relationship with positive emotions ($\beta = 0.242$, $p = 0.005$, BCa [0.075:0.412]). Economic impacts had a significant and negative relationship with negative emotions ($\beta = -0.216$, $p = 0.001$, BCa [−0.346:−0.077]). Urban issues had a significant and negative relationship with negative emotions ($\beta = -0.230$, $p < 0.001$, BCa [−0.345:−0.097]). Negative emotions had a significant and positive relationship with stress ($\beta = 0.738$, $p \leq 0.001$, BCa [0.653:0.802]), suggesting the fewer negative emotions residents felt, the less stressed they were. Positive emotions had a significant and negative relationship with stress ($\beta = -0.163$, $p < 0.001$, BCa [−0.235:−0.099]) implying that the more positive emotions residents felt, the less stressed they were.

Q^2 values as indicators of size effects were calculated by blindfolding the results using an omission distance of 7 (Hair et al., 2014). All effects are positive as shown in Table 2, suggesting that the proposed latent constructs (positive and negative emotions) have predictive relevance in explaining the variance observed in stress. SRMR can be used as a goodness of fit measure in PLS-SEM to avoid model misspecification. The model fit the data well (SRMR = 0.078) given that a value of < 0.08 is considered a good fit (Hu & Bentler, 1999).

To test the mediating effects of positive and negative emotions on the relationship between tourism impacts and stress, we followed Zhao, Lynch, and Chen's (2010) and Hair et al.'s (2014) approach of examining the significance of the indirect effects. Using the recommendation of Lee, Hallak, and Sardeshmukh (2016) we calculated the mediating effects based on bootstrapping analysis and the associated confidence intervals (CI). If both the direct and indirect effects are significant, the results suggest partial mediation

Table 2
Mean, standard deviations, skewness and results of the outer model.

Items	Mean	S.D.	Skewness	Outer loadings	Cronbach's α	AVE	CR
Community pride					0.928	0.779	0.946
CP1: An understanding of different cultures	2.41	0.93	−0.35	0.903			
CP2: Awareness of natural and cultural heritage	2.34	0.94	−0.37	0.915			
CP3: The image of my community to others	2.09	0.94	−0.19	0.826			
CP4: Opportunities to participate in local culture	2.32	0.84	−0.15	0.849			
CP5: Community pride	2.26	0.92	−0.13	0.915			
Economic strength					0.848	0.573	0.888
ES1: Strong and diverse economy	2.62	1.00	−0.69	0.799			
ES2: Enough good jobs for residents	2.51	0.95	−0.64	0.820			
ES3: Stores and restaurants owned by local residents	2.87	0.93	−0.89	0.773			
ES4: Fair prices for goods and services	1.77	0.99	0.22	0.634			
ES5: Plenty of retail shops and restaurants	2.83	0.89	−0.88	0.834			
ES6: The value of my house and/or land	2.33	1.01	−0.32	0.658			
Preservation					0.897	0.832	0.937
PR1: Preservation of natural areas	1.83	1.06	0.13	0.946			
PR2: Preservation of cultural/historical sites	2.16	1.00	−0.09	0.841			
PR3: Preservation of wildlife habitats	1.89	1.01	0.08	0.945			
Recreation impacts					0.806	0.720	0.885
RI1: Plenty of festivals, fairs, museums	2.49	0.87	−0.37	0.837			
RI2: Quality recreation opportunities	2.23	0.88	−0.04	0.859			
RI3: Live sports to watch in my community	2.14	0.71	0.25	0.849			
Crime					0.862	0.877	0.935
CM1: The prevention of drug and alcohol abuse	1.76	0.84	0	0.922			
CM2: The prevention of crime and vandalism	1.87	0.92	−0.01	0.951			
Urban issues					0.864	0.599	0.899
UI1: Crowding and congestion	1.07	0.99	0.88	0.857			
UI2: Litter	1.43	0.89	0.34	0.713			
UI3: Quality of roads, bridges, and utility services	1.95	0.92	−0.04	0.661			
UI4: Urban sprawl and population growth	1.52	0.95	0.11	0.775			
UI5: Traffic	1.05	0.96	0.84	0.842			
UI6: Zoning/land use violations	1.47	0.93	0.28	0.778			
Way-of-life					0.924	0.814	0.946
WL1: A feeling of belonging in my community	1.99	0.81	0.17	0.913			
WL2: My personal life quality	1.99	0.88	0.30	0.887			
WL3: The preservation of my way of life	1.94	0.87	0.03	0.904			
WL4: Respect for my way of life	1.96	0.88	0.11	0.904			
Wellbeing					0.885	0.636	0.913
WB1: The beauty of my community	2.03	1.02	0.10	0.758			
WB2: Clean air and water	1.89	0.91	0.30	0.838			
WB3: Peace and quiet	1.62	0.93	0.22	0.737			
WB4: Feeling safe	2.16	0.81	0.35	0.852			
WB5: City services like police and fire protection	2.07	0.98	0.17	0.826			
WB6: A stable political environment	1.98	0.88	−0.05	0.765			
Negative emotions from tourism (Q^2 = 0.122)					0.881	0.623	0.908
NE1: Afraid	0.48	0.88	2.22	0.765			
NE2: Distressed	1.30	1.22	0.55	0.844			
NE3: Hostile	0.71	1.02	1.55	0.780			
NE4: Irritable	1.36	1.22	0.55	0.799			
NE5: Nervous	0.74	1.04	1.35	0.783			
NE6: Scared	0.54	0.93	2.09	0.764			
Positive emotions from tourism (Q^2 = 0.209)					0.924	0.649	0.936
PE1: Active	1.13	1.21	0.78	0.743			
PE2: Determined	0.81	1.13	1.37	0.625			
PE3: Enthusiastic	1.16	1.16	0.68	0.889			
PE4: Excited	1.09	1.13	0.88	0.845			
PE5: Happy	1.42	1.24	0.42	0.886			
PE6: Inspired	0.95	1.17	1.04	0.850			
PE7: Interested	1.56	1.17	0.31	0.733			
PE8: Proud	1.42	1.30	0.45	0.837			
Tourism related stress(Q^2 = 0.422)					0.930	0.742	0.945
ST1: Felt angry because of tourism in your community	1.21	1.23	0.74	0.898			
ST2: Felt that you were unable to control the important things in your life because of tourism in your community	0.86	1.06	1.25	0.895			
ST3: Felt that you could not cope with the impacts of tourism in your community	0.91	1.12	1.28	0.763			
ST4: Felt difficulties with tourism were piling up so high that you could not deal with them	0.67	0.99	1.59	0.800			
ST5: Felt stressed about tourism in your community	1.13	1.19	0.77	0.912			
ST6: Felt upset because of tourism in your community	1.32	1.19	0.53	0.891			

Table 3
Inter construct correlations.

Constructs	CP	EI	NE	PE	PR	RI	CM	ST	UI	WL	WB
Community pride (CP)	0.882										
Economic strength (EI)	0.624	0.757									
Neg. emotions (NE)	−0.359	−0.380	0.790								
Positive emotions (PE)	0.552	0.399	−0.012	0.806							
Preservation (PR)	0.716	0.513	−0.300	0.429	0.912						
Recreation impacts (RI)	0.657	0.682	−0.288	0.412	0.591	0.849					
Crime (CM)	0.489	0.452	−0.295	0.293	0.471	0.513	0.937				
Stress (ST)	−0.520	−0.465	0.739	−0.172	−0.457	−0.383	−0.373	0.862			
Urban issues (UI)	0.570	0.471	−0.404	0.408	0.622	0.475	0.541	−0.565	0.774		
Way of life (WL)	0.811	0.599	−0.393	0.572	0.724	0.615	0.502	−0.600	0.667	0.902	
Wellbeing (WB)	0.720	0.556	−0.380	0.524	0.661	0.540	0.546	−0.550	0.694	0.819	0.797

Note: square root of AVE is shown in the diagonal.

Table 4
Model One hypothesis testing results

Model One hypothesized relationships	Result	Estimate
H1a Community well-being ➔ Positive emotions (+)	Not supported	0.137
H1b Urban issues ➔ Positive emotions (+)	Not supported	0.054
H1c Way of life ➔ Positive emotions (+)	**Supported**	**0.276**
H1d Community pride ➔ Positive emotions (+)	**Supported**	**0.242**
H1e Natural/cultural preservation ➔ Positive emotions (+)	Not supported	−0.076
H1f Economic strength ➔ Positive emotions (+)	Not supported	0.014
H1g Recreation Amenities ➔ Positive emotions (+)	Not supported	0.053
H1h Crime and substance abuse ➔ Positive emotions (+)	Not supported	−0.066
H2a Community well-being ➔ Negative emotions (−)	Not supported	−0.043
H2b Urban issues ➔ Negative emotions (−)	**Supported**	**−0.230**
H2c Way of life ➔ Negative emotions (−)	Not supported	−0.131
H2d Community pride ➔ Negative emotions (−)	Not supported	−0.045
H2e Natural/cultural preservation ➔ Negative emotions (−)	Not supported	0.083
H2f Economic strength ➔ Negative emotions (−)	**Supported**	**−0.216**
H2g Recreation Amenities ➔ Negative emotions (−)	Not supported	0.071
H2h Crime and substance abuse ➔ Negative emotions (−)	Not supported	−0.038
H4 Positive emotions ➔ Stress (−)	**Supported**	**−0.163**
H5 Negative emotions ➔ Stress (+)	**Supported**	**0.738**

Bold indicates hypotheses were supported.

while if the direct effects are not significant, the results show full mediation (Lee et al., 2016). Only economic strength (β = −0.161, p = 0.001, BCa [−0.257:−0.069]) and urban issues (β = −0.178, p < 0.001, BCa [−0.26:−0.072]) had significant indirect effects on stress. Thus, negative emotions partially mediate the relationship between two tourism impacts (economic strength and urban issues) and stress.

Model two results

Model Two was also evaluated using the explained variance values (R^2) and the strength and significance of the path coefficients (Hair et al., 2014). One emotion item (determined) had to be deleted given its loading of < 0.4 on positive emotions. The final model accounted for 7.7% of the variance in positive emotions and 54.5% of the variance in negative emotions. The various tourism impacts accounted for 44.3% of the variance in stress. The bootstrapped confidence intervals are reported for each significant relationship. There were only five statistically significant relationships in the competing model. There was a significant and negative relationship between economic impacts and stress (β = −0.177, p = 0.003, BCa [−0.292:−0.046]). Urban issues had a significant and negative relationship with stress (β = −0.302, p < 0.001, BCa [−0.42:−0.186]). Way-of-life had a significant and negative relationship with stress (β = −0.322, p < 0.001, BCa [−0.494:−0.133]). Stress had a significant and positive relationship with negative emotions (β = 0.738, p < 0.001, BCa [0.635:0.802]) and a negative relationship with positive emotions (β = −0.227, p = 0.003, BCa [−0.399:−0.207]). Of the ten proposed relational hypotheses, five were supported and five were Not supporteded (Table 5).

Using a procedure similar to that of model one estimation, Q^2 values were estimated and the results showed that all the effects were positive (Q^2 (stress) = 0.318; Q^2 (Positive Emotions) = 0.009; Q^2 (Negative Emotions) = 0.325). SRMR achieved a value of < 0.08, indicative of good fit (SRMR = 0.079).

In terms of mediation in Model Two, bootstrapped indirect effects confirmed that economic strength had a significant indirect effect on negative emotions (β = −0.131, p = 0.005, BCa [−0.225:−0.0466]) only. Urban issues had a significant indirect effect on both negative (β = −0.223, p < 0.001, BCa [−0.316:−0.138]) and positive emotions (β = 0.084, p = 0.015, BCa [0.044:0.144]).

Table 5
Model Two hypothesis testing results.

Model Two hypothesized relationships	Result	Estimate
H3a Community well-being ➔ Stress (−)	Not supported	−0.070
H3b Urban issues ➔ Stress (−)	**Supported**	**−0.302**
H3c Way of life ➔ Stress (−)	**Supported**	**−0.322**
H3d Community pride ➔ Stress (−)	Not supported	−0.051
H3e Natural/cultural preservation ➔ Stress (−)	Not supported	0.069
H3f Economic strength ➔ Stress (−)	**Supported**	**−0.177**
H3g Recreation Amenities ➔ Stress (−)	Not supported	0.100
H3h Crime and substance abuse ➔ Stress (−)	Not supported	0.006
H6a Stress ➔ Positive emotions (−)	**Supported**	**−0.227**
H6b Stress ➔ Negative emotions (+)	**Supported**	**0.738**

Bold indicates hypotheses were supported.

Table 6
Mediation hypothesis testing results.

Mediation hypotheses	Result
H7a Positive emotions mediate tourism impacts and stress	Partial
H7b Negative emotions mediate tourism impacts and stress	Partial
H8 Stress mediates tourism impacts and positive/negative emotions	Partial

Way-of-life had a significant indirect effect on both negative ($\beta = -0.237$, $p < 0.001$, BCa [−0.357:−0.112]) and positive emotions ($\beta = 0.089$, $p = 0.024$, BCa [0.017:0.153]). These results suggest that stress partially mediates the relationships between urban issues and way-of-life and emotions (positive and negative), while this partial mediation was true only for negative emotions in the case of economic strength. In both models, there is partial support for the mediation hypotheses proposed in this study (Table 6).

Conclusions

Theoretical implications

As the tourism impacts literature has expanded to explore QoL, psychological concepts like emotion and stress have begun to be examined as potential outcomes (Jordan & Vogt, 2017b; Nawijn & Mitas, 2012). Models estimated in this study reveal the interdependency of these concepts. Our findings expand the tourism and QoL body of literature in four important ways. First, we begin to examine the reliability and validity of measures of emotion and stress in the tourism context. Second, by establishing the relationships between tourism impacts, emotions and stress of host community residents, we extend the psychological discourse on emotions and well-being of tourists to include that of residents as well (Filep & Deery, 2010). Third, by evaluating competing models of the relationships between tourism impacts, emotions, and stress, we give credence to Lazarus' (1999) conceptualization of stress and emotions, which suggests that uni-directional relationships between stress and emotions are inadequate to capture the complexity of certain psychological outcomes. Finally, we demonstrate that perceived tourism impacts by residents lead to bi-directional relationships between emotions and stress.

While a handful of studies in the tourism literature have previously measured both emotion and stress, neither construct has been quantitatively measured in a sample of host community residents (Jordan & Vogt, 2017a; Nawijn & Mitas, 2012). Evaluation of the outer model in the PLS-SEM revealed both the Perceived Stress Scale (PSS) (Cohen et al., 1983) and the Positive Affect Negative Affect Scale (PANAS) (Watson et al., 1988) to possess construct validity and discriminant validity in the tourism host community resident context. Furthermore, the outer model provided evidence for internal reliability of each construct within this context as well. However, further studies are needed in various tourism contexts to more fully demonstrate the validity and reliability of these scales. Similar to many psychological scales, the perception of various phenomena is subjective and recall of their experience can vary over time. As the body of research examining the relationship between quality of life and tourism continues to grow, continued testing of the validity and reliability of measures of constructs such as stress and emotion will be necessary to advance modeling of the relationships between tourism impacts and psychological outcomes.

Tourism impacts have been related to many attitudinal and behavioral outcomes in previous research (Sharpley, 2014). Attitudes toward tourism and support for tourism development have been prioritized “outcomes” in the tourism impacts literature. In this study, we show the value of including psychological responses in modeling the outcomes of residents' perceived tourism impacts. Models One and Two showed that perceived tourism impacts were significant predictors of both tourism related stress and the experience of positive and negative emotions from tourism. These findings extend previous research that has begun to explore the nature of stress in tourism host communities (Jordan et al., 2015; Jordan & Vogt, 2017a, 2017b). Only a small subset of tourism impacts (way of life, urban issues, and economic strength) were significant predictors of stress and emotions in both models, while community pride was significant in only Model One. These findings reveal that some impacts have a higher propensity to affect

residents than others, consistent with previous literature examining these relationships (Jordan & Vogt, 2017a, 2017b; Nawijn & Mitas, 2012; Woosnam, 2012). This implies that the influence of different perceived impacts depends on the types of psychological outcomes being assessed. For example, previous studies have consistently shown that many of the impacts measured in this study affect attitudes and support for tourism development (Andereck et al., 2005; Faulkner & Tideswell, 1997). It is apparent that psychological and emotional outcomes may have a different relationship with tourism impacts. Our findings suggest that some impacts are more important than others in predicting emotional outcomes and that the interdependency between emotion and stress affect the predictive relevance of different types of impacts.

In terms of model fit, our two models fit the data equally well, as evidenced by SRMR values below the threshold of 0.08. While the purpose of our research was not to determine a "superior" model structure, it is apparent that they are equally appropriate for these data. This finding confirms the interdependent nature of emotion and stress theorized by Lazarus (1999) in the tourism context, and extends findings from the psychology and health fields (Feldman et al., 1999; Folkman & Moskowitz, 2000; Lazarus, 1999; Ong et al., 2006). However, unlike previous studies, we demonstrate that the valence in the perception of tourism impacts is directly linked to the valence in emotional responses. For example, we show that perceptions of positive and negative tourism impacts result in the perception of positive and negative emotions from tourism respectively. The perception of these felt emotions heightens or diminishes the perception of stress by residents, with positive emotions reducing it and negative emotions increasing it. Our findings also show that perceived tourism QoL impacts do result in the perception of positive emotions from tourism, negative emotions from tourism, and tourism related stress. Thus, it can be argued that the life satisfaction of residents and the well-being of communities are intimately linked to their perceptions of tourism impacts and their associated perceptions of emotion and stress. However, it remains unclear from our study whether these are experienced simultaneously. Nevertheless, as predicted by Lazarus (1999), it would be unwise to examine one concept without examining the others in all contexts, including tourism.

Practical implications

For those in tourism communities wishing to promote the perception of positive emotional and psychological well-being of residents, three important findings emerged. First, four perceived tourism impact areas (way of life, community pride, urban issues, and economic strength) should be addressed first, as they play the greatest role in predicting host community residents' perceptions of stress and emotions. This implies that a concerted effort by multiple stakeholders (local government, community leaders, and NGOs) must address the multitude of challenges facing communities such as those on Oahu. Therefore, a holistic rather than ad-hoc approach to community tourism planning and development is necessary for residents' continued well-being. Second, perceived tourism impacts influence both the perception of emotions from tourism and the perception of tourism related stress. Similar to other destinations that are concerned about the well-being of residents, a monitoring system should be set up to evaluate sentiments toward tourism and tourists both during peak and off-peak seasons. Third, perceived emotions from tourism and perceived tourism related stress are interdependent. A comprehensive understanding of tourism impacts, stress and emotions can help inform planning, development, and management of tourism activities on Oahu into the future.

The complicated relationships between perceived emotion and perceived stress likely mean that any activities aimed at addressing tourism impacts and affecting outcomes should probably target both emotions and stress simultaneously. One way community leaders could do so would be to create resident support groups to identify the most pressing impacts and potential solutions for these that minimize stress and negative emotions for residents. Such activities are particularly important for destinations that have had emotion charged anti-tourism movements, like those experienced in Amsterdam, Barcelona, or Venice (Corder, 2017).

Another way that host communities and the organizations operating within them can reduce the perception of tourism impacts and resulting emotional and psychological outcomes is by involving the community in tourism decision making through empowerment. Allowing residents to help shape the tourism industry through activities like tourism planning is a great way to provide ownership of tourism in the community, potentially reducing the perception of impacts (Jordan, 2015), but also allowing the community to determine those impacts that are acceptable and those that are not (Hall, 2008). This is an important element in the perception of tourism impacts, as so much of perception is shaped by expectations (Jordan & Vogt, 2017b).

Limitations and suggestions for future research

A major limitation of this research is that including feedback loops in a structural equation model is appropriate for longitudinal, but not cross-sectional, data (Martens & Haase, 2006). Ideally, the model of impacts, emotions and stress would have emotions and stress dually impacting each other. For this reason, it was necessary to test two separate models, both of which revealed partial mediation. Another limitation of this study is that the study site was an island destination, potentially limiting its application to destinations with differing attributes. Future studies should explore the topics of perceived tourism impacts, emotions, and stress in a variety of destinations. Additionally, there are a great many conceptualizations of impacts, emotions, and stress.

Finally, the emotions measured in this study were high arousal emotions, which has important implications for our findings. High arousal emotions are likely more closely related to stress than low arousal emotions, which we did not measure. It is therefore possible that if low arousal emotions were included in the measure that the relationships between emotions and stress could change. This is an important possibility that can and should be explored in future research.

This research utilized a measure of tourism impacts that was QoL focused, a measure of emotion that focused on states of affect as indicators of emotions, and a measure of perceived stress. There are many other ways to operationalize these constructs, and future research should explore them. Emotions and stress are but two elements of individuals' overall psychological well-being, and other

factors such as autonomy, personal growth, and acceptance should be examined in the future. Just as researchers have recently worked toward understanding how travel experiences can create psychological outcomes like emotions for the tourist (Gao & Kerstetter, 2018), understanding similar outcomes for the host community resident is equally important. Stress and emotions are linked to a vast array of health outcomes (Cooper & Quick, 2017; Richman et al., 2005), and exploring how they are related to tourism impacts is a worthy topic of future examination. It would be particularly interesting to explore how residents' perceived emotions related to impacts coincide with concepts like emotional solidarity with tourists (Woosnam, 2012), as the interplay between these emotions may result in varying outcomes for both residents and tourists. Finally, although emotion and stress are important outcomes, they ultimately affect individuals' physical health as well. Additional measures of physical well-being would contribute to our understanding of the outcomes of perceived tourism impacts.

Statement of contribution

Study findings expand the tourism and quality of life (QoL) body of literature in four important ways. First, we show the reliability and validity of measures of emotion and stress in the tourism context. Second, by establishing the relationship between tourism impacts, emotions and stress of host community residents, we extend the psychological discourse on emotions and well-being of tourists to include that of residents as well (Filep & Deery, 2010). Third, by evaluating competing models of the relationships between tourism impacts, emotions, and stress, we give credence to Lazarus' (1999) conceptualization of stress and emotions, which suggests that uni-directional relationships between stress and emotions are inadequate to capture the complexity of certain psychological outcomes. Finally, we demonstrate that perceived tourism impacts by residents lead to bi-directional relationships between emotions and stress. These findings provide knowledge necessary for communities to promote tourism that positively impacts residents' psychological and emotional QoL.

Our manuscript offers a social science perspective/approach by integrating the concepts of emotion and stress from the psychology discourse into the study of tourism and QoL. Emotions and stress are an important part of the sociological function of individuals and communities; yet have remained largely overlooked as potential outcomes of perceived tourism impacts on host community residents. Researchers have examined the concepts of attitudes and support for tourism development as outcomes related to perceived tourism impacts for > 30 years. Utilizing psychological theory to further understand the outcomes of perceived tourism impacts is an important next step in addressing any health and wellness issues that may arise from the development and operation of the tourism industry in communities across the globe.

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